Halton District School Board

HDSB RFX Front End
- Goods & Services

RFT 26-030 (the RFX)

Oakville # 5 Elementary School and Child Care Facility

Issue Date: January 19, 2026

Closing Date and Time: All Submissions are to be submitted electronically via email to chatelaina@hdsb.ca no later than 2:00 p.m. local time, on February 10, 2026.

Questions:

All questions to be submitted in writing through hdsb.bidsandtenders.ca using the "Submit a Question" link associated with this bid request. Questions are required to be received no later than the question deadline outlined in the bid request.

Purchasing Representative:

Name: Amanda Chatelain
Email Address: chatelaina@hdsb.ca

Site Meeting

Date: January 28, 2026
Location: 3490 Preserve Drive, Oakville (corner of Settlers Road West and Preserve Drive).
Time: 10:00 am

Communications Notice

To obtain documents online please visit: https://hdsb.bidsandtenders.ca

If you subscribe to bids & tenders you can login to your account to download the document(s) without the preview watermark. You may also opt to purchase a one-time download for this opportunity. Documents are not provided in any other manner.

All Suppliers shall be registered as a Plan Taker for this opportunity, which will enable the Supplier to download the RFT without the watermark preview, to receive addenda email notifications, and to download addenda. Failure to register as a Plan Taker may result in disqualification of the submission, at the sole discretion of HDSB.

Should the HDSB receive a Submission that is subsequently found to be from a Supplier that is not registered with bids & tenders and the Supplier did not obtain the RFT document from https://hdsb.bidsandtenders.ca the HDSB reserves the right to remove the Submission from further consideration.

The following documents form part of all HDSB competitive proposal documents:

HDSB Procurement Administrative Procedure:

https://www.hdsb.ca/our-board/Policy/Procurement.pdf

HDSB Asbestos Management in Facilities Administrative Procedure:

https://www.hdsb.ca/our-board/Policy/AsbestosManagementInFacilities.pdf

HDSB Vendor Performance Management Administrative Procedure:

https://www.hdsb.ca/our-board/Policy/VendorPerformanceManagement.pdf

Broader Public Sector Procurement Directive

https://www.doingbusiness.mgs.gov.on.ca/mbs/psb/psb.nsf/Attachments/001-BPS_Procurement_Directive/$FILE/BPS_Procurement_Directive.pdf

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Appendix C - Procurement Restriction Policy Compliance Declaration (1 page)
Appendix D - Voluntary Declaration of Diverse Supplier Status (1 page)
Appendix E – Notice of Intent Not to Submit a Bid (1 page)
Appendix F – Mandatory Incorporated Provisions (16 Pages)
Appendix G – HDSB Prequalified Subcontractors (3 Pages)
HDSB Standard Terms and Conditions (30 pages)

1. *Introduction to the Halton District School Board (HDSB)*

The Halton District School Board (HDSB) supports the learning of approximately 67,000 students across the municipalities of Burlington, Halton Hills, Milton, and Oakville within the Halton Region. As one of the largest English-language school boards in Ontario, the HDSB provides high-quality education from Kindergarten through Grade 12, as well as continuing education programs for adults and newcomers.

The HDSB's team of approximately 12,000 staff, including teachers, administrators, support personnel, and senior leadership, work collaboratively to provide a safe, caring, equitable, and inclusive learning environment for all students, while also promoting respect, civility, and academic excellence. The HDSB aims to create a positive school climate where every student, staff member, and member of the school community feels safe, included, and accepted and where students can learn, grow, and thrive within HDSB's 92 Elementary Schools and 18 Secondary Schools (including Gary Allan HS and Syl Apps HS).

Additional information about the HDSB can be found by visiting hdsb.ca.

2. *Objective of the RFX*

The HDSB is seeking qualified Suppliers to complete construction of Oakville # 5 Elementary School and Child Care Facility located at the corner of Settlers Road West and Preserve Drive.

In order to be considered for this project, the successful Supplier shall have the following attributes/characteristics:

a. Experience providing Services as described in this RFX;
b. Have all appropriate licenses, certifications, and operating authorities to provide the Services requested in this RFX;
c. Knowledge of leading-edge trends in the industry;
d. Ability to develop and follow detailed project timelines;
e. Sufficient, competent, trained, and experienced personnel to provide the requested Services;
f. Appropriate supervision, training, documentation, Information and Technology, and other resources are needed to provide the requested services.
g. Sufficient labor and equipment to meet timelines without overextension;
h. Strong coordination between disciplines and with other trades including a clear process for managing subcontractors, scope changes, delays, or issues; and,
i. Appropriate liability and WSIB insurance documentation.

The deliverables for the HDSB Oakville # 5 Elementary School and Child Care Facility are set out in the Scope of Work and Deliverables. The HDSB intends to contract by issuance of a Letter of Intent, Award Letter, and/or issuance of a Purchase Order (PO) with one or more primary qualified Supplies to provide the services. This RFX includes

the appendices and other supporting documents attached hereto, which form part of the RFX.

Suppliers are encouraged to read each section of the Request for Tender (“RFX”) thoroughly. While sections may appear similar, additional information may be included as applicable within each section. It is the Supplier's responsibility to understand each section's requirements. The procurement timetable represents the HDSB’s best estimated schedule. All dates may be subject to change at HDSB’s discretion. Awarding of the contract is funding dependent and may be delayed while funding is secured.

Additionally, suppliers must review and acknowledge the attached HDSB Standard Terms and Conditions.

3. Planned Schedule of Events

Event	**Date**
Release of RFX	January 19, 2026
Mandatory Site Visit	January 28, 2026
Question Deadline	January 30, 2026
Issuance of Final Addendum	February 3, 2026
RFX Closing	February 10, 2026
Supplementary Forms (3 low bidders)	24 hours or next business day
Project Timelines	Substantial Completion - May 2028 or sooner Total Completion - August 2028
All times specified in this timetable are local times in Burlington, Ontario, Canada	

4. RFX Closing Information

All Suppliers shall have an Online Bidding System vendor account and be registered as a plan taker at https://hdsb.bidsandtenders.ca for this RFX, which will enable the Supplier to download the RFX, to receive addenda/addendum email notifications and to download addenda.

The HDSB **does not** accept electronic submissions via Bids and Tenders. **All Submissions are to be submitted electronically via email to chatelaina@hdsb.ca** no later than **2:00 p.m. local time in Burlington, Ontario, on February 10, 2026** as

noted on the front cover of this document. Submissions submitted and/or received by any other method will be rejected unless the HDSB has instructed otherwise.

Submissions will be deemed to be officially received by the time stamp issued by the HDSB's email server. Suppliers are cautioned that the timing of their Submission is based on when the submission is received by the HDSB's email server, not when the Submission is submitted by the Supplier, as the submission transmission can be delayed in an 'Internet Traffic Jam' due to file transfer size, transmission speed, etc.

All Submissions must be received by the HDSB's designated email address no later than the closing date and time specified in this RFP. Submissions received after the official closing time, as determined by the HDSB's email server timestamp, may be declared non-compliant and not be considered for evaluation, in the sole discretion of the HDSB. It is the sole responsibility of the Supplier to ensure that its Submission is received on time.

By submitting, the Supplier acknowledges and accepts all terms and conditions in this solicitation document and all terms and conditions outlined in the attached HSDB Standard Terms and Conditions.

5. Site Meeting

Suppliers are responsible for conducting any site examination deemed necessary by the Supplier to inform themselves fully as to the existing conditions, limitations, access, surrounding site conditions and all other conditions, and for the proper preparation of the Submission. Failure of Suppliers to familiarize themselves with site conditions will not be an allowable reason for an increase in Contract costs.

A Mandatory Site Meeting will be held on January 28, 2026, at 10:00 a.m. at 3490 Preserve Drive, Oakville (corner of Settlers Road West and Preserve Drive).

All Suppliers are required to sign in upon arrival. Late arrivals will not be permitted to attend the mandatory site meeting and will be disqualified from further consideration for this project. Suppliers who fail to attend and sign in at the Mandatory Site Meeting will have their submissions disqualified. No exceptions will be made for late arrivals or failure to sign in. Suppliers are responsible for ensuring timely attendance.

Where there is a mandatory site meeting(s), the HDSB, at its sole discretion, reserves the right to re-schedule a second visit, to ensure competitive submissions are received, in the event that no potential Supplier or only one potential Supplier attends the mandatory site meeting(s). Suppliers who fail to attend and register their attendance at the mandatory site meeting(s) will be disqualified from submitting a Submission.

6. Communication Protocol

All communication related to any aspect of this RFX must be conducted exclusively through the Online Bidding System.

Suppliers who fail to adhere to this communication requirement may be disqualified from further participation in this RFX process. Specifically, and without limitation, Suppliers shall not communicate or attempt to communicate regarding this RFX with:

1. Any employee, official, or agent of the Halton District School Board (HDSB), other than the designated RFX Purchasing contact; or
2. Any member of HDSB's governance, including but not limited to Trustees, the Director of Education, Superintendents, officers, or external advisors.

Suppliers are responsible for reviewing all RFX documents, including the HDSB Standard Terms and Conditions, all Appendices, and the Form of Tender. Should a Supplier identify any errors, omissions, or ambiguities, or require further clarification, such inquiries must be submitted to the RFX Purchasing contact via the Online Bidding System by the deadline specified for questions.

It is the sole responsibility of the Supplier to request clarification on any aspect of this RFX that appears unclear. The HDSB shall not be held responsible for any misunderstanding or misinterpretation by the Supplier.

If a Supplier believes there is an error, inconsistency, or ambiguity in the RFX documents, they must notify the RFX Authority via the Online Bidding System prior to submitting a response.

Where appropriate, the HDSB will issue a clarification through the Online Bidding System for the benefit of all Suppliers. Responses to inquiries will include both the question (edited for clarity if necessary and without identifying the Supplier) and the HDSB's response. The HDSB reserves the right to consolidate and respond to similar questions only once.

If a clarification results in a change to the RFX, such change will be communicated through a formal addendum issued via the Online Bidding System.

All addendum or addenda issued shall form part of this document, which forms part of the RFX. The onus is on the Supplier to verify that they have received and reviewed all addenda. Failure to acknowledge receipt of all addenda in the submission may result in disqualification.

7. Issuance of Addenda

Should the HDSB determine, for any reason, that it is necessary to provide additional information or clarification regarding this RFX, such information will be issued to all Suppliers in the form of an addendum, using the same method by which the original

RFX was communicated. Each addendum will form an integral part of this RFX and shall be considered incorporated into all related documents.

This RFX may only be amended through the issuance of such addenda in accordance with this section. Amendments or clarifications issued in any other manner will not be considered binding on the HDSB.

All inquiries regarding this RFX must be **submitted in writing through the Online Bidding System no later than 2:00 p.m. (local time)** on **January 30, 2026**. **Any resulting addenda will be issued no later than February 3, 2026.**

It is the sole responsibility of each Supplier to ensure they have received all addenda prior to submitting their Submission.

8. Subcontractors

The General Contractor must select a subcontractor from the HDSB pre-qualified list of subcontractors attached in **Appendix G - HDSB Prequalified Subcontractors**.

The Contractor agrees to preserve and protect the rights of the parties under the contract with respect to work performed under subcontract, and shall:

- enter into contracts or written agreements with their subcontractors to require them to perform their work in accordance with and subject to the terms and conditions of the contract. Further, the Contractor shall be fully responsible to the Owner for acts and omissions of their subcontractors and of any persons directly or indirectly employed by them as for acts and omissions of persons directly employed by them.
- therefore, agree that they will incorporate the terms and conditions of the Contract Documents into all Subcontractor Agreements they enter into with their subcontractors.

The HDSB reserves the right, at its discretion to waive the requirement to utilized the mandatory list of pre-qualified sub-trades at any time during the tendering process based on market conditions.

Proposed subcontractors must be noted on the Form of Tender.

9. Submission of Required Documentation

Suppliers are required to submit all mandatory and supporting documentation as part of their response to this RFX. Failure to provide any required documentation may result in the Submission being deemed non-compliant and disqualified from further consideration. Incomplete submissions may be rejected without further review.

Required documents include, but are not limited to, the following:

- Form of Tender
- Appendix A: Declaration and Signature Sheet
- Appendix B: Supplier Attestation
- Appendix C: Procurement Restriction Policy Compliance Declaration
- Supplementary Forms from low three (3) bidders 24 hours or next business day

Suppliers must ensure that all forms are fully completed, signed by an authorized representative, and submitted in the manner and format specified in this RFX.

Optional documents include, but are not limited to, the following:

- Appendix D: Voluntary Declaration of Diverse Supplier Status (if applicable)

It is the sole responsibility of the Supplier to review all RFX documents and instructions to ensure that a complete submission is made. Incomplete submissions may be rejected without further consideration.

10. Notice of Intent Not to Submit a Bid

Suppliers who do not intend to submit a response to this RFX are requested to complete and return **Appendix E - Notice of Intent Not to Submit a Bid** form included in this RFX package.

The purpose of this form is to assist the HDSB in understanding reasons for non-participation and to help improve future procurement opportunities.

Please submit the completed form by email to **chatelaina@hdsb.ca** on or before the closing date and time indicated in this RFX.

11. HDSB Standard Terms and Conditions

All Suppliers must review the attached HDSB Standard Terms and Conditions which form an integral part of this RFX process.

All Suppliers to the HDSB will be bound by the standard terms and conditions set forth, except as specifically qualified in Special Terms and Conditions, issued in connection with any RFSQ, RFQ, RFP, RFI, Tender or any other type of request issued by the HDSB soliciting pricing and/or services, whether communicated formally or informally, including via email, phone, or verbal request.

12. Mandatory Terms for Definitive Agreements

As a condition of award, the Supplier agrees that this RFX and any Letter of Intent, Award Letter, Purchase Order, contract or other definitive agreement issued by HDSB (each, a "**Definitive Agreement**") will incorporate and be governed by: (i) this RFX and the HDSB Standard Terms and Conditions; and (ii) the mandatory provisions set out in Appendix F (the "**Mandatory Incorporated Provisions**").

The Mandatory Incorporated Provisions shall be included in or are deemed included in every Definitive Agreement (and prevail in the event of conflict), notwithstanding any Supplier terms, order forms, shrink-wrap/click-wrap or other documents, which are of no force or effect unless expressly accepted in writing by HDSB. Notwithstanding the foregoing, such provisions shall be interpreted and applied with such modifications, adaptions, and conforming changes as may be necessary to ensure consistency with the structure, terminology, and context of the applicable Definitive Agreement and to give full effect to the intent of the HDSB as expressed herein.

The Supplier shall flow down the Mandatory Incorporated Provisions to all permitted subcontractors and remains fully responsible for their compliance.

13. Order of Precedence

In the event of any conflict, inconsistency, ambiguity or discrepancy among the documents forming this RFX and any resulting Definitive Agreement, the documents shall take precedence in the following order, to the extent of the conflict only.

Supplier terms and conditions (including quotations, proposals, order forms, shrink-wrap/click-wrap, websites/portals) are of no force or effect unless expressly accepted by HDSB in writing and identified as prevailing.

<u>During the RFX process (prior to award)</u>

1. Most recent Addendum(da), in reverse chronological order.
2. Any Special Terms and Conditions or Special Instructions to Suppliers included in this RFX.
3. The main body of this RFX.
4. Appendix F – Mandatory Incorporated Provisions (notwithstanding the foregoing, Appendix F prevails over any conflicting RFX term).
5. Other Appendices and Attachments to this RFX (excluding Appendix F), including the Scope of Work/Specifications/Drawings, schedules and forms (as applicable).
6. Questions and answers/clarifications only to the extent formally issued by Addendum.
7. The Supplier's Submission (including any BAFO and any Supplier-written clarifications requested by HDSB and accepted by HDSB in writing).

<u>After award (Definitive Agreements: PO, Letter of Intent/Award Letter, standalone contract)</u>

1. Most recent Amendment/Change Order/Change Directive, in reverse chronological order.
2. The executed Definitive Agreement (including any schedules), or the HDSB Purchase Order (including any PO Terms), or the Letter of Intent/Award Letter (as applicable).

3. Appendix F – Mandatory Incorporated Provisions (these are deemed incorporated into every Definitive Agreement and prevail over any conflicting term).
4. The main body of this RFX (front end).
5. Special Terms and Conditions or Special Instructions to Suppliers included in this RFX (if not already incorporated above).
6. Scope of Work/Specifications/Drawings and all technical requirements.
7. Other RFX Appendices and Attachments (excluding Appendix F).
8. The Supplier's Submission (including any BAFO and any Supplier-written clarifications requested by HDSB and accepted by HDSB in writing).

Additional rules of precedence

Later-dated documents of the same tier prevail over earlier-dated documents.

Addenda prevail over any previously issued portion of the RFX they modify.

Figures govern over scaled measurements on drawings; detailed specifications govern over general; project-specific requirements govern over standard specifications.

In the case of a discrepancy between words and figures, the words govern.

Responses to questions, presentations, demonstrations or site-meeting discussions are not binding unless and only to the extent incorporated by formal Addendum or written amendment executed by HDSB.

Post-award, the executed Definitive Agreement (or PO) prevails over Appendix F except where Appendix F is expressly incorporated as a mandatory, non-variable provision and identified as prevailing in the Definitive Agreement.

Nothing in this Order of Precedence limits HDSB's rights or remedies set out in the HDSB Standard Terms and Conditions.

SCOPE OF WORK AND DELIVERABLES

Includes the following:

- Binder A: Architectural and Structural Specifications (670 pages)
- Binder B: Mechanical and Electrical Specifications (646 pages)
- Binder C: Architectural Details and Geotechnical Report (226 pages)
- Drawings (93 pages)

PROJECT: OAKVILLE #5 ELEMENTARY SCHOOL AND CHILDCARE FACILITY
HDSB NO. RFT 26-030

CLIENT: HALTON DISTRICT SCHOOL BOARD

PROJECT No.: 22125

DATE: JANUARY 2026

BINDER: A ARCHITECTURAL & STRUCTURAL



ARCHITECT & CONSULTANTS:

HOSSACK ARCHITECTURE

105-1939 IRONOAK WAY
OAKVILLE, ONTARIO L6H 3V8
Tel (905) 815-8284

Strategy 4
- Development Consulting
- Urban Transformation
- Urban Design
- Urban Engineering

MGM CONSULTING INC

DEI Consulting Engineers
MECHANICAL | ELECTRICAL | AQUATIC

KALOS ENGINEERING

PROJECT NAME

Oakville #5 Elementary School and Child Care Facility
3490 Preserve Drive
Oakville, Ontario

HDSB Tender No. **RFT 26-030**

PROJECT OWNER

HALTON DISTRICT SCHOOL BOARD
J.W. Singleton Centre
2050 Guelph Line
Burlington, Ontario
L7R 3Z2

CONSULTANTS

Architect
HOSSACK ARCHITECTURE
105 – 1939 Ironoak Way
Oakville, ON L6H 3V8
Tel.: (905) 607-8284

Mechanical, & Electrical Engineers
DEI Consulting Engineers
55 Northland Rd.,
Waterloo, ON N2V 1Y8
Tel.: (519) 725-3555

Structural Engineer
KALOS ENGINEERING INC.
300 York Boulevard
Hamilton, ON L8R 3K6
Tel.: (905) 333-9119

Site Services (Civil) Engineer
MGM Consulting Inc.
400 Bronte Street South, Suite 201
Milton, Ontario, L9T 0H7
Tel. (905) 567 8678

Landscape Architect
STRATEGY 4
2620 Bristol Circle, Unit 100
Oakville, ON L6H 6Z7
Tel.: (905) 829-2544 Fax: (905) 829-1985

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SPECIFICATIONS BINDER "A"

HDSB STANDARD TERMS & CONDITIONS
RFT (REQUEST FOR TENDER) FRONT END

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AD 410 Exterior Cavity Wall Control Joint Detail
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1. INSTRUCTIONS TO BIDDERS

Instruction for tendering must be followed implicitly. Any tender that does not comply with the School Board's RFT front-end documents may be declared informal and might not be considered.

1.1. DEFINITIONS

1.1.1. The words "Bidder" & "Tenderer" and "Bids" & "Tenders" are interchangeable in the documents and their meanings are identical.

1.1.2. The words "Owner" & "Board" are interchangeable in the documents and their meanings are identical.

1.2. DESCRIPTION

1.2.1. Work under this Contract covers the construction of the Project as identified in the Contract Documents.

1.3. CONTRACT

1.3.1. Consult all Contract Documents consisting of the following:

1.3.1.1. Form of Tender HDSB RFT front end

(Above Document is to be signed and executed by all Bidders and accompanied by a Bid Bond and Agreement to Bond to form the "Bid Submission".)

And

1.3.1.2. Supplementary Information Form Section 00 22 00

(The above document is the "Supplementary Bid Submission" and is to be completed and submitted by the THREE LOW BID prequalified General Contractors, on the day following (or next regular business day) the Bid Submission on or before 2:00pm local time, or the next business day, to the office of the Architect by email (admin@hossackarch.com) in order to have a completed Tender.

And

1.3.1.1. Mechanical Supplemental Tender Form Binder B

1.3.1.2. Electrical Supplemental Tender Form Binder B

(The THREE Low Bid General Contractors are to ensure that fully completed originals of the Mechanical and Electrical Supplementary Tender Forms from their named subcontractors are submitted to the office of the Architect by 2 p.m. on the day following the tender submission.)

And

1.3.1.3. Summary of Work Section 01 11 00

And

1.3.1.4. Specifications as listed in the Specification Index prepared by the Architect and Consultants.

1.3.1.5. Drawings as listed in the Drawing Index and Detail Sheets as listed in the Detail Sheet Index and as applicable - prepared by the Architects and Consultants.

1.3.1.6. Any Addenda issued prior to the closing of tenders.

1.4. BOARD

1.4.1. The "Owner" of the project is:

Halton District School Board
J.W. Singleton Centre
2050 Guelph Line
Burlington, ON L7R 3Z2

1.4.2. The words "Owner" & "Board" are interchangeable in the Documents and their meanings are identical.

1.5. ARCHITECT

1.5.1. The Prime Consultant (Architect) on this project is identified in the Contract Documents.

1.6. CONSULTANTS

1.6.1. The Sub-Consultants on this project are identified in the Contract Documents.

1.7. TENDER

1.7.1. The tender is to be submitted on the provided Tender Form, and shall be known as the **Bid Submission.**

1.7.2. The General Contractor must note that the Bid Submission requires the inclusion of the General Contractor's *Bid Bond* and *Agreement to Bond*.

1.7.3. The **Bid Submission**, submitted on the Request for Tender form supplied, to the location indicated on the Request or Tender form.

1.7.4. **Bid Submission** must be time stamped and received at the Board's, *Reception Counter* on, or before, the Tender Deadline Time outlined in the HDSB Request for Tender.

1.7.5. In the event of a discrepancy, the Board's stamp device shall be the standard of measurement. This clock shall be set to local time, within reasonable tolerances. See also Tender Deadline Time for official clock measurement.

1.7.6. Tenders received after this time and date will not be accepted, and the unopened tender will be returned. The Board will not be responsible for tenders that are delivered to any location within the Board's offices other than at the designated location identified in the Tender Documents.

1.7.7. The Tender shall be submitted for project on forms provided by the Owner.

1.7.8. All blanks in the Tender Form shall be fully completed or the Tender may be invalidated. *Tenders not completed in full, may, at the discretion of the Board, be rejected*.

1.7.9. On the day following (or next regular business day) the Bid Submission, only the THREE LOW BID General Contractors will be required to submit by **2:00 p.m. to the office of the Architect**, by email (admin@hossackarch.com) following:

Supplementary Information Form	Section 00 22 00
Mechanical Supplemental Tender Form	Binder B
Electrical Supplemental Tender Form	Binder B

as completed by the Mechanical and Electrical Sub-Contractors named on the Stipulated Price Bid Form of the respective General Contractor.

1.7.10. Mechanical and Electrical Sub-Contract Bidders are required to submit bonds for this project. As part of their Bid, Mechanical and Electrical Bidders shall submit an Agreement to provide a 50% Performance Bond and a 50% Labour and Materials Payment Bond, duly signed and sealed by a Surety firm who is licensed to do business in the Provence of Ontario, stating that if awarded the Contract the Bidder will execute and enter into a formal agreement within the time required. These bonds shall be issued in favour of "The Successful General Contractor" and the Halton District School Board jointly. The Mechanical and Electrical contractors carried by the low three General Contractors must submit their Agreement to Bond to the General Contractor, along with the completed Supplementary Information Forms so that the General Contractor can submit to the Architect within 24 hours of the close of tenders.

1.7.11. *Section 002200 - Supplementary Information Form* shall be signed by the appropriate officers of the Contractor's firm. Incorporated companies shall affix their corporate seal under the hands of their authorized officers.

1.7.12. Drawings and specifications shall be returned to the Consultant within 10 days of the closing of tenders. A second copy of *Section 002110 – Stipulated Price Bid Form* shall be retained by the Bidder.

1.7.13. Tenders shall be valid for length of time outlined in the front end documents.

1.7.14. Tenderers must note, and include, any *Alternate, Separate, and Itemized Prices* requested by the Consultant, as well as all *List of Subtrades*, *List of Suppliers/Products*, *Labour Rates* and *Unit Prices* indicated on the *Supplementary Information Form.*

1.8. TENDER DEADLINE TIME

1.8.1. Time on the official clock is measured in hours and minutes only - not hours, minutes and seconds.

1.8.2. Submitted tenders shall be deemed "On Time" for as long as the official clock shows 2:00 p.m. Submitted tenders shall be deemed "Late" if the submission is stamped by the official clock as 2:01. p.m.

1.9. TENDER ACCEPTANCE AND OPENING

1.9.1. The Board endeavours to open all tenders in public as soon as possible after 2:00 p.m local time, on the date of the closing of the tender. Pre-Qualified Bidders who have submitted bids may attend the opening.

1.9.2. The Board's Administration anticipates that the formal award of the Contract will take place at a future Regular Meeting of the Board. A *Letter of Intent* to sign a Contract will be issued, by the Board, within the terms of acceptance.

1.10. TENDER REJECTION

1.10.1. The Board reserves the right to reject any or all proposals submitted, without explanations, and to waive any informality in same. The lowest or any tender shall not necessarily be accepted.

1.11. UNIT PRICES

1.11.1. Refer to *Supplementary Information Form.* The Bidder should be aware, however, that Unit Prices for additional Work shall not exceed Unit Prices for deducted Work by more than 20%.

1.11.2. Unit prices must be submitted at the time of *Section 002200 - Supplementary Information Form.*

1.11.3. The Board reserves the right to accept or reject any or all of the unit prices prior to entering into a contract.

1.11.4. The Board further reserves the right to negotiate any of all of the unit prices with the Contractor prior to the signing of the Contract.

1.11.5. Should the Board and the General Contractor be unable to mutually agree on the amounts of the unit prices, the Contractor agrees that the Board has the right to hire outside contractors to perform the Work concerned under a separate contract, without any financial penalty whatever to the Board and without additional overhead and profit to the General Contractor.

1.12. SUB-CONTRACTORS

1.12.1. The Construction Bid Depository will not be used for this project.

1.12.2. General Contractor is required to submit, on the provide Tender Form, the names of Mechanical, Electrical and Roofing Sub-Contractors that the General Contractor proposes to use on this Project from the list of pre-qualified sub-contractors contained herein.

1.12.3. General Contractors shall ensure they carry in their bid sub-contractors with whom they can execute a subcontract agreement. This requirement specifically pertains to trade union compatibility. Additional costs will not be considered for failure to comply with this requirement.

1.12.4. General Contractors are required to submit, on *Section 002200 - Supplementary Information Form,* a list of Sub-Contractors. The Bidder shall name in this list the Sub-Contractors proposed to perform the Work under the Contract. Ensure that only prequalified or subcontractors listed in individual specifications sections, if any, are listed. No substitutions to these lists shall be made without the written approval of the Consultants.

1.12.5. The selection of all Sub-Contractors must be acceptable to the Board and to the Consultants. If the required substitution of a Sub-Contractor affects the sub-tender price, an adjustment will be made in the amount of the General Contract by the amount only of the difference in sub-tenders, without additional overhead or profit to the General Contractor.

1.12.6. If the Bidder proposes to do Work with persons directly employed by him and not sub-contract then the Bidder shall insert the words "*Contractor*" ***provided*** that the Bidder can submit proof that his forces have had extensive experience in this field.

1.12.7. Sub-Contractors shall be actually engaged as their own recognized business, in the line of Work required by the specifications and shall carry out themselves the Work which they are awarded by subcontract. They shall not be permitted to re-subcontract their Work or portions thereof, to other contractors. THIS INCLUDES SHOP DRAWINGS.

1.13. COMPLETION DATE

1.13.1. Tenders must include all costs involved in having the Contract “Substantially Complete" by the date specified in *Form of Tender.*

1.13.2. Construction must start immediately upon signing of the contract. Work must continue during all adverse weather conditions as necessary to ensure completion by dates listed in the HDSB RFT front end documents.

1.14. OCCUPANCY REQUIREMENTS

1.14.1. The building(s) shall be deemed to be ready for occupancy when the Contract meets the requirements of OAA/OGCA Document 100, Construction Lien Act (latest amendments) and occupancy approval of all Authorities Having Jurisdiction.

1.14.2. The date of Substantial Completion shall be deemed the date by which the Contractor has achieved the level of completion for full legal occupancy of all areas by the owner.

1.15. BID BOND, PERFORMANCE BOND, LABOUR & MATERIAL BOND/MAINTENANCE BOND

1.15.1. Each tender shall be accompanied by a Bid Bond and Agreement to Bond in the most recent form approved by the Canadian Construction Association from a Surety Company, acceptable to the Board in the amount of **10% of the Bid Price** together with an Agreement to Bond. Tenders not accompanied by a Bid Bond and Agreement to Bond will be declared informal.

1.15.2. This Bid Bond shall be forfeited if the Bidder declines to enter into a formal contract in the amount tendered, or as adjusted according to the separate prices included in the tender, and to furnish, when called upon to do so, a Performance Bond. This Bid Bond shall be accompanied by an Agreement from the Surety Company that a 50% Performance Bond and a 50% Labour and Material Payment Bond will be issued to the Bidder if he is awarded the Contract. The cost of the Bonds shall be included in the amount of the Tender.

1.15.3. Retention and use of the Bid Bond, as outlined above, shall not be deemed a penalty, but a consideration to the Board for inviting and considering the Tender and as part payment for sustained damages and costs incurred by the Board, which shall be deemed to be the difference between the bid price of this Bidder and the bid price of the next lowest Bidder acceptable to the Board.

1.15.4. A Performance Bond, equal to 50% of the Contract Price, shall be furnished through a Surety Company or Insurance Company approved by the Consultant and the Board according to terms and conditions acceptable to the Board and the Consultant.

1.15.5. Labour and Material Payment Bond, equal to 50% of the Contract Price is to be provided within ten (10) Working Days upon request, stating that Board will not be held responsible if payment to Sub-Contractors, as certified due by the Consultant, is not made by the General Contractor when due.

1.15.6. On completion of the Work, the Performance Bond shall remain in force as a MAINTENANCE BOND for a period of one year from the date of acceptance of the building by the Board. It shall form a *Guarantee of Workmanship and Materials* for the one year period.

1.15.7. The Bidder to whom the contract is awarded must properly sign the contract and furnish a satisfactory Performance Bond, Labour and Material Payment Bond, Insurance Certificate and Workers' Compensation Board Certificate within ten (10) Working Days of acceptance of the Tender by the Board, or forfeit the Bid Bond.

1.16. PREQUALIFIED CONTRACTORS AND SUB-CONTRACTORS

1.16.1. Tenders will only be accepted from the following General Contractors:

.1 Bromac Construction Inc.
.2 Everstrong Construction Ltd.
.3 Gen-Pro
.4 Golden Gate Contracting
.5 PM Contracting
.6 Pre-Eng Contracting Ltd.
.7 Remo Construction
.8 Struct-Con Construction
.9 TRP Construction
.10 Tambro Construction Ltd.

1.16.2. Tenders will only be accepted with Mechanical, Electrical and Roofing Contractors listed from the Halton District School Board's list of Pre-Approved Sub-Contractors.

1.16.3. In addition, refer to specific specification sections for prequalified products or suppliers for some individual sections. Ensure names of ONLY the prequalified manufacturers or suppliers are listed on the Bid Documents that form the base bid price.

1.17. COMPLETION OF THE SUPPLEMENTARY INFORMATION FORM

1.17.1. Accurate completion of the Supplementary Information Form is a mandatory requirement for all contractors to make a complete Tender submission.

1.17.2. All bidders are to note that due to the requirement to submit the Supplementary Bid Form on the day following the Bid Submission, advance preparation to complete the information and in particular, the Alternate and Itemized Prices, is advisable.

1.17.3. Bidders must recognise that that accurate completion of the Alternate Prices

1.18. MECHANICAL AND ELECTRICAL SUPPLEMENTARY BID SUBMISSIONS

1.18.1. *Section 15001-'Mechanical Supplementary Tender Form'* and *Section 16001-'Electrical Supplementary Tender Form'* shall be signed, executed, only by the each respective sub-contractor Listed on the Stipulated Price Bid Form of the THREE LOW BID General Contractors. These shall be delivered to the three low bid General Contractors for submission by the three low bid General Contractors in accordance with the terms stated in article 1.7 above.

1.19. BIDDERS

1.19.1. Persons or firms submitting tender proposals shall be actually engaged as their recognized business in the lines of Work required by the specifications, and shall be able to refer to Work of a similar character which has been satisfactorily performed by them.

1.20. FAIR WAGE AND LABOUR

1.20.1. Rate of wages, hours and conditions of Work shall be in accordance with Provincial Codes and as generally recognized and accepted in the locality. Building mechanics and labourers resident in the district are to be employed where suitable.

1.20.2. Labour forces employed on the site may have compatible affiliation with any labour organization. Union contract itself is not a prerequisite.

1.21. DISCREPANCIES AND OMISSIONS

1.21.1. Bidders, including Sub-Contractors, finding specified items unavailable, finding discrepancies in, or omissions from, the drawings or specifications or other contract documents, or having any doubt as to the intent or meaning of any part thereof, shall at once notify the Consultant, who will issue a Bulletin to all Bidders in explanation of the inquiry if necessary.

1.21.2. All definitions, Addenda, explanations, corrections or additional information will be issued by the Consultant during the time of bidding in the form of typewritten Bulletins and such Bulletins will be available to all Bidders. These shall become part of the Contract Documents and must be shown on *Section 002110 - Stipulated Price Bid Form* as having been received.

1.21.3. NO ORAL INSTRUCTIONS WILL BE VALID.

1.22. BIDDING ASSUMPTIONS

1.22.1. All bids submitted, including bids by Sub-Contractors, are assumed to be based upon the complete set of Contract Documents. No alterations in prices for items of Work will be considered if it is determined by the Consultants, or the General Contractor, that bids were not based on the complete set of documents (e.g. bids based upon Specifications but not on drawings and vice-versa).

1.23. ERRORS IN TENDER

1.23.1. The Board shall not entertain requests for gratuitous payments arising from errors alleged to have been made in a Tender that the Board has accepted.

1.24. INQUIRY AND INSTRUCTION

1.24.1 All questions related to this Tender must be submitted in writing in the on-line bidding system.

1.25. EXAMINATION OF SITE

1.25.1. Before tendering, the Bidder shall examine the site, and examine and understand the Geotechnical Investigation Report, the scope of previous rough grading and understand and be aware of said materials as may be included in those documents and this specification. The Bidder shall ascertain the extent and nature of the materials it may be necessary to remove or fill to reach or provide the depths, levels and grades required. The Bidder must determine that all of his/her calculations are made in accordance with the drawings and specifications and the Soils Reports.

1.25.2. Proposals shall include the cost imposed by existing conditions and limitations of site and the accepted proposal shall be held to have included such costs. NO ALLOWANCE WILL BE MADE FOR FAILURE TO EXAMINE THE EXISTING SITE.

1.25.3. The levels and other information shown on the drawings are furnished in good faith for the guidance of the General Contractor. This information, however, shall in no way relieve the General Contractor of the responsibility of ascertaining to his/her own satisfaction the nature of all conditions at the site.

1.26. BUILDING PERMIT AND OTHER PERMITS REQUIRED

1.26.1. The Building Permit has been applied for and the Permit cost shall be paid for by the Owner. The permit may be provided for construction in phases as partial conditional permit(s).

1.26.2. The General Contractor must, however, pay all other necessary fees, deposits and charges related to Municipal, Regional, Provincial and Federal Requirements or permits except as outlined below. The General Contractor is responsible for determining the amounts of these permits, fees, etc.

1.27. CONTRACT DOCUMENTS

1.27.1. The Contract shall be subject to the **Canadian Standard Construction Document CCDC – 2 2020 for Stipulated Price Contract** and all Supplementary Conditions and Contract Documents as prepared by the Consultants. Successful bidder must sign a contract within ten (10) Working Days of notification of award. ***The Contractor shall not be entitled to any payment until the Contract is signed.***

1.27.2. All Contractors will be held to have examined and made themselves familiar with the various articles of these Standard Documents and shall be as binding for all sections of the following specifications as though written in full therein.

1.28. INSURANCE COVERAGE ON EXISTING SCHOOLS VACATED DURING CONSTRUCTION

1.28.1. This article is not applicable to this project.

1.29. FINAL ACCEPTANCE

1.29.1. It must be clearly understood that final acceptance of this Contract is subject to approvals of the Board and other Authorities and these may delay final approval. There will be no adjustments in the tendered price for a period outlined in the tender documents, from receipt of tenders due to delays resulting from obtaining necessary approvals.

1.30. ONTARIO HARMONIZED SALES TAX

1.30.1. The tender amount does not include HST, but shall include all other applicable sales and excise taxes, custom duties, freight, exchange and all other charges in effect and known to come into effect during the construction of the building described in this Contract.

1.30.2. The successful Tenderer must provide his H.S.T. Registration Number and each request for payment must show this number.

1.31. LONG DELIVERY BUILDING COMPONENTS

1.31.1. Contractor will identify long delivery items after contract award. It is not anticipated that there are building components requiring pre-order by the owner for this project.

END OF SECTION

1. SUPPLEMENTARY INFORMATION FORM

1.1. SUBMISSION REQUIREMENTS

Note that this **Supplementary Information Form** is to be submitted by the
THREE LOW BIDDERS to
the Architect admin@hossackarch.com and
School Board chatelaina@hdsb.ca

WITHIN TWENTY-FOUR (24) HOURS FOLLOWING THE CLOSE OF GENERAL TENDERS

1.2. TENDER BREAKDOWN

1.2.1. Cash Allowance

1.2.1.1 The value of the Cash Allowance included in the Tender Amount:

$ **700,000.00** _____(***excluding*** **H.S.T.**)

1.2.2. Contingency Allowance

1.2.3.1 The value of the Contingency Allowance included in the Tender Amount:

$ **500,000.00** _____(***excluding*** **H.S.T.**)

1.2.3. **Building Construction - School:**

1.2.3.1. The **school** building construction including all of the Work of all trades, the supply and installation of all specified equipment, base bid supply and installation, but excludes the cost of Mechanical, Electrical and Site Work identified. below.

$ _____(***excluding*** **H.S.T.**)

1.2.4. **Building Construction – Childcare Facility:**

1.2.4.1. The **childcare** building construction including all of the Work of all trades, the supply and installation of all specified equipment, base bid supply and installation, but excludes the cost of Mechanical, Electrical and Site Work identified. below.

$ _____(***excluding*** **H.S.T.**)

1.2.5. **Site Services:**

1.2.5.1. Cost of all Mechanical and Electrical Site services; i.e. site drainage, sewers, water mains, and underground Mechanical & Electrical services outside the Building.

$ _____(***excluding*** **H.S.T.**)

1.2.6. **Site Work:**

1.2.6.1. Cost of all Site Work (excluding Site Services referenced in 1.2.5 above and childcare site work noted below); i.e. rough and finish grading, landscaping, asphalt and concrete paving, including temporary and permanent fencing and hoarding.

$ _____(***excluding*** **H.S.T**.)

1.2.7. **Childcare Outdoor Play Area - Site Work:**

1.2.7.1. Cost of all Site Work required within the fenced childcare outdoor play area; i.e. fencing, asphalt, mulch, seating logs, stepped posts, trees etc...

$ _____(***excluding*** **H.S.T**.)

1.2.8. **Mechanical Bid** (excludes Mechanical Site Services)

Name of Pre-Qualified Mechanical Sub-Contractor: _____

$_____(***excluding*** **H.S.T**.)

1.2.9. **Electrical Bid** (excludes exterior underground electrical site services)

Name of Pre-Qualified Electrical Sub-Contractor: _____

$ _____(***excluding*** **H.S.T**.)

1.2.10. The total of items 1.2.1 through 1.2.9. shall equal the Tender Amount shown on the Stipulated Price Bid Form.

1.3. SUPPLEMENTARY LIST OF SUB-CONTRACTORS

1.3.1. We, the Bidder, propose to have the following Subcontractors perform the Work on this project and these are an integral part of this Tender.

1.3.2. We confirm that we shall not substitute other Subcontractors for any of the Subcontractors listed below. Any such substitution shall be subject to the Consultants' and Board's approval.

1.3.3. Where we propose to do the Work ourselves, we so note by inserting the word, "*Contractor*".

1.3.4. We confirm that we have investigated their reliability, bonding abilities where required, and competence to carry out the Work as specified. We agree that no changes to this list will be made without the express written approval of the Board.

1.3.5. We confirm that if more than one name is given for a specific sub-trade, the Board has the right to select the preferred trade without any adjustment to the Contract Amount.

1.4. WORK DIVISION

1.4.1. We the Bidder confirm that the division of Work among all the subcontractors and suppliers/installers is our responsibility and we covenant that neither the Consultants nor the Board, will be requested to act as an arbiter to establish subcontract limits between Sections or Division of Work.

SPECIFICATION SECTION/SUB-TRADE	NAME OF SUBCONTRACTOR
03 30 00 Concrete Slab on Grade	
03 41 00 Precast Structural Concrete	
04 21 13 Block Unit Masonry	
04 22 00 Veneer Unit Masonry	
05 12 23 Structural Steel Supply	
05 12 23 Structural Steel Installation	
05 50 00 Metal Fabrications	
06 40 00 Architectural Millwork	
07 21 13 Board Insulation	
07 27 10 Air Barrier	
07 41 43 Aluminum Composite Panels	
07 55 12 Roofing *(Pre-Qualified)*	
07 62 03 Sheet Metal Flashing & Trim	
08 11 14 Metal Doors and Frames	
08 44 13 Aluminum Curtain Wall & Doors	
08 50 50 Aluminum Windows	
09 30 13 Porcelain Floor Tile	

09 21 16 Gypsum Board System _____

09 51 13 Acoustic Panel Ceilings _____

09 65 16 Resilient Sheet Flooring/Base _____

09 65 19 Resilient Tile Flooring/Base _____

09 91 22 Painting _____

10 11 25 Chalkboards and Tackboards _____

10 21 14 Toilet Partitions _____

10 22 27 Folding Panel Partition _____

10 28 10 Washroom Accessories _____

11 52 00 Gymnasium Equipment _____

11 52 00 Gymnasium Divider Curtain _____

31 23 13 Rough Grading _____

31 23 10 Excavation and Backfilling _____

32 12 17 Asphalt Paving _____

32 31 13 Chain Link Fences and Gates _____

33 05 50 Mechanical Site Services _____

32 92 21 Topsoil and Fine Grading _____

32 92 21 Sodding _____

32 93 10 Landscaping _____

1.5. LABOUR RATES

1.5.1 The following (net HST) labour rates shall apply to all changes in the Work.

Trade of Labour Classification	Rate per Hour
Site Foreman	$_____
General Labourer	$_____
Carpenter	$_____
Carpenter Labourer	$_____
Other _____	$_____

(Insert applicable trades and rates per hour)

1.6. ALTERNATE, SEPARATE AND ITEMIZED PRICES

We the undersigned, have completed any Separate, Itemized and Alternate prices requested by the Architects, and any Contractor proposed Alternate Prices. We agree to the following:

1.6.1. All prices submitted take into consideration and allow for changes and adjustments in other Work as may be necessary, to provide a finished and functional result, unless specifically indicated otherwise.

1.6.2. **Alternate (In Lieu of) Prices** are for Work that is not included in the Tender Price requested by the Architect and identified in this *Supplementary Information Form* or submitted by the Tenderer as an attachment to this *Supplementary Information Form*, but which may be substituted by the Board for Work which is included. (No price listed shall mean no change in the cost.)

1.6.3. **Separate Prices** are for Work that is not included in the Tender Price listed in this *Supplementary Information Form,* but which may be added by the Board for the price quoted on the attachment(s).

1.6.4. **Itemized Prices** are for Work that is included in the Tender Price to be supplied by the Tenderer, supplied as for information to the Board for the purposes stated.

1.6.5. The Board reserves the right to accept or reject any of the prices proposed on the Supplementary Information Form or as attachment(s) to this Form.

1.6.6. **None of the prices listed below or on the attachment(s) include HST**.

1.7.7 All Alternate prices must be completed or the Bidder's Tender may not be considered.

1.7. ALTERNATE PRICES (Not included in the Tendered Amount, not incl. HST)

1.7.1. **Not Applicable**.

1.7.2. **General Contractor's Proposed Alternates**:

1.7.2.1. We, the General Contractor propose, for the Board's consideration, possible alternates to specified materials or products by indicating the alternate and the sum to be added to, or deducted from, the Stipulated Price. We acknowledge that the Board is under no obligation to consider or accept such proposed alternates.

Description of Alternate Product or Method of installation proposed as a deduction/addition to the Contract:

1.) _____

_____

Add:_____Deduct:_____

2.) _____

_____

Add:_____Deduct:_____

1.8. **SEPARATE PRICES** (Not included in the Tendered Amount, not incl. HST)

1.8.1. **Not applicable**.

1.9. **ITEMIZED PRICES** (Included in the Tendered Amount, not incl. HST)

1.9.1. **Not Applicable**.

1.10. **SIGNATURE OF SUPPLEMENTARY INFORMATION FORM**

We are submitting this *Supplementary Information Form* under a Corporate Seal as a Limited Company, or witnessed as an individual or partnership and in accordance with ***Instructions to Bidders.***

NAME OF BIDDER _____

PRINT NAME OF SIGNING OFFICER _____

PRINT TITLE OF SIGNING OFFICER _____

SIGNATURE OF AUTHORIZED SIGNING OFFICER _____

DATED AT _____THIS_____DAY OF _____2026

1.14 BIDDERS CHECKLIST – ENVELOPE SUBMISSION

1.14.1 We declare the following items are required in accordance with the Bid Documents for the Supplementary Information Form Submission, as follows:

- ☐ Stipulate Price Breakdown
- ☐ Subcontractor Names
- ☐ Labour Rates
- ☐ Alternate Prices (if applicable)
- ☐ Separate Prices (if applicable)
- ☐ Itemized Prices (if applicable)

Bidder shall check off ☐ items to verify that documents and or information have been attached and or included in the submission.

END OF SUPPLEMENTARY INFORMATION FORM

Part 1 General

1.0 SECTION INCLUDES

1.1 Precedence
1.2 Contract
1.3 Relations of Trades
1.4 Additional Drawings
1.5 Existing Site Conditions
1.6 Temporary Construction Fencing
1.7 Contractor Parking
1.8 Bylaws, Permits and Approvals
1.9 Organization
1.10 Seismic Design Requirements
1.11 Canadian Products and Local Labour
1.12 Materials and Workmanship
1.13 Quality Control
1.14 Overtime
1.15 Protection of Other Work
1.16 Fastenings
1.17 Supply and Install
1.18 Occupation Before Completion
1.19 General Requirements
1.20 Coordination
1.21 Access to the Project
1.22 Subtrade Awards
1.23 Safety Data Sheets
1.24 Regulating Documents
1.25 General Contractor's Responsibilities
1.26 Manufacturers' Instructions
1.27 Air and Vapour Seal
1.28 Fire Safety
1.29 Construction Safety
1.30 Independent Tests and Inspections
1.31 Periodic Cleaning
1.32 Temporary Protection
1.33 Completion
1.34 Guarantees
1.35 Contingency Allowance
1.36 Cash Allowances
1.37 Allowances Carried in Divisions 15 and 16
1.38 Schedule of Allowances
1.39 Polychlorinated Biphenyl (PCB)
1.40 Use of Consultant's Digital Drawings
1.41 Building Dimensions
1.42 Setting of the Work & Required Surveys
1.43 Layout of Work
1.44 Documents Required: Start, During & Close Out.

1.1 PRECEDENCE

.1 This Section contains Articles prepared which represent the Board standards and policies. In all cases this Section is intended to be read in conjunction with and to coordinate with all other Sections. In the case of discrepancy between this Section and other Sections to more stringent Articles of any applicable Section shall apply.

1.2 CONTRACT

.1 Construct the Work under a single, lump sum, Stipulated Contract. The form of Contract is the CCDC2-2020 plus Supplementary Conditions attached to these specifications

.2 Contract includes the construction of a new three storey school, Oakville #5 Public School, plus adjoining Child Care facility, site work, plus coordination. Location of the work is 3490 Preserve Drive, Oakville, Ontario

.3 Project Occupancy Requirements

.1 It is the requirement of this Contract that the school, which is to be contracted and completed under the terms of this contract, be Substantially Complete and fit for full legal occupancy as outlined in the School Board's RFT documents. Contractor to provide temporary utilities, winter heating, frost breaking and inclement weather protection per Section 01 51 00 as required to ensure completion date deliver.

.4 Cautionary Note

.1 Bidders, both General Contractors and Subcontractors, are cautioned that they should not submit bids or tenders if they are unsure of their ability to comply with the above stated construction/occupancy schedule and requirements, provide overtime work as necessary and/or are unwilling to be bound by the schedule and Provisions described in these documents.

1.3 RELATIONS OF TRADES

.1 The Contract Specifications have been generally divided into trade sections for the purpose of ready reference.

.2 The Contractor is responsible for coordinating all trades. He is solely responsible for determining the lines of demarcation between Contractor and/or trades. Neither the Consultant nor the Board, assume any responsibility for any such determination or for any dispute arising concerning it. No extras will be considered due to any such dispute concerning either labour or materials.

.3 Specifications and drawings form an integral part of the Contract Documents. Any subject or item omitted from one, but which is mentioned or reasonably implied in the other, shall be considered as properly and sufficiently specified and will be part of the Work.

1.4 ADDITIONAL DRAWINGS

.1 Consultant may furnish additional drawings to assist proper execution of the Work. These drawings will be issued for clarification only. Such drawings, however, shall have the

same meaning and intent as if they were included with plans referred to in the Contract Documents.

1.5 EXISTING SITE CONDITIONS

.1 Site area within the property lines only has previously been rough graded with fill by the developer. Refer to Drawings for additional grading, removals, new driveways and service connections and reinstatement for areas beyond property lines and coordinate Permits requirements with Section 00 21 13 – Instructions to Bidders.

.2 At the outset of the contract and before any other work begins, the contractor shall review grades on site to confirm compliance with the contract documents. Failure to do so at this initial stage shall eliminate the contractor's right to make claim regarding incorrect grades or site surface conditions at any later stage for the work.

.3 Contractor is responsible to quantify all on-site material to achieve design grades and is responsible for the importation or exportation of material from the site as required.

.4 Ascertaining the specific site and building conditions as they relate to the project is the responsibility of the contractor. Notwithstanding this overriding responsibility the consultant has made every effort to properly represent existing site conditions as they are evident at the time of tender.

.5 The Contractor shall assume the work site based on the existing conditions as shown on the drawings and visible on the job site at the time of the closing of the tender. All excavation, stockpiling, removal, importing and/or grading of soils is to be included in the work of this Contract. Refer to site plan drawings. The contractor shall also refer to the recommendations of the soils investigation records which are included for information, and report any discrepancies to the consultant prior to submitting a tender.

.6 Inspection of the site during the tender period is mandatory for all Contractors. In addition, refer to Section 00 21 13 Instructions to Bidders for the time of a MANDATORY conducted contractors' site tour.

.7 Minor adjustments to the level of sodded areas, berms, etc., may be permitted, to the prior approval of the Consultant and owner. It must be stressed that it will be the contractor's responsibility to negotiate and obtain approval for any such changes with the Authorities having Jurisdiction over lot grading approvals for this project. Completion delays due to such approvals shall not be entertained.

1.6 TEMPORARY CONSTRUCTION FENCING

.1 A temporary perimeter chain link construction fence and siltation fencing shall be erected by the awarded contractor in advance of work and is to be maintained for the duration of the work until such time as new fences, if any as shown, are installed. Provide lockable truck access gates and man gates and maintenance of the entire fence as part of the work of this contract.

.2 Ensure for the duration of the contract that surrounding the work site, the construction fencing, siltation fencing and man and truck gates, are provided and maintained. This fence shall be locked when no work is in progress, and located as shown on the site plan drawing.

.3 The Board insists that the installation of this construction fencing be accomplished as the first task of the General Contractor when he moves onto the site.

.4 In addition, should the sodded play areas not be completed a minimum of 6 weeks prior to school occupancy, the contractor shall be responsible for the erection and maintenance of a temporary, leased, perimeter "Mod-U-Lock" fence around the sodded areas for a minimum of 6 months from sod being laid, at no additional cost to the owner. Refer also to Section 01 56 00.

1.7 CONTRACTOR PARKING

.1 Refer to section 01 52 00 Construction Facilities.

1.8 BYLAWS, PERMITS AND APPROVALS

.1 Nothing indicated on the Drawings or Specifications is intended to be in conflict with any law, by-law or regulation of Municipal, Provincial, or similar Authority Having Jurisdiction.

.2 Work of this Contract must conform with such laws, by-laws and/or regulations. Any required variation to, or deviation from, the drawings and specifications, shall be performed in accordance with the CCDC-2 Contract and Supplementary Conditions to the CCDC -2 contained in these specifications.

.3 Furnish inspection certificates and/or permits as may be applicable as evidence that the installed Work conforms with laws, by-laws and regulations of Authorities Having Jurisdiction.

.4 Each subtrade shall obtain and pay for all permits and licenses required by Municipal, Provincial, or other authorities having Jurisdiction, particular to their trade.

.5 It is the final responsibility of the General Contractor to obtain all the required approvals and permits and include in his Total Stipulated Price, the cost of such approvals, permits and fees. The only exception is the Building Permit and the Site Servicing permit, which will be applied for by the Consultant and paid for by the Board. It is the contractor's responsibility include in the base tender amount any additional permit or connection fees not specifically identified in the Cash Allowance, and to provide any deposits or securities required by Authorities Having Jurisdiction.

.6 Any revisions or deviations to Contract Documents required by any Authorities Having Jurisdiction must be reviewed by the Consultants before implementation.

1.9 ORGANIZATION

.1 Organize the Work of each section as required for satisfactory and expeditious completion of the Work. Take field dimensions required for the Work. Fabricate and install work to suit field dimensions and conditions.

.2 If applicable, take into account existing work to ensure best arrangements of components in available space. Contact the Consultant prior to commencing Work in critical locations and interface with other Contractors' Work.

.3 Provide all forms, templates, anchors, sleeves, inserts and accessories required to be installed in the Work. Set in place, or instruct the applicable subtrade as to their location. Pay costs of extra work, if required, as a result of a failure to comply with these requirements at the proper time.

.4 Before starting his work and from time to time as the work progresses, each Subcontractor shall examine the work and materials installed by the other Subcontractors insofar as it effects his own work, and the General Contractor shall promptly notify the Consultant IN WRITING, if any condition exists that will prevent any Subcontractor from giving a satisfactory result in his own work.

.5 Should any Subcontractor start his own work without such notification, it shall be construed as an acceptance by him of all preceding work and as a waiver of all claims or questions as to its suitability for receiving his work.

1.10 SEISMIC DESIGN REQUIREMENTS

.1 This project requires adherence to seismic design requirements as stipulated in the current Ontario Building Code (OBC), Div. B, Part 4. The General Contractor shall be responsible to coordinate all disciplines to ensure compliance with these requirements for all applicable building components.

.2 All disciplines including Mechanical & Electrical shall make reference to individual specification section and the seismic lateral load table on Drawing S01 which outlines components requiring compliance with seismic design.

.3 As a minimum standard, design for all connections to meet seismic forces shall be included in base bid whether specifically stated in specific specification sections or not.

.4 Shop drawings shall clearly include seismic design compliance calculations for all building components within scope of the current Ontario Building Code (OBC), Div. B, Part 4 requirements.

.5 Refer to Structural Drawing for a table of applicable building components and Section 13 05 41 – ‘Seismic Restraint for Non-structural Components’.

1.11 CANADIAN PRODUCTS AND LOCAL LABOUR

.1 To the extent that the same are available and consistent with the proper economy and expeditious completion of the Contract, Canadian equipment, materials, products and other such applicable items are preferred by the Board to be used in the Work, wherever possible and practical.

1.12 MATERIALS AND WORKMANSHIP

.1 All materials shall be new and the best of their respective kinds, where a specific grade or brand is not indicated. Pre-packaged materials shall be delivered and stored in unopened containers.

.2 All work performed under this Contract shall be done by mechanics skilled in their respective trades. They shall make use of such templates, jigs or special tools as may be required for the operation involved.

.3 The acceptance of any materials or workmanship shall not be a bar to their subsequent rejection, if found defective.

.4 Adequate, dry storage facilities shall be provided and all stored materials shall be protected from damage and theft.

.5 All Contractors will do Work in accordance with the best industry practice of the type of work specified, unless the Contract Documents stipulate more precise requirements, in which case, the more precise requirements shall govern.

.6 Do Work in a neat, plumb & square manner. Ensure that various work components are properly installed, forming tight joints and appropriately aligned junctions, edges and surfaces, free of warps, twists, waves, or other such irregularities.

.7 Wherever indicated on the drawings or specifications, or in the manufacturers' / suppliers' written instructions, arrange to have manufacturers' / installer's representatives inspect the Work which incorporates their materials, products or items.

.8 Do not permit materials to come in contact with other materials such conditions may result in corrosion, staining, discolouration or deterioration of the completed Work. Provide compatible, durable separators where such contact is unavoidable.

.9 The design of the Work is based on the full interaction of its component parts. No provisions have been made for conditions occurring during construction. Ensure that no part of the Work is subjected to a load which will endanger its safety or which might cause permanent deformation.

.10 Conceal pipes, ducts, conduit, wiring and other such items requiring concealment preferably in, wall or ceiling construction of all finished areas. If in doubt as to method of concealment, or intent of the Contract Documents in this regard, request clarification from the Consultant before proceeding with the Work.

.11 Lay out mechanical and electrical work well in advance of concrete placement and furring installation to allow for proper concealment. Test and inspect Work before applying pipe covering and before it is concealed.

.12 Provide and maintain control lines and levels required for the Work. Lay out the Work in accordance with these lines and levels and dimensions indicated on the drawings.

.13 Verify lines, levels and dimensions and report any errors or inconsistencies on the drawings to the Consultants.

.14 Final responsibility of satisfactory completion of all the Work, however, lies with the General Contractor.

1.13 QUALITY CONTROL

.1 Refer also to Section 01 45 00.

.2 The Consultants and authorized Board staff shall have access to all areas of the Work, including any off site construction facilities.

.3 The General Contractor shall give timely notice requesting inspection if Work is designated for special tests, inspections, or approvals by the Consultants, or any other authorized Board staff or testing and Inspection Company.

.4 If the General Contract covers, or permits to be covered Work that has been designated as outlined above, he shall uncover such work, have the inspections and tests satisfactorily completed and make good such work at no additional cost to the Board.

.5 The Consultants or the authorized Board Staff may order any part of the Work to be examined, if such Work is suspected not to be according to the Contract Documents. If, upon examination, such work is found not to be in accordance with the Contract Documents, then the General Contractor shall correct such Work and pay for cost of examinations and correction. If such Work is found to be in full accordance with the Contract Documents, the Board shall pay for the cost of examination and making good.

.6 If defects are revealed during inspection and/or testing, the appointed agency may request additional inspection and/or testing to ascertain the full degree of defects. The General Contractor shall correct the defects and irregularities as reported by the inspection and/or testing agency, at no additional cost to the Board and the General Contractor shall pay all associated costs for retesting and reinspection.

.7 The General Contractor shall provide any tools, materials or equipment that may be required by the inspection and/or testing agencies in retesting the Work (*e.g.* Video camera rental to reinspect incorrectly installed sewer lines.)

.8 The employment of inspection and/or testing agencies does not, in any way, affect the General Contractor's responsibility to perform the Work in strict accordance with the Contract Documents.

.9 The General Contractor shall remove all defective work, whether the result of poor workmanship by him or his subtrades, use of defective or damaged products, whether or not incorporated into the Work and any Work that has been rejected by the Consultants or authorized Board Staff as failing to conform to the Contract Documents. Replacement and execution of the affected Work shall be done in full accordance with the Contract Documents, making good other trades' work damaged by such removals or replacements at no additional charge to the Board.

.10 If, in the opinion of the Consultant and/or the authorized Board Staff, it is not expeditious to correct the defective Work, or Work not performed in accordance with the Contract Documents, the Board, may, at its sole discretion, deduct from the Contract Price, the difference in value between the work performed and that required by the Contract Documents, the amounts of which shall be determined by the Consultant.

.1 The notable exception to the above item is a faulty installation of base and asphalt paving. If, the inspection agency, after performing random test holes to determine compaction and thickness of sub base, base and asphalt, determines that either one or both, are not according to what was specified in the Contract Documents, the Board will not accept credits for such inconsistencies but rather, demand that any such installation be removed and redone in its entirety, at the pleasure and convenience of the Board, but within the first year of the warranty period.

As required by ss. 24(4) of O. Reg 137/15, all new playground equipment and installation must meet current CSA standards, where applicable. Compliance with the CSA Standard must be verified in writing, by an independent certified third-party inspector, and a copy must be submitted to the ministry before the playground is used by children. This inspection of the playground equipment located within the Kindergarten and Childcare outdoor play areas is part of the project Cash Allowance (Inspections & Testing).

1.14 OVERTIME AND OVERTIME SCHEDULING

.1 The General Contractor must include in his Total Stipulated Tender Price, all costs for overtime work which may be necessary to complete the various portions of the Work, in accordance with the Completion Dates specified in the *Stipulated Price Bid Form.* The Board shall not entertain requests for any payments in connection with overtime work that may be required by the General Contractor, or any of his subtrades, in order to comply with the above referenced dates.

.2 Similarly, it is the Contractor's responsibility to ensure, prior to the close of tenders that all subtrades will meet the requirements for overtime, as required, with no additional costs to the owner, in order to meet the Completion Dates specified in the Form of Tender.

.3 The contractor shall recognize the critical importance that the schedule for full occupancy must be met by the dates stated in the *Stipulated Price Bid Form*. Note that local by-laws may be enforced restricting morning and evening and Sunday work hours.

.4 Note that at no time will the Board entertain additional charges or claims from the General Contractor or his subcontractors for premium, overtime or after–hours work.

.5 Only claims for scope changes or conditions beyond the control of the Contractor may be submitted for review by the Consultants and must be submitted and accepted in advance of the work taking place and at the outset of the condition or scope change arising. No claims additional charges or delays will be accepted if not reviewed and formally accepted in advance.

.6 Notwithstanding sentence 5 above, for any work that remains incomplete after school occupancy by students and staff, all access and work shall be restricted to after hours only: i.e.: after 4:00 p.m. and before 7:00 a.m. No additional costs for overtime or after hours work shall apply.

1.15 PROTECTION OF OTHER WORK

.1 Each trade shall avoid damage to other trades and shall take all measures necessary and provide all masking and materials necessary, to provide adequate protection.

.2 Each Subcontractor shall be held responsible for all damage to work installed by others that is caused by this work or by anyone employed by him.

.3 Patching and repairing of damaged work shall be done by the Contractor who installed the work, as directed by the Consultant, but the cost of same, shall be paid for by the Contractor who is responsible for the damage.

1.16 FASTENINGS

.1 All fastenings must be permanent, of same metal, or compatible with any metals with which they are in contact, of adequate size and spacing, to ensure permanent anchorage against load or shear.

.2 Exposed fastenings must be evenly spaced, neatly laid out and must not mar surfaces of prefinished materials.

.3 No ram-setting or similar techniques will be permitted, without prior written approval of the Consultant.

1.17 SUPPLY AND INSTALL

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

1.18 OCCUPATION BEFORE COMPLETION

.1 If the General Contractor, for any reason, does not have the Project completed by the specified completion date and the Board, of necessity, is forced to occupy any part of the building before the whole of the Work is completed, the Contractor will not be entitled to any indemnity for interference with his operation.

1.19 GENERAL REQUIREMENTS

.1 All Contractors shall examine carefully all drawings and specifications to inform themselves fully of all conditions and limitations pertaining to the work of the contract.

.2 All Contractors shall co-operate and co-ordinate their work for the proper completion of the work, including co-ordination of delivery dates and commencement of subtrades work.

.3 The responsibility and costs for all work, including temporary structures, shoring, shoring design (if applicable) and erection shall at all times rest with the General Contractor and his Subcontractors. The Consultant will review construction methods and shop drawings for general arrangements only. The method of obtaining the results contemplated by the Contract Documents shall be determined by the General Contractor.

.4 The undertaking of period site review by the Consultant or Board Representative shall not be construed as supervision of actual construction, nor make them responsible for providing a safe place for work, visit, use, access, travel, or occupancy of the Consultant's or Board's employees or agents.

.5 The General Contractor shall be fully responsible for coordinating and expediting the work of all Subcontractors and shall employ the necessary and qualified personnel to provide the required quality of labour and materials and to prevent delays in the progress of the project. Each trade shall be afforded all reasonable opportunities for the installation of its work and for the storage and handling of its materials.

1.20 COORDINATION

.1 The General Contractor shall coordinate all work and preparation on which subsequent work depends to facilitate mutual progress, and to prevent any conflict.

.2 The General Contractor shall ensure that each trade makes known, for the information of the General Contractor and other trades, the environmental and surface conditions required for the execution of its work; and that each trade makes known the sequence of others' work required for installation of its work.

.3 The General Contractor shall ensure that each trade, before commencing work, knows the requirements for subsequent work and that each trade is assisted in the execution of its preparatory work by trades whose work depends upon it.

.4 The General Contractor shall ensure that shop and layout drawings, templates, and all information necessary for the location and installation of materials, openings, inserts, anchors, accessories, fastenings, connections and access panels are provided by each trade whose work requires cooperative location and installation by other trades and that such information is communicated to the applicable installer.

.5 The General Contractor shall ensure that delivery of materials supplied by one trade to be installed by another is well before the installation begins.

.6 The General Contractor shall inform all trades that giving installation information in error, or too late to incorporate in the work, shall be responsible for any extra work caused thereby, unless impractical and where required, cutting shall be done by each respective trade, and patching shall be done by the general contractor.

1.21 ACCESS TO THE PROJECT

.1 The General Contractor for this Work shall, at all times allow the Consultants, the Board, or any other Board commissioned contractor or their employees, access into the building or around the premises, undisturbed, whether union or non-union, as may be required in the execution of other portions of the building work and installation of equipment, etc.

.2 The General Contractor shall cooperate fully with any and all Board commissioned Contractors.

1.22 SUBTRADE AWARDS

.1 The Contractor shall, on notice of award of the contract, obtain the Consultants approval of a complete list of all persons or firms to which he proposes to sublet any part of the work, the trades or divisions of work which are to be sublet to each, and the amount of each trade. The General Contractor shall provide to the Consultant a financial breakdown showing all divisions of the work amounting to the full sum of the contract. Mechanical and Electrical trades shall be further broken down as specified in Divisions 26 and 33.

1.23 SAFETY DATA SHEETS

.1 The General Contractor shall ensure that the following material and safety data sheets are submitted prior to commencing installation and application of at least the following:

.1 Lead-free solder

.2 Resilient flooring
.3 Painting and finishing
.4 Fertilizers
.5 Glues and adhesives
.6 Pesticides
.7 Herbicides
.8 Any other product which may give off air borne particles after installation.
.9 Sealants and caulking

.2 The General Contractor and all of his Subcontractors must note that specifically, Asbestos and Asbestos containing materials solder for piping containing lead, and Painting & Coatings containing lead and/or mercury must be excluded from any part of the Work.

.3 Contractor The General must submit Certificates of Compliance, prior to the application for Substantial performance, for each of the following items:

.1 An affidavit relative to the use of Lead-free solder for all domestic water lines, regardless of location.
.2 Products for which Material Safety Data Sheets have been submitted and accepted.
.3 Other Work/Products identified in the Contract Documents as requiring a Certificate of Compliance.

.4 Each Certificate of Compliance must indicate names and addresses of the project, the Board, the date of Issue, produce description including name, number, manufacturer, with a statement verifying that the Work/Product installed meets specified requirements and, if applicable, complies with the submitted and accepted Material Safety Data Sheets.

.5 Each Certificate of Compliance must be issued on the trade's letterhead, properly executed, under whose work the respective Work/Product has been provided.

.6 Each Certificate of Compliance must be endorsed by the General Contractor with his authorized stamp/signature.

.7 The Completion Security Account will not be paid to the Contractor without submission of all required affidavits and requested material and safety data sheets.

1.24 REGULATING DOCUMENTS

.1 The General Contractor and all of his Subcontractors, Suppliers/Installers etc., must conform to the latest editions in force at the time of tender of each and all of the following: Ontario Building Code, Canadian Electrical Code (CEC), The Occupational Health and Safety Act, Ontario, the National Fire Code, the local Municipal Fire Code, and all other applicable Codes and Building By-Laws. All must also conform to the requirements of the Authorities Having Jurisdiction, such as Public Utilities. Where required under the Occupational Health and Safety Act, engage a Professional Engineer to design hoarding, scaffolding and shoring, formwork and falsework for concrete.

.2 Contract forms, codes, standards and manuals referred to in these specifications are the latest published editions at the date of close of tenders. The General Contractor and all of

his Subcontractors, Suppliers/Installers must meet or exceed the requirements of specified standards.

.3 Provide, on site, copies of documents referred to in the Specification for joint use of Contractor and Consultant.

1.25 GENERAL CONTRACTOR'S RESPONSIBILITIES

.1 The list of General Contractor's responsibilities identified below is by no means comprehensive, nor is it in any priority or critical order. It is here, merely to identify the most often forgotten or ignored responsibilities of the General Contractor and is reproduced only as a reminder. The Consultants and the Board advise the General Contractor that it is he who is responsible for all aspects and facets of the Project, from start to completion, from compliance with Occupational Health and Safety regulations to compliance with all codes and statutes.

.1 The General Contractor will be responsible to take all necessary steps to protect personnel (workers, visitors, general public, etc.) and property from any harm during the course of the contract.

.2 All equipment shall be in safe operating condition and appropriate to the task.

.3 Only competent personnel will be permitted on site. During the site introduction, *only the Consultant* will determine who is competent. The General Contractor will cause to remove from the site any persons not observing or complying with safety requirements.

.4 The General Contractor shall comply with, and shall ensure that all of his Subcontractors, Suppliers, Installers etc., comply with all Federal, Provincial and Municipal Safety Codes and Regulations and the Occupational Health and Safety Act.

.5 The General Contractor shall supply competent personnel to implement his safety program and ensure that all Subcontractors comply with the Board's standards, and those of the Occupational Health and Safety Act.

.6 The Board will provide periodic monitoring to ensure that safety requirements are met, and that safety records are properly kept and maintained. Continued disregard for safety standards can cause the Contract to be canceled and the General Contractor removed from the site.

.7 The Board may hire Commissioners to perform inspections of building systems at the closing stages of the work of this contract. If so contracted and identified in the *Instructions to Bidders*, the General Contractor shall cooperate with and coordinate the work of the Board's Commissioners on site.

.8 The General Contractor will report to the Board and Jurisdictional Authorities any accident or incident involving personnel and/or property of the Contractor, Board, or Public, arising from the General Contractor's or any of his Subcontractors' execution of the work.

.9 The General Contractor will include all provisions of this contract in any agreement with Subcontractors, and hold them equally responsible for safe work performance.

.10 If the General Contractor is responsible for a delay in the progress of the work due to an infraction of legislation or Board Health and Safety requirements, the Contractor will, without additional cost to the Board, work such overtime, and acquire and use for the execution of the work such additional labour and

equipment as to be necessary in the sole opinion of the Board's Representative and Consultant, to avoid delay in the final completion of the work or any operations thereof.

1.26 MANUFACTURERS' INSTRUCTIONS

.1 Unless otherwise specified, the General Contractor and all his Subcontractors shall comply with manufacturer's latest printed instructions for materials and installation methods.

.2 The General Contractor shall notify the Consultant in writing of any conflict between the Specifications and Manufacturer's Instructions and have same clarified.

1.27 AIR AND VAPOUR SEAL

.1 The General Contractor shall ensure that exterior walls, windows, floor and roof surfaces provide an air-tight and vapour-tight membrane to prevent problems due to building vapour migration.

.2 In general, the air/vapour barrier must be achieved on the interior side of the thermal insulation.

1.28 FIRE SAFETY

.1 The General Contractor and all of his Subcontractors must comply with requirements of standard for Building Construction Operations DFC No. 301-1975, issued by Dominion Fire Commissioner.

.2 The appropriate clauses of the Ontario Building Code relating to fire protection shall be strictly followed.

.3 The General Contractor shall provide and maintain free access to temporary or permanent fire hydrants acceptable to local fire department.

1.29 CONSTRUCTION SAFETY

.1 The General Contractor and all his trades must observe and enforce construction safety measures required by Canadian Construction Safety Code, Workplace Safety & Insurance Board, and Municipal statutes. In particular, the Ontario Construction Safety Act, the regulations of the Ontario Department of Labour and Ontario Hydro Safety Requirements shall be strictly enforced. In event of conflict between any provisions of above authorities the most stringent provisions will apply.

.2 The General Contractor is reminded, once again, that it is he who is responsible for Occupational Health and Safety on this Project. The items listed below are only guidelines of the Board's expectations in this regard and not to be construed to be comprehensive or total in nature.

.3 The Board will take every reasonable precaution to prevent injury or illness to students, employees and the public, participating in Board activities, or performing their duties. This shall be accomplished by providing and maintaining a safe, health working

environment by providing the education necessary to perform these activities or duties safely.

.4 The Board is vitally interested in the health and safety of all Contractors and their workers performing work for the Board. Cooperation and support of the General Contractor in the protection of workers from injury or occupational disease is a major, continuing object of the Board. To achieve these goals, the Board, in concert with the Contractors, will endeavor to make every effort to ensure that the Contractors provide a work site which is a safe and healthy work environment. The Board insists that all Contractors and their workers are dedicated to the continuing objective of reducing risk and injury.

.5 The General Contractor covenants and agrees to comply with all statutory and other obligations, including, without limitation, the provisions of the Occupational Health and Safety Act (Ontario) and all Regulations thereto, and all amending and successor legislation, including without limitation, Bill 208 (the "Act") in connection with all work performed by either the Contractor, Subcontractors, or any Other Contractor on, or in connection with, the Project.

.6 Without limiting the foregoing, for the purposes of this Contract, the General Contractor agrees that **he** shall be the "constructor" of the Project within the meaning of the Act, and as such, shall assume all the obligations and responsibilities, and observe all construction safety requirements and procedures, and duties of inspection imposed by the Act on the "constructor", as therein defined, for all work and services performed by the General Contractor, Subcontractors and Other Contractors on or in connection with the Project.

.7 The General Contractor further covenants and agrees that the Board and its existing and former officers, trustees, employees and agents, and their respective heirs, executors, administrators, successors and assigns (hereinafter collectively referred to as the "Board") shall be released from any obligations or liabilities otherwise imposed on the Board, or on any of them, pursuant to the Act in connection with the Project, and that the General Contractor shall assume all liability and responsibility in connection with same.

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

.9 The General Contractor shall inform and instruct Other Contractors that they, while performing work on this project, are under the authority of the Contractor. Other Contractors are to discuss and co-ordinate with, and follow instructions from, the General Contractor on all matters of site access, vehicles, deliveries, storage, temporary facilities, coordination with the work of other subcontractors, work methods, scheduling, labour conditions, construction safety, environmental protection, security and all other matters which relate to the safe and proper execution of construction work.

.10 The General Contractor shall ensure that all supervisory personnel on job site are fully aware of the procedures and requirements outlined above and comply with all requirements specified.

.11 All Contractors are responsible to ensure that all machinery and/or equipment are/is safe and that the workers perform their tasks in compliance with established safe work practices or procedures. Workers must receive adequate training in their specific work tasks to protect their health and safety.

.12 The General Contractor shall be responsible for all persons and companies performing work, including Other Contractors, on this project, at all times, up to and including, the date of Substantial Performance of the Work. Authority for coordination and instructions relating to all matters which relate to the safe and proper execution of construction work shall rest with the General Contractor. The Contract Price must include the General Contractor's fees for the coordination and supervision of the work of all Other Contractors.

.13 In addition to the responsibility of all contractors as outlined above, Subcontractors will be held accountable for the health and safety of workers under their supervision.

.14 Every worker must protect his/her own health and safety by working in compliance with the law and with safe work practices and procedures established by the authorities having jurisdiction.

.15 All sections of the Occupational Health and Safety Act for Industrial Establishments, latest edition, and the Occupational Health and Safety Act for Construction projects, latest edition, shall be enforced, by the General Contractor, in their entirety, throughout the duration of the construction project.

.16 The General Contractor shall provide the Consultant with the telephone number where the General Contractor or his representative can be reached at any time, day or night, for the duration of the contract.

.17 Where an accident, explosion, or fire causes a person injury at the work place, and the worker is disabled from performing the usual task, the General Contractor shall prepare a written notice and shall forward same to the Ministry of Labour within four days of the occurrence with a copy to the Board's Representative, who shall copy and inform the Board's Supervisor of Health and Safety and/or the Board's Joint Health and Safety Committee, containing such information and particulars as may be described.

.18 Where a person is killed or critically injured from any cause at the work place, the General Contractor shall immediately call the Ministry of Labour. A written notice from the General Contractor shall be given to the Ministry of Labour within forty-eight hours after the occurrence, containing such information and particulars as may be prescribed, with copies to the Architect and the Board's Representative.

.19 The General Contractor is advised that the accident scene is under the jurisdiction of the Ministry of Labour and no wreckage, articles, etc., shall be interfered with, disturbed, destroyed, altered or carried away at the scene, or connected with the occurrence, until the Ministry of Labour has given permission.

1.30 INDEPENDENT TESTS AND INSPECTIONS

.1 The Contractor shall appoint inspection firms as directed by the Consultant and make payments from the cash allowances specified in Division noted, except for the following, which shall be included in the contract:

.1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.

.2 Inspection and testing performed exclusively for Contractor's convenience.

.3 Testing, adjustment and balancing of mechanical and electrical equipment and systems.

.4 Mill tests and certificates of compliance.

.5 Re-testing as already described in *Quality Control* of this Section.

.2 The Consultant will authorize payment of inspection services from specified cash allowances.

.3 The General Contractor shall furnish labour and facilities to:

.1 Provide access to work to be inspected and tested.

.2 Facilitate inspections and tests.

.3 Make good work disturbed by inspection and test.

.4 Pour concrete test cylinders and store as directed by Inspection Firm.

.4 The General Contractor shall notify Inspection Firms sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.

.5 Where materials are specified to be tested, the General Contractor shall deliver representative samples in required quantity to testing laboratory.

1.31 PERIODIC CLEANING

.1 Refer also to Section 01 74 11.

.2 As part of the Tender, the General Contractor shall provide all necessary garbage bins through the duration of the project. The General Contractor shall ensure that the following is accomplished:

.1 Keep all areas of the Work clean and orderly, free from accumulation of dirt, debris, garbage, oily rags, excess material, or such other trash items. Remove such items for all areas of the Work on a daily basis.

.2 Vacuum and/or broom interior building areas when ready to receive painting and other finishes. Continue cleaning on an "as needed" basis until the building is ready for inspection and takeover.

.3 Schedule cleaning operations so that resulting dust and other contaminants do not affect wet, newly painted surfaces.

.4 In preparation for Substantial Performance and Occupancy, conduct inspections of all exposed interior and exterior surfaces.

.5 Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from all exposed interior and exterior finishes, including glass and other polished surfaces.

.6 Remove all protective film from switch plates and hardware, particular kick plates.

.7 Clean lighting reflectors, lenses and other lighting surfaces.

.8 Broom clean paved surfaces and rake clean other disturbed surfaces in the area of the Work, to remove site debris caused by the Work of this Contract. Inspect for damages and make good.

.9 Remove debris and surplus materials from the roof areas and accessible concealed spaces.

.10 Replace heating, ventilation and/or air conditioning filters through the entire building to the extent that they supply or return from the work areas, whether or not, the units were operated during construction operations.

.11 Refer to "cleaning" sections of the specifications for additional specific periodic and final clean up requirements.

.3 The General Contractor must note the Board insists that tiled (VCT) and sheet good floors (vinyl or linoleum) be broom swept only. Wet mopping and waxing/polishing will be done by the Board's Caretaking Staff.

.4 Do not provide sealants and waxes on terrazzo, ceramic and other hard surfaced floors without reviewing products and methods of application with the Board's Caretaking Staff. Failure to comply with this requirement will result in the contractor stripping these floors in their entirety.

.5 The contractor shall also ensure that the appropriate measures including a stone mud mat are installed and maintained at all construction entrances, to avoid contamination of City roads and sewers. It is the Contractor's responsibility and not the Board's to ensure that site entrances and roadways in front of the site are maintained in clean condition acceptable to the municipality or Subdivision Engineer, as the case may be for un-assumed subdivisions.

1.32 TEMPORARY PROTECTION

.1 Refer also to Articles 1.6, in this Section.

.2 The General Contractor to provide temporary barricades, screens or barriers as directed by the Consultant and/or authorized Board Representative, for the safety of persons, or for dividing the Work from portion or portions of the building or site that may be required for use by the school, or others.

.3 Properly protect the Work from any damage by the elements. In cold weather cover all exterior openings in the work areas likely to cause water damage.

.4 During off hours and/or stages of suspended operations for whatever reasons, the General Contractor must assume all responsibility for protection against the elements, theft and/or vandalism. This applies to all work in progress and to any materials, products, tools, equipment, or other such items left at the work site.

.5 Properly protect floors and roofs from any damage. Take special precautions when moving heavy loads or equipment over floors and roofs.

.6 The General Contractor must keep floors free of oils, grease or other such materials likely to discolour them and/or affect bonding of applied surfaces.

.7 The General Contractor must ensure that no part of the Work is loaded greater than it was designed for, when completed. Make any temporary support as strong as the permanent support. Place no load on concrete structure until it has sufficient strength to safely bear such load.

.8 Protect glass and other finishes against heat, slab and weld splatters, using appropriate protective shields and covers.

.9 The General Contractor must provide and maintain, in good working order, appropriately labeled ULC fire extinguishers, to the approval of Authorities Having Jurisdiction.

.10 The General Contractor must provide a minimum of two safety helmets on site at all times for the use of the Consultant and any other Board authorized visitors to the site. It is the General Contractor's responsibility to make certain that any such visitors wear the protective headgear and any other safety gear which may be necessary at that particular time of construction.

1.33 COMPLETION

.1 Upon completion of the Work, all protection erected shall be removed, all damage to the Work and adjoining Work due to the lack or failure of such protection shall be made good and all debris, surplus materials tools equipment shall be removed from the work areas and the site, and the Project shall be left clean and tidy to the full and complete satisfaction of the Consultant and Board Staff. The General Contractor shall give written notice to the Consultant, requesting final inspection of the completed Project.

.2 Refer to the pertinent sections of the Specifications for requirements with respect to submission of *Record Documents, Maintenance Materials, Special Tools* and *Spare Parts.*

1.34 GUARANTEES

.1 The following is a summary of the guarantees (in number of years) required by the contract. Refer to individual specifications sections for additional information on warrantees. In the event an extended warranty is listed in the specific Section, that section will have precedence over this list. If no extended warranty is listed, this list will govern:

.1	Entire Building, General Contract	1
.2	Paving	2
.3	Finish Carpentry - Architectural Woodwork	2
.4	Sprayed-In-Place Urethane Insulation	2
.5	Precast Structural Concrete	5
.6	Caulking	2
.7	Aluminum Composite Metal Panels	5
.8	Aluminum Windows & Window Walls (manufacturer's)	5
.9	Glazed Sealed Units	10
.10	Finish Hardware	3

	(auto operators & hardware warranty to be from one supplier)	
.11	Panic Devices and Door Closers	5
.12	Acoustic Ceilings	2
.13	Built Up Roofing (installation)	2
.14	Built Up Roofing (manufacturer's)	10
.15	Sheet Metal Flashing and Siding	5
.16	Concrete Floors	3
.17	Ceramic Tile	3
.18	Painting (OPCA warranty)	2

.2 The guarantee period shall start on the date of issue of the Certificate of Substantial Performance of the Contract by the Consultant.

1.35 CONTINGENCY ALLOWANCE

.1 Include in the Tender Amount a Contingency Allowance in the amount identified in the front end contract documents.

.2 Expend Contingency Allowance as directed by the Consultant, in writing, in accordance with the CCDC-2 2020 Contract and Supplementary Conditions.

.3 Contractor's charges for expenses and profit on Contingency Allowance expenditure shall not be included in Contract Price. CCDC-2 2020 Contract and Supplementary Conditions for percentages of mark-ups.

.4 Such charges shall be added to the net trade cost of each expenditure from the Contingency Allowance at the percentage rates noted in the Supplementary Conditions to the CCDC-2-2020.

.5 *Changes to the Work shall be added to, or deducted from, the Contingency Allowance, not from the Board approved Contract. The Contract shall be adjusted by Board approval, only once - at the end of the Project.* Credit the Contract with any unused portion of the Contingency Allowance only in the final payment statement.

1.36 CASH ALLOWANCES

.1 Include in the Contract Price, a stipulated sum Cash Allowance in the amount identified in the front end contract documents.

.2 Cash Allowances, unless otherwise specified, cover the net cost to the General Contractor of services, products, construction, machinery and equipment, freight, handling, unloading, storage installation and other authorized expenses incurred in performing the Work.

.3 The Contract Price, *and not the Cash Allowance*, includes the General Contractor's profit and coordination costs in connection with all Cash Allowance expenditures.

.4 The Contract Price will be adjusted by written order by the Consultant to provide for an excess or deficit to each Cash Allowance. Any unused portions of these allowances shall be returned to the Board on the conclusion of the Contract.

.5 A schedule shall be prepared jointly by the Consultant and the General Contractor to show when items called for under Cash Allowances, so that the progress of the Work is not delayed.

.6 Exclusive of Deposits, which are the contractor's sole responsibility to provide as required of Authorities Having Jurisdiction, the following is a summary of the scope Cash Allowances to be included in the contract:

.7 Expend both Cash Allowances as directed by the Consultant in writing. Allowances will be adjusted to actual cost with no adjustment to Contractor's charges. Cash expenditure must identify the H.S.T. separately.

.8 **Cash Allowance - General**

.1 Outdoor basketball poles and backstops
.2 Street Pole Lamp or Electrical Pole Relocation (if any and if performed by Utility or Municipality)
.3 Window Coverings (manual only)(electric operated included in base-bid)
.4 Music Equipment Storage
.5 Gymnasium and Sensory Room Crash Pads
.6 Stage Rigging, Drapery and Stage Lighting (other than items shown on electrical documents)
.7 Library Projector screen and projector
.8 Interior Signage (supply and install)
.9 Exterior school name, address signage and HDSB logo
(structural framing for canopy signage to be included in base-bid).
('AD215 Job Site Sign' is to be in base-bid, not Cash Allowance)
.10 Local Utility and Hydro Service Connection Fees
.11 Incoming Gas Service
.12 Incoming fibre optic/cable service by Utility Company
.13 Additional fire route signage (as requested by authorities)
.14 Monitoring well decommissioning
.15 Commissioning Agent (Mechanical)
.16 Completion Site Survey by OLS
.17 All Inspections and Testing (requested by Consultants, Owner or Authorities)
.18 Preparation of digital Architectural and Structural as-built drawings

1.37 ALLOWANCES CARRIED IN DIVISIONS 15 AND 16

.1 No Additional Cash Allowances are included in the work of Divisions 15 and 16.

1.38 SCHEDULE OF ALLOWANCES

.1 Material Allowances shall include the following:

.1 Net cost of Material
.2 Applicable taxes and duties

.3 Delivery to site

.2 For Material Allowance, the contract shall include:

.1 Handling at site, including unloading, uncrating, storage and hoisting
.2 Protection from elements, from damage
.3 Labour, installation and finishing
.4 Other expenses required to do cash allowance work (i.e. contract co-ordination)
.5 Overhead and profit

.3 Material and Installation Allowances shall include the following:

.1 Net cost of material
.2 Applicable taxes and duties
.3 Deliver to site
.4 Handling at site, including unloading, uncrating, storage and hoisting
.5 Labour, installation and finishing

1.39 POLYCHLORINATED BIPHENYL (PCB)

.1 Conform to the Environmental Protection Act and Regulations, Ontario Regulation 11/82 as amended.

1.40 USE OF CONSULTANTS'S DIGITAL DRAWINGS

.1 Where a contractor wishes to obtain a digital copy of consultant drawings for shop drawings or survey purposes, the consultant may elect to provide this drawing for a nominal fee. As this is the consultants' option, the contractor shall not anticipate provision of these digital drawings to meet the contract schedule.

1.41 BUILDING DIMENSIONS

.1 Ensure that all necessary job dimensions are taken and all trades are co-coordinated for the proper execution of the work. Assume complete responsibility for the accuracy and completeness of such dimensions, and for co-ordination.

.2 Verify that all work, as it proceeds, is executed in accordance with dimensions and positions indicated which maintain levels and clearances to adjacent work, as set out by requirements of the drawings, and ensure that work installed in error is rectified before construction resumes.

.3 Check and verify all dimensions referring to the work and the interfacing of all services. Verify all dimensions, with the trade concerned when pertaining to the work of other trades. Be responsible to see that Subcontractors for various trades co-operate for the proper performance of the Work.

.4 Avoid scaling directly from the drawings. If there is ambiguity or lack of information, immediately inform the Consultant. Be responsible for any change through the disregarding of this clause.

.5 All details and measurements of any work which is to fit or to conform with work installed shall be taken at the building.

.6 Advise Consultant of discrepancies and if there are omissions on drawings, including layout of items which affect aesthetics, or which interfere with services, equipment or surfaces. DO NOT PROCEED without direction from the Consultant.

.7 Prepare interference drawings AND SUBMIT AS SHOP DRAWINGS IN ADVANCE OF PRODUCTION to properly co-ordinate the work in all ceiling spaces and where necessary. Coordinate these drawings with all Divisions. Refer also to Section 013300.

1.42 SETTING OF WORK AND REQUIRED SURVEYS

.1 As part of the base tender amount, provide and pay for the services of a Land Surveyor acceptable to the Consultant, registered in the Province of Ontario to establish the property boundaries and the location of the building addition.

.2 Lay out building lines for the work and provide substantial stakes, batterboards or monuments to preserve lines and levels.

.3 Verify on the site all grades, lines, levels, dimensions and location of hydrants, existing structures, manholes, overhead and buried utilities, existing trees, roadways, sidewalks and the like, shown on the drawings, and report omissions, errors, or inconsistencies, before commencing work.

.4 Upon completion of layout work and before commencement of any excavation, give ample notification to allow for inspection of lines and levels. Such inspection does not in any way mitigate the Contractor's responsibility for accuracy of layout.

.5 Provide the consultant with a Surveyor’s Certificate describing the location of all perimeter foundation walls relative to property lines before construction proceeds on those walls.

1.43 LAYOUT OF WORK

.1 Layout work with respect to the work of all trades. Arrange mechanical and electrical work such as piping, ducts, conduits, panels, equipment and the like to suit the architectural and structural details.

.2 Alterations necessary due to conflict and interference between trades, to be executed at no cost to the Owner unless notification is given in writing before Tender Closing Date.

1.44 DOCUMENTS REQUIRED AT START, DURING & CLOSE-OUT OF CONSTRUCTION

.1 At Commencement of Contract

.1 Supply Performance Bond and Labour and Material Bond, in accordance with Section 00 21 13, Instructions to Bidders.

.2 Supply Public Liability and Property Damage Insurance Certificates, also Builder’s Risk and Boiler Insurance as required of the Contract.

.3 Supply Certificates of good standing from WSIB for the General Contractor and all Subcontractors.

.4 Supply a complete Contract Sum Breakdown of all subtrades or parts of work and general expense items for approval by all consultants. Include Mechanical and Electrical Breakdowns for review and acceptance by Consultants.

.5 Supply a competent detailed Construction Schedule that has been reviewed and approved by major subtrades. Identify critical milestone dates.

.6 Supply Cash Flow schedule of monthly progress payments in coordination with the Construction Schedule and plot as 'S' curve chart.

.7 Supply Schedule of Shop Drawing Submissions and identify list of long-lead items.

.8 Apply for and post and supply a copy of Notice of Project.

.9 Supply a copy of Health & Safety policy as well as post at the job site.

.10 Supply Shoring Designs of all load bearing areas if any required of the construction sequence or if required by the Structural Engineer.

.11 Supply interference drawings for all areas requested by the Architect, Mechanical Engineer or Electrical Engineer.

.2 During Construction

.1 Maintain as-built record drawings in clean condition.

.2 Organize regular Trade Coordination meetings.

.3 Organize separate, regular Owner and Consultant Job Meetings in accordance with Section 012200.

.4 Maintain a copy of up to date records on site including, but not limited to Permit Sets, Contract Documents updated with all addenda, all Changes and Supplementary Instructions issued by Consultants.

.3 Monthly with Each Progress Payment Application

.1 Supply Monthly Progress Reports and Construction Schedule in accordance with Section 012200.

.2 Adjust Allowances, as required.

.3 Current WSIB Form

.4 Confirm that payments are being made to subcontractors and suppliers by submission of original copies of the current versions of Statutory Declarations with the second and subsequent Progress Payment Application. Include both Statutory Declarations Form CCDC-9A for the General Contractor and CCDC-9B from subcontractors with each monthly Progress Payment Application. No payment will be made for unincorporated material on the site, unless Bill of Sale in proper format is provided.

.4 Prior to Substantial Completion

.1 Provide detailed Completion Schedule a minimum of 90 days prior to Substantial Completion. Schedule to illustrate all trades and sequences required for completion and legal occupancy. Issue to Consultants and upon acceptance, to all trades.

.2 Coordinate Completion Schedule with Building Commissioner at least 60 days prior to substantial completion or as directed by Consultant.

.3 Prior and as a requirement of owner acceptance of Substantial Completion of the work the following to be observed, executed and submitted:

.1 DEFICIENCIES ARE LISTED: prior to Substantial Completion, the contractor shall prepare a room by room deficiency list in electronic format on an MS Excel spreadsheet provided by the Consultant. Contractor shall print and review on site with consultants at a site meeting and post on each room or area. This list will be acted upon by all trades and coordinated and updated weekly as a minimum by the General Contractor to ensure all deficiencies are addressed by the date required for Total Performance. Confirm in writing to the Architect when and on what dates each deficiency has been completed in a satisfactory manner. The Consultant's site review will be final approval.

.2 Acceptable preliminary submissions of all Mechanical and Electrical Operations and Maintenance Manuals have been reviewed by Consultants.

.3 Acceptable preliminary submissions of all Warranty and Shop Drawing Records have been reviewed by Consultants.

.4 All final clean-up to have been executed, as specified in Section 01 74 11.

.5 Complete preliminary balancing and provide preliminary Balancing Reports.

.4 Failure to comply with these requirements shall have amounts withheld on Progress Payments and delay issuance of Certificate of Substantial Completion.

.5 Note that Prior to the Release of Holdback, a similar Progress Claim is required, and must include current Statutory Declaration Forms CCDC-9A for the General Contractor and CCDC-9B from subcontractors updated to refer to the Previous Certificate of Payment.

.5 Upon Completion (Refer also to 01 78 00 Close-Out Submittals)

.1 Upon completion of work before the Final Certificate of Payment is issued, the following to be observed, executed and submitted:

.2 DEFICIENCIES ARE COMPLETE. Confirm in writing to the Architect when and on what dates each deficiency has been completed in a satisfactory manner. The Consultant's site review will be final approval.

.3 Finishing Hardware, Inspection and Verification. Note requirements for qualified installation and inspection in Section 08 71 10- Door Hardware. Inspection only is paid for from Cash Allowances.

.4 Organize a Final Inspection tour at which to be present: the Owner's authorized representative; the Architectural, Structural, Mechanical and Electrical Consultants, and their supervisory personnel, if any; the Contractor and his superintendent.

.5 Where the above procedure is impossible or where any deficiencies remain outstanding, the Owner's representative and the Consultant concerned, to inspect and accept the affected work and/or material upon notification by the Contractor, that all deficiencies involving this Consultant have been made good.

.6 A complete release of all liens arising out of this Contract, other than his own. If a subcontractor or supplier refuses to furnish a release of such a lien, furnish a bond satisfactory to the Owner to indemnify him against any claim under such a lien.

.7 Certificates of good standing from the WSIB, for the General Contractor and all Subcontractors.

.8 All reference records, as specified, under Section 01 78 00.

.9 Certificate of Inspection from Mechanical and Electrical Engineers.

.10 Copies of all Lists of Deficiencies with each Deficiency verified when complete by only this project's job Superintendent. The Final List of Deficiencies to be signed, completed by all concerned, if accepted.

.11 Statement of Completion from General Contractor.

.12 Final adjustment of all Allowances.

.13 Certificates required by Provincial, Municipal and other authorities having jurisdiction. Including signed Building Permit.

.14 Final Balancing Reports showing completed adjustments

.15 Digital copy of Site Services, Architectural, Structural, Mechanical and Electrical and 2 sets As-Built Drawings.

.16 As-Built Survey by O.L.S. (2 copies and digital copy on USB) – paid from Cash Allowance. Survey to include detailed spot elevations and include elevations at tops of all CB's & MH's, all invert elevations (engage private locate firm as required), elevations at bottoms of curbs, elevations at all corners of building. Digital copy of Survey must be georeferenced to NAD83/ UTM zone 17N.

.17 Final copies of all Maintenance Manuals.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 PROJECT MEETINGS FOR COORDINATION

.1 In consultation with the Consultant not later than the second week of construction, arrange for site meetings weekly or every 2 weeks as appropriate to the stage of construction, for project coordination. Such meetings shall fall at the same time each week the meeting is scheduled.

.2 Responsible representatives of the Contractor's and Subcontractor's office and field forces and suppliers shall be obliged to attend.

.3 Inform the Owner, Consultant, and those others whose attendance is obligatory, of the date of each meeting, in sufficient time to ensure their attendance.

.4 Provide physical space for meetings, prepare an agenda, chair and record the minutes of each meeting. Relevant information must be made available to all concerned, in order that problems to be discussed may be expeditiously resolved. Identify "action by: _____".

.5 Within three days after each meeting, distribute two copies of the minutes to each invited person and regular distribution list to be issued by the consultant.

1.2 PRECONSTRUCTION MEETING

.1 Within 5 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 Include in the agenda the following:

.1 Appointment of official representative of participants in the Work.
.2 Site Safety and Security
.3 Scheduling of Work. Schedule to include a detailed breakdown of mechanical and electrical works.
.4 Interference with ongoing business.
.5 Work by other Contractors.
.6 Schedule of submission of shop drawings and samples.
.7 Requirements for temporary facilities, site sign, offices, storage sheds utilities.
.8 Delivery schedule of specified equipment and identification of long-lead or other critical items.
.9 Site security.
.10 Procedures for Contemplated change notices, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
.11 Record drawings.
.12 Maintenance manuals.
.13 Take-over procedures, acceptance, warranties.
.14 Monthly progress claims, administrative procedures, photographs, holdbacks.

.15 Appointments of inspection and testing agencies or firms.

.16 Insurances, transcript of policies.

.17 Schedule for progress meetings.

1.3 PROJECT MEETINGS FOR PROGRESS OF WORK

.1 Conduct progress meetings in accordance with the schedule and/or decisions made at Preconstruction meeting.

.2 Inform the Owner, Consultant, project consultants, Subcontractors and suppliers and those whose attendance is obligatory, of the date of the meeting, in sufficient time to ensure their attendance.

.3 Include in the agenda the following:

.1 Site Safety and security record or incidents.

.2 Review, approval of minutes of previous meeting.

.3 Review of Work progress since previous meeting.

.4 Field observations, problems, conflicts.

.5 Problems which impede construction schedule.

.6 Review of off-site fabrication delivery schedules.

.7 Corrective measures and procedures to regain projected schedule.

.8 Revisions to construction schedule.

.9 Progress during succeeding work period as a “two-week look ahead”.

.10 Review submittal schedules: expedite as required.

.11 Maintenance of quality standards.

.12 Pending changes and substitutions.

.13 Review proposed changes for effect on construction schedule and on completion date.

.14 Other business.

1.4 PROGRESS RECORDS

.1 Maintain a permanent written record on the site of the progress of the work using standard OGCA form. This record shall be available to the Consultant at the site, and a copy shall be furnished to same on request. The record shall contain:

.1 Daily weather conditions, including maximum and minimum temperatures.

.2 Dates of the commencement and completion of stage or portion of the work of each trade in each area of the project.

.3 Conditions encountered during excavation.

.4 Dates of erection and removal of formwork, in each area of the project.

.5 Dates of pouring the concrete in each area of the project, with quantity and Particulars of the concrete.

.6 Work force on project daily per trade and active hours.

.7 Visits to site by personnel of Consultant, Jurisdictional Authorities and testing companies.

1.5 PROGRESS REPORTS

.1 Submit to the Consultant, Monthly Progress Reports consisting of a concise narrative and a marked-up summary schedule showing physical percentage complete by item and in total. These progress calculations must agree with the Progress Payment Claims. masonry; mechanical, finishing trades and the like. Include with this submission the digital schedule referenced below

1.6 DIGITAL PROJECT SCHEDULES

.1 At the outset of the project, General Contractor to provide and maintain a digital project schedule including Milestone Dates and listing all trades.

.2 Update and issue to Consultant in hard copy and electronic copy not less than monthly and at each Progress Draw. To be issued in format compatible with Microsoft Project program.

.3 At 70% completion, or 16 weeks prior to Substantial Completion, whichever comes first, Project develop a detailed Completion Schedule outlining final coordination and sequences to completion.

1.7 DOCUMENTS REQUIRED AT PROJECT START, DURING CONSTRYCTION AND CLOSE OUT

.1 Refer to Section 01 11 00 – Summary of Work, article 1.44.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Shop drawings and product data.

.2 Samples and mock ups.

1.2 SHOP DRAWINGS

.1 Submit to Architect, for review, shop drawings, product data and samples specified.

.2 Until submission is reviewed, work involving relevant product must not proceed.

1.3 RELATED SECTIONS

.1 Section 05 50 00 – Metal Fabrications

.2 Section 13 05 41 - Seismic Restraint for Non-structural Components.

1.4 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2 - 2020, Stipulated Price Contract.

1.5 SHOP DRAWINGS AND PRODUCT DATA

.1 Refer to CCDC 2 General Conditions.

.2 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

.3 Drawings to be originals prepared by Contractor, Subcontractor, Supplier or Distributor, which illustrate appropriate portion of work; showing fabrication, layout, setting or erection details as specified in appropriate Sections.

.4 Identify details by reference to sheet and detail numbers shown on Contract Drawings.

.5 Maximum sheet size 606 x 909 mm.

.6 Reproductions for submissions: opaque diazo prints.

1.6 PROJECT DATA

.1 Certain specification Sections specify that manufacturer's standard schematic drawings, catalogue sheets, diagrams schedules, performance charts, illustrations and other standard descriptive data will be accepted in lieu of shop drawings.

.2 Above will only be accepted if they conform to following:

.1 Delete information which is not applicable to project.

.2 Supplement standard information to provide additional information applicable to project.

.3 Show dimensions and clearances required.

.4 Show performance characteristics and capacities.

.5 Show wiring diagrams (when requested) and controls.

1.7 COORDINATION OF SUBMISSIONS

.1 Review shop drawings, product data and samples prior to submission.

.2 Verify:

.1 Field measurements.

.2 Field construction criteria.

.3 Catalogue numbers and similar data.

.3 Co-ordinate each submission with requirement of work and Contract documents. Individual shop drawings will not be reviewed until all related drawings are available.

.4 Contractor's responsibility for errors and omissions in submission is not relieved by Architect's review of submittals.

.5 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.

.6 Notify Architect, in writing at time of submission, of deviations from requirements of Contract documents.

.7 After Architect's review, distribute copies.

1.8 SUBMISSION REQUIREMENTS

.1 Schedule submissions at least fourteen (14) days before dates that reviewed submissions will be required to be returned.

.2 Submit one reproducible transparency, plus six (6) opaque diazo copies of shop drawings, product data to Architect for review.

.3 Accompany submissions with transmittal letter, in duplicate, containing:

.1 Date.

.2 Project title and number.

.3 Contractor's name and address.

.4 Number of each shop drawing, product data and sample submitted.

.5 Other pertinent data.

.4 Submissions must include:

.1 Date and revision dates.

.2 Project title and number.

.3 Name of:

.1 Contractor.

.2 Subcontractor.

.3 Supplier.

.4 Manufacturer.

.5 Separate detailer when pertinent.

.5 Identification of product or material:

.1 Relation to adjacent structure or materials.

.2 Field dimensions, clearly identified as such.

.3 Specification Section number.

.4 Applicable standards, such as CSA or CGSB numbers.

.5 Contractor's stamp, initialed or signed, certifying review of submission, verification of field measurements and compliance with Contract documents

1.9 INTERFERENCE DRAWINGS

.1 Prepare interference drawings for all work in confined space: all typical ceiling space conditions and atypical conditions. Coordinate with all trades.

.2 Submit as shop drawings in advance of fabrication or installation of components. Site conditions requiring corrections, due to failure to provide interference drawings as required will be corrected at no additional cost to the owner.

.3 Ceiling heights and bulkheads will not be revised during construction due to failure to prepare interference drawings.

1.10 SEISMIC DESIGN SUBMITTALS

.1 Shop drawings shall clearly include seismic design compliance calculations for all building components within scope of the current Ontario Building Code (OBC), Div. B, Part 4 requirements.

.2 Refer to Structural Drawing S-1 for a table of applicable building components and Section 13 05 41 – 'Seismic Restraint for Non-Structural Components'.

1.11 SHORING DESIGN DRAWINGS

.1 If required as part of this project, or due to construction sequence, it is the contractor's responsibility to provide in advance of any work requiring shoring, detailed Shoring design drawings bearing the seal of a Professional engineer registered in the Province of Ontario and also a Method Statement describing the work sequence.

.2 Submit to the Consultants as shop drawings in advance of the work.

1.12 SHOP DRAWINGS BEARING THE SEAL OF A PROFESSIONAL ENGINEERS

.1 In addition to any the similar requirements for shop drawings of any mechanical or electrical systems, Shop Drawings for all structural components or components required

to perform in conjunction with other structural or building envelope components, cladding and the like shall bear the seal of a professional engineer licensed in the Province of Ontario.

.2 In addition, all components to be attached to or suspended from the walls and ceiling areas shall also bear the seal of a professional engineer licensed in the Province of Ontario. This shall include but not be limited to the following:

.1 Stage drapery and rigging
.2 Stage lighting system
.3 Gymnasium equipment such as basketball backstops
.4 Projection screen supports
.5 Gymnasium curtain structural connections
.6 Stair guardrails and handrails
.7 Steel Ladders, rungs & guardrails
.8 Bent plate & channel at library mezzanine framing and curtain wall

1.13 LIST OF SAMPLE OR MOCK-UP SUBMITALS

.1 At the outset of the project the contractor shall prepare a comprehensive list of all shop drawings, sample submissions and mock ups required.

.2 For assistance only, the following samples and mock up items to be provided are included but not limited to the list following (note this is not exclusive of data sheets and shop drawings):

.1	04 21 13	Concrete and Brick Masonry	samples, mock-up (2m x 2m)
.2	04 21 13	Masonry Accessories	samples
.3	04 22 00	Concrete Masonry	samples
.4	06 40 00	Architectural Woodwork	samples (300mm x 300mm)
.5	06 47 00	Plastic Laminates	samples
.6	07 11 13	Bituminous Waterproofing	mock-up (3m x 2m)
.7	07 18 00	Traffic Coatings	samples
.8	07 21 13	Board Insulation	samples
.9	07 27 10	Air Barriers	samples
.10	07 41 43	Aluminum Composite Panels	samples, mock-up (3m x 2m)
.11	07 81 00	Applied Fireproofing	samples (300mm x 300mm)
.12	07 84 00	Firestopping	samples (300mm x 300mm)
.13	07 92 10	Joint Sealing	samples and mock up
.14	08 44 13	Glazed Aluminum Curtain Walls	samples, mock-up
.15	08 71 10	Finish Hardware	samples
.16	08 80 50	Glazing	samples (300 x 300)
.17	09 30 13	Ceramic Tiling	samples
.18	09 51 13	Acoustical Panel Ceilings	samples (300 x 300)
.19	09 65 19	Resilient Tile Flooring	samples
.20	09 68 00	Carpeting	samples (225 x 225)
.21	09 84 10	Acoustic Wall Treatment	samples (300 x 300)
.22	09 91 22	Painting	draw downs, mock-up
.23	10 11 25	Manufacturer Specialties	samples
.24	10 14 10	Exterior Building Panel Signage	samples
.25	10 21 20	Laminated Plastic Toilet Partitions	samples

.26	10 22 27	Folding Panel Partitions	samples
.27	31 23 10	Excavating, Trenching and Backfilling	samples
.28	32 12 17	Asphalt Paving	samples
.29	32 13 10	Unit Paving on Sand Bed	samples
.30	32 31 13	Chain Link Fences and Gates	samples
.31	32 91 21	Imported Topsoil	test reports and samples

1.14 SUBMISSIONS TO INSPECTION AGENCIES

.1 Note that Millwork shop drawings are to be submitted to AWMAC as part of the Guarantee Inspection program.

.2 Note that Paint formulations specified are to be submitted to the OPCA with set up documentation upon award of Contract.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Health and safety considerations required to ensure due diligence towards health and safety on construction sites, and meets the requirements laid out Occupational Health and Safety - Construction.

1.2 RELATED SECTIONS

.1 These specifications apply to all divisions of this project specification. It is the responsibility of the Contractor to apply these provisions wherever practical within specification limits to all products and services used on this project.

.2 Recognized that currently specified materials and methods may conflict with the basic intention of this section. Where reasonable alternate materials and methods exist that are not specified here, and that do not compromise quality or create additional cost for the Owner, notify the Consultant of such alternate materials or methods. Do not proceed to use alternate materials or methods to those specified without the express approval of the Consultant.

.3 Elsewhere, apply the provisions of this section to all work. Exceptions can only be made when signed off by the Consultant. Suitability of all products used is the responsibility of the Contractor.

1.3 REFERENCES

.1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS).

.1 Material Safety Data Sheets (MSDS).

.3 Province of Ontario

.1 Occupational Health and Safety Act and Regulations for Construction Projects, R.S.O. [1990 June 2002].

1.4 COMPLIANCE SPECIFICATION

.1 The Contractor must comply with all applicable health, safety and environmental regulations.

1.5 BEYOND COMPLIANCE SPECIFICATION

.1 These specifications apply in addition to all applicable health, safety and environmental compliance regulations. They are incorporated here to reflect the Owner’s intention to develop a specification which maximizes environmentally “friendly” materials and methods wherever possible within current technical and budget limitations.

.2 Beyond compliance specifications recognize that performance well beyond the minimum regulatory standard is often desirable, possible and affordable, often with no cost or low

cost options. It also recognizes that application methods or protocols may be as important as the material specified. Therefore these specifications cover both material and methods.

.3 The primary goal of beyond compliance specification is to reduce the use of products or methods which have negative health and environmental impacts both during and after construction. These considerations may include full life cycle impacts, associated with raw materials, manufacturing, transport, deconstruction and their eventual fate.

.4 These specifications will specifically address primary categories of readily identifiable products, ingredients and methods.

.5 These provisions apply to both indoor and outdoor applications equally.

1.6 EXCEPTIONS

.1 These specifications recognize that not all substitutes are equal and therefore exceptions can be made based on substantive evidence of necessary and superior performance. Special considerations may be given to restricted substances when secondary provisions are made such as sealed in place (contained) applications. All such exceptions must be approved in writing by the Consultant.

1.7 PRODUCTS OR SUBSTANCES TO BE AVOIDED OR LIMITED IN USE

.1 No product containing the following substances may be used on this project when an equivalent product without or with a lower concentration of this substance is suitable and available. All products containing substances which are known to cause health effects including but not limited to cancer, mutagenic, neurological, or behavioral effects should be avoided if suitable substitutes not containing or containing lower concentrations are available. This provision shall be limited to information contained on Material Safety Data Sheets, therefore MSDS sheets must be reviewed for all products for which such sheets are required. Applications for exceptions must be accompanied by related MSDS and product application and performance sheets, clearly showing a need for the exception.

1.8 VOLATILE ORGANIC COMPOUNDS

.1 No product containing volatile organic compounds (in over simplified terms volatile petro chemical or similar plant derived solvents) may be used on this project when a suitable non VOC or failing that a low VOC substitute is available. Manufacturers may refer to the U.S. EPA definition of VOC's for guidance or alternatively use the low molecular weight organic compound descriptor.

.1 Example: Paints, Coatings, Primer, Adhesives, Chalks, Firestops, etc.

.2 Waterborne equivalents are available for most of the solvent borne products used in construction and in most cases would be the preferred alternative. Waterborne products may in some instances have high VOC contents; therefore the fact that a product is waterborne does not automatically make it acceptable.

1.9 CHLORINATED SUBSTANCES

.1 Poly Vinyl Chloride (vinyl) and other chlorinated products should be avoided if suitable substitutes are available.

1.10 PLASTICIZERS

.1 Plasticizers which off-gas (low molecular weight) should be avoided.

1.11 MAN MADE MINERAL FIBRES

.1 Products containing mineral fibres which can be emitted or abraded should be avoided.

.1 Examples: duct liner, mineral fibre ceiling tiles, etc.

1.12 RADIATION

.1 Products or methods which result in the lowest emission of Electro Magnetic Fields are preferred.

1.13 BIOCIDES

.1 Products containing biocides (pesticides, miticides, mildeweides. fungicides, rodenticides, etc.) are not to be used if suitable alternatives are available. Highly stable, low human toxicity biocides such as Portercept may be acceptable substitutes. Biocide formulas which break down, emit powders of offgass should be avoided.

1.14 HEAVY METALS

.1 Heavy metals such as lead, cadmium, mercury etc. should be avoided.

1.15 ALUMINUM

.1 Raw aluminum should be avoided, anodized or factory painted aluminum is acceptable. This is particularly applicable to surfaces which people can touch.

1.16 OZONE DEPLETING SUBSTANCES

.1 Products which contain or which use Ozone Depleting Substances such as Bromide, Chlorofluorocarbons (CFC) or Hydrofluorocarbons (HFC) etc. should be avoided if suitable substitutes are available.

1.17 GREENHOUSE GASES

.1 Products which contain, use or generate Greenhouse gasses such as CO2 should be avoided if suitable substitutes are available.

1.18 BITUMINOUS (Tar) PRODUCTS

.1 Products containing tar compounds should not be used if suitable substitutes are available.

1.19 CHEMICAL COMPOUNDS

.1 Products containing the following chemical compounds should not be used if suitable substitutes are available: Neoprene, Latex, Butyl, ABS, and Formaldehyde.

1.20 ADHESIVES

.1 Adhesives containing solvents or other non preferred ingredients should be avoided if suitable substitutes are available, including systems designs which do not need adhesives or can use mechanical etc. fastening alternatives

1.21 COMPOSITE PRODUCTS

.1 Some composite products contain adhesives such as formaldehyde which are not preferred, and some composites such as Fibre Reinforced Plastics are not practical for recycling. These products should be avoided if suitable substitutes are available.

1.22 CLEANERS AND SOLVENTS

.1 Products, equipment, and methods which require the use of cleaners and solvents are not preferred if suitable substitutes are available. Examples of preferred products would include No Wax floors, or primerless caulks and adhesives, or products not requiring caulks and adhesives.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 FIRES

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

1.2 DISPOSAL OF WASTES

.1 Do not bury rubbish and waste materials on site.

.2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

1.3 DRAINAGE

.1 Refer also to Section 31 23 10.

.2 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.

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

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

1.4 SITE CLEARING AND PLANT PROTECTION

.1 Protect trees and plants on site and adjacent properties where indicated.

.2 Wrap in burlap, trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m.

.3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.

.4 Restrict tree removal to areas indicated or designated by Engineer.

1.5 POLLUTION CONTROL

.1 Maintain temporary erosion and pollution control features installed under previous contract and to be provided new under this contract and as requested by local Municipal and Regional Authorities.

.2 Install, maintain, restore, replace sediment control fence as required by Municipal and Regional authorities. The fence shall be in accordance with Municipal standards.

3. Install, maintain, restore, replace roadside catchbasin sediment protection at all street catch basin in accordance with Municipal standards.

.3 Install, maintain, restore, replace catchbasin sediment barrier immediately after installation of catch basins on the property in accordance with Municipal Standards.

.4 A temporary mud mat has been installed under the previous grading contract and remains for removal under this contract. As part of this contract, include in the tender amount the supplementary stone required for maintenance and the removal of the mud mat consisting of 30m x 5m x 0.45m clear stone at any construction entrance. This is required whether or not such mud mat is shown on drawings or remains evident on site.

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

.6 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Inspection and testing, administrative and enforcement requirements.

.2 Tests and mix designs.

.3 Mock-ups.

.4 Mill tests.

.5 Equipment and system adjust and balance.

1.2 PRECEDENCE

.1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.3 RELATED SECTIONS

.1 Section 1 33 00 - Submittal Procedures.

.2 Section 01 78 00 - Closeout Submittals.

.3 Section 01 11 00, article 1.12 – Quality Control

1.4 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2- 2020 Stipulated Price Contract.

1.5 INSPECTION

.1 General: Materials and workmanship shall be subject to inspection at any time. Cooperate in permitting access for inspection to all places where work is being done or stock is being stored.

.2 Owner's quality control inspection and testing is specified in the technical sections and will be paid from Cash Allowance except as otherwise specified. Contractor to be responsible to pay for inspections and retesting to verify acceptability of work requiring correction.

.3 Allow Consultant access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.4 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Consultant instructions, or law of Place of Work.

.5 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.6 Consultant may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction.

1.6 ACCESS TO WORK

.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

1.7 PROCEDURES

.1 Notify appropriate agency Consultant in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.

.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.8 REJECTED WORK

.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Consultant as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

.2 Make good other Contractor's work damaged by such removals or replacements promptly.

1.9 TESTS AND MIX DESIGNS

.1 Furnish test results and mix designs as may be requested.

.2 The cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work shall be appraised by Consultant and may be authorized as recoverable.

.3 Allow sufficient time for testing, evaluation, alterations and retesting so as not to interrupt the Progress Schedule for the Project.

.4 The Consultant may require testing of connections and special prefabricated inserts, as part of the work of this Section.

1.10 MOCK-UPS

.1 Refer to partial list of mock ups in Section 01 33 00 - Submittal Procedures

.2 Prepare mock-ups for Work specifically requested in specifications. Include for Work of all Sections required to provide mock-ups.

.3 Construct in all locations acceptable to Consultant.

.4 Prepare mock-ups for Consultant's review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.

.5 Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

.6 If requested, Consultant will assist in preparing a schedule fixing dates for preparation.

.7 Remove mock-up at conclusion of Work or when acceptable to Consultant.

.8 Mock-ups may remain as part of Work only if previously agreed to by consultant and accepted as acceptable quality upon completion..

.9 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

1.11 MILL TESTS

.1 Submit mill test certificates as required of specification Sections.

1.12 EQUIPMENT AND SYSTEMS

.1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.

1.13 SEALANTS

.1 Refer also to Section 07 92 10.

.2 Sealants used for the various building envelope assemblies shall be selected from those specified in the respective assembly Section, and shall be coordinated with the sealant being provided under other building envelope Sections. Preferably, one sealant by the same manufacturer shall be used throughout. If different sealants are selected, from those specified, it is the responsibility of the respective Section to ensure compatibility between selected sealant, substrates, and sealants of other Sections which come in contact with the selected sealant.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Temporary utilities.

1.2 RELATED SECTIONS

.1 Section 01 52 00 - Construction Facilities.

.2 Section 01 56 00 – Temporary Barriers and Enclosures.

1.3 INSTALLATION AND REMOVAL

.1 Provide temporary utilities controls in order to execute work expeditiously.

.2 Remove from site all such work after use.

1.4 DEWATERING

.1 Refer also to Sections 31 23 10 and 01 35 43.

.2 Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.

1.5 WATER SUPPLY

.1 Arrange, pay for and maintain temporary water supply in accordance with governing regulations and ordinances. Provide for water as require whether available in the vicinity of the site or not.

1.6 TEMPORARY HEATING AND VENTILATION

.1 Pay for cost of temporary heat and ventilation used during construction, including costs of installation, fuel, operation, maintenance and removal of equipment. Use of direct-fired heaters discharging waste products into work areas will not be permitted unless prior approvals given by the Architect.

.2 Furnish and install temporary heat and ventilation in enclosed areas, as required to:

- .1 Facilitate progress of work.
- .2 Protect work and products against dampness and cold.
- .3 Prevent moisture condensation on surfaces.
- .4 Provide ambient temperatures and humidity for storage, installation, curing of materials.
- .5 Provide adequate ventilation to meet health regulations for safe working environment.

.3 Maintain minimum temperature of 10 degrees C or higher where specified as soon as finishing work is commenced and maintained until acceptance of structure by Engineer.

.4 Ventilating:

.1 Prevent hazardous accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.

.2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.

.3 Dispose of exhaust materials in manner that will not result inharmful exposure to persons.

.4 Ventilate storage spaces containing hazardous or volatile materials.

.5 Ventilate temporary sanitary facilities.

.6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful elements.

.5 Maintain strict supervision of operation of temporary heating and ventilating equipment to:

.1 Conform with applicable codes and standards.

.2 Enforce safe practices.

.3 Prevent abuse of services.

.4 Prevent damage to finishes.

.5 Vent direct -fired combustion units to outside.

.6 The Architect may permit the use of permanent system providing agreement can be reached on:

.1 Conditions of use, special equipment, protection and maintenance.

.2 Guarantees will not be affected.

.3 Approval of the Owner.

7. Refer to Section 011100, item 1.30. ‘Periodic Cleaning’ for replacement of filters at time of final acceptance of work.

8. Contractor is to provide all temporary utilities, winter heating, frost breaking and inclement weather protection as required to ensure completion date delivery.

1.7 TEMPORARY COMMUNICATION FACILITIES

.1 For duration of contract until final permanent lines are installed, provide and pay for temporary telephone and fax hook up, lines and equipment necessary for own use and use of Consultant.

.2 Immediately upon award of contract, arrange for temporary Bell telephone line to be connected to the site trailer for purposes of providing functional communication equipment listed above.

1.8 FIRE PROTECTION

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

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

1.9 POWER

.1 During the tender period, determine if power will be available in the vicinity of the project site. If no power is deemed available, include costs for generation of power required to carry out the work for the duration required to complete the Project. The Board will not consider payment of generated power.

.2 It is expected that power may not be available to the project site at the onset of the project. The contractor is to include costs for the generation of power, or arrange for the provision of temporary power as required to carry out the work for the duration required to complete the Project

.3 Arrange, pay for and maintain temporary electrical power supply in accordance with governing regulations and ordinances.

.4 Install temporary facilities for power such as pole lines and underground cables to approval of local power supply authority.

.5 Electrical power and lighting systems installed under this Contract may be used for construction requirements with prior approval of Architect, provided that guarantees are not affected. Make good damage. Replace lamps which have been used over period of three (3) months.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Construction aids.

.2 Office and sheds.

.3 Parking.

.4 Project identification – refer to AD Drawings for jobsite sign.

1.2 RELATED SECTIONS

.1 Section 01 51 00 - Temporary Utilities.

.2 Section 01 56 00 - Temporary Barriers and Enclosures.

1.3 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020 Stipulated Price Contract.

.2 Canadian General Standards Board (CGSB)

.1 CGSB 1-GP-189M-84, Primer, Alkyd, Wood, Exterior.
.2 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.

.3 Canadian Standards Association (CSA International)

.1 CAN3-A23.1-/A23.2-94, Concrete Materials and Methods for Concrete Construction/Method of Test for Concrete.
.2 CSA-0121-M1978, Douglas Fir Plywood.
.3 CAN/CSA-Z321-96, Signs and Symbols for the Occupational Environment.

1.4 INSTALLATION AND REMOVAL

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

.2 Remove from site all such work after use.

1.5 SCAFFOLDING

.1 All necessary scaffolding shall be provided and constructed according to all by-laws and safety regulations. It shall be removed promptly and completely when no longer required.

.2 As required by Ministry or Labour, design of scaffolding or hoarding shall be by a Professional Engineer.

1.6 ACCESS

.1 Provide and maintain adequate access to project site.

.2 The General Contractor for this Work shall, at all times allow the Consultants, the Board, or any other Board commissioned contractor or their employees, access into the building or around the premises, undisturbed, whether union or non-union, as may be required in the execution of other portions of the building work and installation of equipment, etc.

.3 The General Contractor shall cooperate fully with any and all Board commissioned Contractors.

1.7 HOISTING

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

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

1.8 ELEVATORS

.1 Permanent elevators may not be used by construction personnel for transporting of materials unless coordinated with the Architect or Structural Engineer.

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

1.9 SITE STORAGE/LOADING

.1 Provide adequate weather tight sheds with raised floors, for storage of materials, tools and equipment which are subject to damage by weather.

1.10 CONSTRUCTION PARKING

.1 Provide, on site, sufficient temporary parking.

1.11 OFFICES

.1 Provide office heated to 22 degrees Celsius, lighted 750 Lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing lay down table, telephone, and facsimile machine. Pay telephone not acceptable.

.2 Maintain in clean condition.

.3 Provide and maintain in clean condition: two separate plans layout tables, minimum 1200 x 1800 mm each. One table shall be used by the General Contractor and subcontractors at their discretion. The second shall be provided for use by subcontractors and by the consultant or Inspection and Testing Companies during site visits or project meetings.

1.12 EQUIPMENT, TOOL AND MATERIALS STORAGE

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

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

1.13 SANITARY FACILITIES

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

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

.3 When permanent water and drain connections are completed, provide temporary water closets and urinals complete with temporary enclosures, inside building. Permanent facilities may be used on approval or Architect.

1.14 JOBSITE SIGN

.1 Supply and erect a sign (W.P. Plywood Signboard) as shown on AD Detail Sheets

.2 Construct plumb and level in neat wood framework and securely anchored in ground by posts to withstand wind pressure of 160 km/h.

.3 Provide shop drawing of layout.

.4 Supply of painted sign only shall be paid from Cash Allowance. Contractor is responsible for supply and installation of support framing and foundation connection on the site.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Barriers.

.2 Traffic Controls.

.3 Fire Routes.

1.2 RELATED SECTIONS

.1 Section 01 51 00 - Temporary Utilities.

.2 Section 01 52 00 - Construction Facilities.

.3 Section 01 11 00 - Summary of Work.

1.3 REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 CGSB 1.189M- [84], Primer, Alkyd, Wood, Exterior.
.2 CGSB 1.59- [97], Alkyd Exterior Gloss Enamel.

.2 Canadian Standards Association (CSA International)

.1 CSA-O121- [M1978], Douglas Fir Plywood.

1.4 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

1.5 SITE ENCLOSURES

.1 Refer to Section 01 11 00- Summary of Work, article 1.6 ‘Construction Fencing’ for clarification of existing fence on site.’ Maintain fences in good repair.

2. Maintain siltation control fencing as part of site enclosure, as indicated in Section 01 35 43, and/or required Municipal or Regional authorities. Maintain/restore/replace siltation control fencing as directed throughout the construction period to ensure proper function.

1.6 WEATHER ENCLOSURES

.1 Provide temporary weathertight enclosures protection for exterior openings until permanently enclosed.

.2 Erect enclosures to allow access for installation of materials and working inside enclosure.

.3 Design enclosures to withstand wind pressure.

.4 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.

1.7 DUST TIGHT SCREENS

.1 Provide dust tight screens or insulated partitions as required to localize dust generating activities, and for protection of workers, finished areas of Work and public.

.2 Maintain and relocate protection until such work is complete.

1.8 ACCESS TO SITE

.1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

1.9 PUBLIC TRAFFIC FLOW

.1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect the public.

1.10 FIRE ROUTES

.1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.11 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

1.12 PROTECTION OF BUILDING FINISHES

.1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.

.2 Provide necessary screens, covers, and hoardings.

.3 Confirm with Consultant locations and installation schedule 5 days prior to installation.

.4 Be responsible for damage incurred due to lack of or improper protection.

1.13 TEMPORARY FENCING TO SODDED AREAS

1. Following the installation of sod to the playfield areas, supply and install temporary, leased Modular (Mod U Lok) 1800 high chain link fencing. Stake with iron “T’s” at minimum 2400 o.c. and maintain for a minimum of 6 weeks while sod is maintained as part of this contract and is deemed established. Refer to Section 32 92 23 – Sodding and 01 11 00 – Summary of Work.

2. Remove fencing at end of 6 week period.

3. Cost of this temporary fencing shall to be included Tender Price if sod is not installed a minimum of 6 weeks prior to occupancy.

4. If sodding is delayed such that the 6 week period is not completed prior to the end of the sod growing season, Contractor shall be responsible to maintain fence on site, at no additional cost to the owner, until the Spring and the consultant has deemed the sod roots have "knit" and is ready for student play activities.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not Used

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Requirements and limitations for cutting and patching the Work.

.2 The responsibilities of this section includes but is not limited to the following item(s), including all related labour and materials necessary to successfully complete the installation of same as detailed on the Drawings.

.3 The cutting, removal and disposal and patching of masonry wall sections in locations of all new electrical panels and for all mechanical ducts passing through masonry walls or walls of any other construction not automatically accommodated in new work by the mason.

.4 The cutting, removal and patching of all penetrations required for mechanical and electrical services through floors, ceilings and walls.

.5 The supply and installation of a Portland cement based leveling skim coat as required to provide an acceptable surface for the installation of new VCT tile to any rooms as described on drawings to receive such flooring.

.6 All other work not listed in other Sections, but detailed on the Drawings.

1.2 RELATED SECTIONS

.1 Section 01 11 00 - Summary of Work.

.2 Section 04 21 13- Brick Masonry

.3 Section 01 33 00 - Submittal Procedures.

.4 Section 08 11 14- Metal Doors and Frames

.5 Section 08 71 15 – Finish Hardware

.6 Section 09 91 22- Painting

.7 Section 09 21 16- Gypsum Board Assemblies

.8 Section 09 51 13- Acoustic Panel Ceilings

.9 Section 10 11 25- Manufactured Specialties

.10 Mechanical and Electrical Sections.

.11 Individual product Sections: cutting and patching incidental to work of section. Advance notification to other sections required.

1.3 SUBMITTALS

.1 Submit written request in advance of cutting or alteration which affects:

.1 Structural integrity of any element of Project.
.2 Integrity of weather-exposed or moisture-resistant elements.
.3 Efficiency, maintenance, or safety of any operational element.
.4 Visual qualities of sight-exposed elements.
.5 Work of Owner or separate contractor.

.2 Include in request:

.1 Identification of Project.
.2 Location and description of affected Work.
.3 Statement on necessity for cutting or alteration.
.4 Description of proposed Work, and products to be used.
.5 Alternatives to cutting and patching.
.6 Effect on Work of Owner or separate contractor.
.7 Written permission of affected separate contractor.
.8 Date and time work will be executed.

1.4 MATERIALS

.1 Required for original installation.

.2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

.3 Concrete lintel block, reinforcing steel and concrete fill for openings if required at new penetrations in walls or steel lintels as may be permitted by consultant.

.4 Portland Cement based Concrete Patching Compound compatible with new slab, precast concrete slabs or other flooring to make good a smooth, suitable surface to accept the direct application of new VCT or resilient sheet flooring.

.5 Portland Cement based Concrete for new floor openings or floor leveling, or patching of floor openings.

.6 All other materials not listed in other Sections, but detailed on the Drawings.

1.5 EXECUTION

.1 The Trades requiring cuts, holes or sleeves for their work shall locate them.

.2 Do not cut, drill or sleeve load-bearing members without obtaining prior written approval from the Consultant for each condition.

.3 Cut holes carefully, leaving holes no longer than required, with clean, true and smooth edges.

.4 Fit items to the tolerances established by industry 'Best Practice' standard for applicable type of work.

.5 Make patches undetectable in the finished work. All other work not listed in other Sections, but detailed on the Drawings, is to be done in a professional manner and to the industry 'Best Practice' standard for the described work.

.6 Execute cutting, fitting, and patching including excavation and fill if required, to complete Work.

.7 Fit several parts together, to integrate with other Work.

.8 Uncover Work to install ill-timed Work.

.9 Remove and replace defective and non-conforming Work.

.10 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.

.11 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

.12 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.

.13 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.

.14 Restore work with new products in accordance with requirements of Contract Documents.

.15 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.16 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material, full thickness of the construction element.

.17 Refinish surfaces to match adjacent finishes: For continuous surfaces refinish to nearest intersection; for an assembly, refinish entire unit.

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

General

.1 SECTION INCLUDES

.1 Progressive cleaning.

.2 Final cleaning.

.2 RELATED SECTION

.1 Section 01 77 00 - Closeout Procedures.

.2 Section 01 11 00 – Summary of Work.

.3 REFERENCE STANDARDS

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2020, Stipulated Price Contract.

.4 GENERAL CLEANINESS DURING CONSTRUCTION

.1 Refer also to Section 01 11 10, item 1.30 ‘Periodic Cleaning’ and coordinate with this Section.

.2 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.

.3 Store volatile wastes in covered metal containers, and remove from premises daily.

.4 Prevent accumulation of wastes which create hazardous conditions.

.5 Provide adequate ventilation during use of volatile or noxious substances.

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

.7 Provide on-site dump containers for collection of waste materials, and rubbish.

.8 Remove waste materials, and rubbish from site.

.9 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.

.10 Schedule cleaning operations so that resulting dust and other contaminants will not fall on wet, newly painted surfaces.

.5 FINAL CLEANING

.1 At completion of Work, remove waste materials, rubbish, tools, equipment, machinery, and surplus materials, and clean all surfaces exposed to view; leave project clean and ready for occupancy.

.2 Employ experienced, professional cleaners, for final cleaning.

.3 Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from all sight-exposed interior and exterior finished surfaces; polish resilient and ceramic surfaces so designated to shine finish. Vacuum carpet.

.4 Clean and polish glass and mirrors.

.5 Repair, patch and touch-up marred surfaces to specified finish, to match adjacent surfaces.

.6 Broom-clean paved surfaces; rake clean other surfaces of grounds.

.7 Clean exposed ductwork, and structure.

.8 Replace filters.

.9 Clean bulbs and lamps and replace those burned out.

.10 Clean diffusers and grilles.

.11 Clean sinks, faucets, and water closets and controls.

.12 Remove snow and ice from access to building, if applicable.

.13 Maintain cleaning until project, or portion thereof, is occupied by Owner.

Products

.1 NOT USED

.1 Not Used.

Execution

.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Section 01 11 00 - Summary of Work, article 1.44.

.2 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2 - 2020, Stipulated Price Contract.

1.2 INSPECTION AND DECLARATION

.1 Refer to Section 01 11 00 – Summary of Work, article 1.44 for a detailed list of requirements.

.2 Contractor's Inspection: Contractor and Subcontractors: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.1 Notify Consultant in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.

.3 Consultant's Inspection: Consultant and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor to correct Work accordingly.

.4 Completion: submit written certificate that following have been performed:

.1 Work has been completed and inspected for compliance with Contract Documents.

.2 Defects have been corrected and deficiencies have been completed.

.3 Equipment and systems have been tested, adjusted and balanced and are fully operational.

.4 Certificates required by Fire Commissioner and Utility companies have been submitted.

.5 Operation of systems has been demonstrated to Owner's personnel.

.6 Work is complete and ready for final inspection.

.5 Final Inspection: when items noted above are completed, request final inspection of Work by Owner, Consultant and Contractor If Work is deemed incomplete by Owner and Consultant, complete outstanding items and request re-inspection.

.6 Declaration of Substantial Performance: when Owner and Consultant consider deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for certificate of Substantial Performance.

.7 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance shall be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.

.8 Final Payment: when Owner and Consultant consider final deficiencies and defects have been corrected and it appears requirements of Contract have been totally performed, make application for final payment. If Work is deemed incomplete by Owner and Consultant, complete outstanding items and request re-inspection.

.9 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit an application for payment of holdback amount in accordance with CCDC 2-2020.

1.3 CLEANING

.1 In accordance with Section 01 74 11 – Cleaning.

.2 Remove waste and surplus materials, rubbish and construction facilities from the site immediately following completion of work and prior to final inspection.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 As-built, samples, and specifications.

.2 Equipment and systems.

.3 Product data, materials and finishes, and related information.

.4 Operation and maintenance data.

.5 Spare parts, special tools and maintenance materials.

.6 Warranties and bonds.

.7 Final site survey.

1.2 RELATED SECTIONS

.1 Section 01 45 00 - Quality Control.

.2 Section 01 77 00 - Closeout Procedures.

.3 Section 01 78 10 - Guarantee/Warrantee Form

.4 Section 01 91 00 - Commissioning.

.5 Mechanical Division: Commissioning

.6 Section 01 11 00 Summary of Work, article 1.43.

1.3 SUBMISSION

.1 Submit one copy of completed project operation and maintenance volumes and as-built drawings in final form 15 days prior to substantial performance. For equipment put into use with Owner’s permission during construction, submit Operating and Maintenance Manuals within 10 days after start-up. For items of Work delayed materially beyond date of Substantial Performance, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.

.2 Prepare instructions and data using personnel experienced in maintenance and operation of described products.

.3 Copy will be returned after inspection with Consultant's comments.

.4 Revise content of documents as required prior to final submittal.

.5 Submit 2 copies of revised volumes of data in final form within 10 days after final inspection.

.6 For contract drawings (architectural, site services, landscaping, structural, mechanical, and electrical)**,** transfer neatly as-built notations onto second and third set and submit all three sets. Cost of only the transfer of these as-built sets into digital format is paid from Cash Allowance. Completion of digital as-built to the Consultant is a mandatory requirement of Total Completion of the Contract.

.7 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.

.8 If requested, furnish evidence as to type, source and quality of products provided.

.9 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

.10 Pay costs of transportation.

1.4 FORMAT

.1 Organize data in the form of an instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf [219 x 279] mm with spine and face pockets.

.3 When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.

.4 Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

.5 Arrange content under Section numbers and sequence of Table of Contents.

.6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

.7 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

1.5 CONTENTS - EACH VOLUME

.1 Table of Contents: provide title of project;

.1 date of submission; names,

.2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties;

.3 Schedule of products and systems, indexed to content of volume.

.2 For each product or system:

.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

.5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

1.6 AS-BUILTS AND SAMPLES

.1 In addition to requirements in Sections 00 21 13 Instructions to Bidders, 01 11 00 Summary of Work and CCDC Contract terms, maintain at the site for Owner one record copy of:

.1 Contract Drawings.
.2 Specifications.
.3 Addenda.
.4 Change Orders and other modifications to the Contract.
.5 Reviewed shop drawings, product data, and samples.
.6 Field test records.
.7 Inspection certificates.
.8 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by Consultant.

1.7 RECORDING ACTUAL SITE CONDITIONS

.1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Consultant.

.2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.

.3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.

.4 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:

.1 Measured depths of elements of foundation in relation to finish first floor datum.

.2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

.4 Field changes of dimension and detail.

.5 Changes made by change orders.

.6 Details not on original Contract Drawings.

.7 References to related shop drawings and modifications.

.5 Specifications: legibly mark each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

.2 Changes made by Addenda and change orders.

.6 Other Documents: maintain manufacturer's certifications, inspection certifications, and field test records, required by individual specifications sections.

1.8 DIGITAL AS-BUILT DRAWINGS

.1 Retain the services of a CAD drafting company acceptable to the Consultant.

.2 Transfer to digital file all information recorded on As-Built drawings. Layering of information as per Consultant’s instructions.

.3 The Consultant will provide CAD file of contract documents.

.4 The cost for preparing digital As-Built drawings will be deducted from the Cash Allowances.

1.9 EQUIPMENT AND SYSTEMS

.1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

.2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.

.3 Include installed colour coded wiring diagrams.

.4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

.5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

.6 Provide servicing and lubrication schedule, and list of lubricants required.

.7 Include manufacturer's printed operation and maintenance instructions.

.8 Include sequence of operation by controls manufacturer.

.9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

.10 Provide installed control diagrams by controls manufacturer.

.11 Provide Contractor's coordination drawings, with installed colour coded piping diagrams.

.12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

.13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

.14 Include test and balancing reports as specified in Mechanical Sections.

.15 Additional requirements: As specified in individual specification sections.

1.10 MATERIALS AND FINISHES

.1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.

.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.4 Additional Requirements: as specified in individual specifications sections.

1.11 MAINTENANCE MATERIALS

.1 On completion of project, submit to Architect two (2) copies of Operations Data and Maintenance Manual in English, made up as follows:

.1 Bind data in vinyl hard covered, 3 ring loose leaf binder for 215 x 280 mm size paper.

.2 Enclose title sheet, labeled "Operation Data and Maintenance Manual", project name, date and list of contents.

.3 Organize contents into applicable sections of work to parallel project’s specification break-down. Mark each section by labeled tabs protected with celluloid covers fastened to hard paper dividing sheets.

.2 Include following information, plus data specified.

.1 Maintenance instruction for finished surface and materials.

.2 Copy of hardware and paint schedules.

.3 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, serial number.

.4 Names, addresses and phone numbers of sub-contractors and suppliers.

.5 Guarantees, Warranties and bonds showing:

.1 Name and address of project.

.2 Guarantee commencement date (date of Final Certificate of Completion).

.3 Duration of guarantee.

.4 Clear indication of what is being guaranteed and what remedial action will be taken under guarantee.

.5 Signature and seal of Contractor.

.6 Additional material used in project listed under various Sections showing name of manufacturer and source of supply.

.3 Neatly type lists and notes. Use clear drawings, diagrams or manufacturers' literature.

.4 Include one complete set of final shop drawings (bound separately) indicating corrections and changes made during fabrication and installation.

1.12 STORAGE, HANDLING AND PROTECTION

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

.3 Store components subject to damage from weather in weatherproof enclosures.

.4 Store paints and freezable materials in a heated and ventilated room.

.5 Remove and replace damaged products at own expense and to satisfaction of Consultant.

1.13 WARRANTIES AND BONDS

.1 Refer to Section 00 21 13 ‘Instructions to Bidders’ for bonding requirements for this project, both at the time of tender submission and throughout the duration of the construction period.

.2 Refer to CCDC-2 2020 Contract for Warranty requirements and conditions for the standard warranty which is required for the work of this contract.

.3 Extended warranties are required to be issued by manufacturers, fabricators, suppliers and/or installers, sometimes jointly, due to their unique position in the construction process and their ability to guarantee a particular section of work. Refer to individual requirements of extended warranties requested as well as Section 01 11 00 article 1.33.

.4 Unless specifically noted otherwise, all extended warranties shall commence on the date of Substantial Performance of the Work as certified by the Consultant.

.5 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.6 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal. Use Guarantee/Warranty Form as provided in Section 017810 Sample Guarantee/Warranty Form, whenever standard preprinted trade or manufacturer's Guarantee/Warranty forms are not available. Provide written form for each warranty specified in Section 01 11 00 Summary of Work, Article 1.33.

.7 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work.

.8 Date at beginning of time of warranty start shall be Date of Substantial Performance.

.9 Verify that documents are in proper form, contain full information, and are notarized.

.10 Co-execute submittals when required.

.11 Retain warranties and bonds until time specified for submittal.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

1. GENERAL

1. To be made out on the letterhead of Guarantor or Warrantor which usually is a Subcontractor.

2. This format is to be used only when standard preprinted trade or manufacturer's forms are not available. Preprinted forms are to include all elements of information shown on this sample or as a minimum.

3. Comply with Requirements for Guarantee/Warranty as specified in Section 01 78 10, Closeout Submittals.

To: HALTON DISTRICT SCHOOL BOARD
J.W. Singleton Centre
2050 Guelph Line
Burlington, Ontario
L7R 3Z2

Date: _____

SECTION _____

TITLE _____

GUARANTEE/WARRANTY TO:

OWNER	The Halton District School Board
PROJECT	Oakville #5 Public School 3490 Preserve Drive Oakville, Ontario
ARCHITECT	Hossack & Associates Architects
REFERENCE	(to specifications or drawings)
TIME	Period of Guarantee/Warranty:_____ years
GUARANTEE/ WARRANTY	Starting Date: Substantial Performance as certified by Consultant Date: _____

(Description of Guarantee/Warranty)

_____

_____

_____

Upon written notification from the Owner or the Consultant that the above work is defective any repair or replacement work required shall be to the Consultant's satisfaction at no cost to the Owner.

This guarantee shall not apply to defects caused by the work of others, maltreatment of materials, negligence or Acts of God.

SUBCONTRACTOR

_____ _____
Signature Date

Authorized Signing Officer:

_____
(Name Printed)

_____
Title

Name of Firm: _____

Address: _____

Telephone Number _____

CONTRACTOR

_____ _____
Signature Date

Authorized Signing Officer:

_____ _____
(Name Printed)

_____
Title

Name of Firm: _____ SEAL

Address: _____

Telephone Number _____

END OF SECTION

Part 1 General

1.1 QUALITY ASSURANCE

.1 This Section includes parameters for the general design and performance for the work of Sections which comprise the building envelope including but not limited to, masonry cavity walls, metal cladding, soffits, windows, entrances and roofing.

.2 Performance of the building envelope shall be guaranteed by the Contractor.

1.2 DESIGN

.1 General: Design and engineer as required, fabricate, erect, and/or install building envelope in compliance with the Ontario Building Code, other regulations and requirements of authorities having jurisdiction.

.2 Take into account construction tolerance limitations, creepage, deflection and other movements of the structure.

.3 Accommodate, by means of expansion and contraction provisions, any movement in the building envelope assemblies themselves and between the assemblies and the building structure. Allow for expansion and contraction of components caused by ambient temperature range, surface temperature variation of components, wind, seismic forces, structural deflection and racking; without causing misalignment of joints, breakage of joints and air/vapour barriers, water and air penetration through the assembly, glass breakage, or other defects detrimental to appearance or performance.

.4 Method of attachment to the structure shall take into account site peculiarities so that site and air vibrations or normal temperature movements of the building do not loosen, weaken and/or fracture the connection between building envelope assembly components and the structure or between the components themselves.

.5 Reinforce building envelope assembly components, as required, so that the members can safely sustain design loads.

.6 Assemble and secure assemblies in manner which will keep stresses on sealants within the sealant manufacturer's recommended maximum performance levels.

.7 Rain Screen Principle: Except where detailed otherwise, construct building envelope assemblies based on the "Rain Screen" principle as advocated by the National Research Council of Canada. All voids between the assembly components as well as those between components and the structure shall have:

.1 Gaskets, baffles, overlaps, seals and compartmentalization as required providing a barrier "Rain Screen" to effectively prevent excessive rain water entry into any of the building envelope cavities but to allow pressure equalization of cavity air spaces.

.2 air barriers and seals are required to prevent entry of interior building air into building envelope cavities, and exterior air into the building. Air barriers and seals shall be able to withstand wind design pressures.

.3 such provisions in the form of openings between cavities and the building exterior of sufficient cross sections to provide adequate pressure equalization. All openings shall be effectively baffled against direct rain water entry. Air spaces shall be baffled and compartmentalized to prevent chimney effect within the air spaces vertically and horizontally.

.4 Thermal separators, isolators and seals placed to eliminate contact between interior humid air and a cold surface or structural component to prevent condensation and ice build-up on such surfaces during cold weather.

1.3 WATER, VAPOUR AND MOISTURE

.1 Comply with the design and performance requirements specified in the building code, and as specified herein, including the following principles:

.2 Drain to the exterior face of the assembly, any water entering at joints and any condensation occurring within the building envelope assembly.

.3 Design, fabricate and install the assembly to be watertight to the interior under the interior and exterior design conditions in combination with movements occurring due to loads imposed.

.4 At design conditions no water penetration to the building interior side of the assembly shall occur.

.5 The requirements for an air barrier and a vapour barrier are intended to be provided at the same plane in the building envelope design unless otherwise indicated or specified. In such cases, the Drawings and Specifications refer to "air/vapour barrier". The definition of the air/vapour barrier for the purpose of these Specifications is "a continuous membrane including joints of membrane between components and to adjacent construction which prevents or retards penetration of moisture laden air and the diffusion of water vapour through it".

.6 The maximum water vapour transmission of all components forming the vapour barrier shall be (1.72 ng/Pa x s x sq.m.) (0.3 Imperial Perms) unless specified otherwise.

.7 At design conditions no condensation shall occur on room side surfaces.

.8 Sound: Provide completed installations free from vibrations, wind whistles and noise due to thermal and structural movement and wind pressure.

.9 Seismic: Fabricate and erect cladding assemblies to prevent damage due to earthquake forces as required by The Ontario Building Code. Also refer to *Section 01 11 00 – 'Summary of Work, article 1.10, Seismic Design Requirements'*.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 General Requirements

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

1.2 Work in Other Sections

.1 Related Work Specified in Other Sections

Section 03 20 00	:	Concrete Reinforcement
Section 03 30 00	:	Cast-in-Place Concrete
Division 31	:	Earthwork

1.3 Reference Standards

CSA-A23.1-19: Concrete Materials and Methods of Concrete Construction
CSA-A23.2-19: Test Methods and Standard Practices for Concrete
CSA S269.1-16 (R2021): Falsework and Formwork for Construction Purposes

1.4 Co-ordination

.1 Install anchors, sleeves, bolts, inserts, drains, expansion joint components and other items supplied under other sections of the specifications required to be built into, anchored to, or passing through concrete work, in co-ordination with the other trades.

.2 Supply templates for setting all anchorages required for the buildings and shelters.

1.5 Design of Formwork

.1 Assume full responsibility for the complete structural design and construction of formwork including shoring and bracing to resist vertical and horizontal loads due to the weight of wet concrete, self weight of forms, wind, fluid pressure of concrete, and other forces arising from equipment used in placing the concrete.

1.6 Waste Management and Disposal

.1 Place materials defined as hazardous or toxic waste in designated containers.

.2 Ensure emptied containers are sealed and stored safely for disposal away from children.

.3 Use sealers, form release and stripping agents that are non-toxic, biodegradable and have zero or low VOC's.

PART 2 - PRODUCTS

2.1 Materials

.1 Formwork Lumber: Plywood and wood formwork materials to CAN/CSA-A23.1/A23.2. Formwork materials used on site shall be new and acceptable to the Consultant, prior to erection. Panels shall be fabricated for use as form panels, finished one side, with sealed edges and a minimum thickness of 19mm. Panels shall be smooth and free from defects which would show up on concrete surfaces exposed to view.

.2 Formwork Liner: Plastic laminate, vinyl, polyethylene, neoprene or approved products new and acceptable to the Consultant to provide the surface texture and forms required for the design as shown.

.3 Form Coating: Formaseal as manufactured by Master Builders for wood forms and as recommended by manufacturer for form liner.

.4 Form stripping agent: CPD colourless non-staining odourless or as recommended by manufacturer of form liner.

.5 Joint Tape: non staining, water impermeable, self releasing, where required.

.6 Form ties: removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm dia. in concrete surface, and not leaving metal closer than 25 mm to the surface of the concrete for walls. Snap tie length shall suit wall thickness as noted on drawings.

.7 Tie Hole Plugs: 25mm dia. tapered PVC hole plugs to be provided on all exposed walls.

.8 Form Ties/Supports: External clamping devices to retain form tight, uniform and easily removable around all columns.

PART 3 - EXECUTION

3.1 Erection

.1 Verify lines, levels and column centres before proceeding with formwork and ensure dimensions agree with drawings.

.2 Construct forms to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CAN/CSA-A23.1-19, and to produce acceptable finish where exposed.

.3 Construct falsework in accordance with CSA S269.1-19.

.4 Obtain approval from soils testing engineer for bearing surfaces prior to erection of forms.

.5 Obtain Consultant's approval for use of earth forms.

.6 Hand trim sides and bottoms and remove loose earth from earth forms before placing

concrete.

.7 Align form joints and make watertight. Keep form joints to minimum.

.8 Use (25) mm chamfer strips on external corners of beams, joints, columns, walls etc., exposed to view.

.9 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.

.10 Provide blocking and anchorage for hollow metal frames set to be cast into forms.

.11 Clean formwork in accordance with CAN/CSA-A23.1-19 before placing concrete.

.12 Forms shall remain in place for a minimum duration of 48 hours for footings, curbs, etc. and all other non-self-supporting structural components.

.13 Forms shall remain in place for a minimum of 72 hours for all columns.

.14 Re-use of formwork and falsework subject to requirements of CAN/CSA-A23.1-19.

.15 Be responsible for the safety of the structure, both before and after the removal of forms, until the concrete has reached its specified 28 day strength.

.16 When forms are stripped during the curing period, cure and protect the exposed concrete in accordance with Section 03 30 00.

.17 Movement and displacement of formwork during construction, variations in excess of specified tolerances and marked and disfigured surfaces that cannot be repaired by specified methods will be considered defective work performed by this Section.

.18 Reconstruct defective formwork and replace concrete and reinforcement placed in defective formwork at no additional cost to the Owner.

END OF SECTION 03 10 00

PART 1 - GENERAL

1.1 General Requirements

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

1.2 Work in Other Sections

.1 Related Work Specified in Other Sections
Section 03 10 00 : Concrete Formwork & Accessories
Section 03 30 00 : Cast-in-Place Concrete

1.3 Reference Standards

CSA-A23.1-19: Concrete Materials and Methods of Concrete Construction
CSA-A23.2-19: Test Methods and Standard Practices for Concrete
CSA A23.3-19: Design of Concrete Structures
CSA G30.18-09 (R2019): Carbon Steel Bars for Concrete Reinforcement
ACI 315-2004 (SP66): Detailing Manual 2014
ACI 315R-04: Manual of Structural and Placing Drawings for Reinforced Concrete Structures
CSA-W186-M1990 (R2016): Welding of Reinforcing Bars in Reinforced Concrete Construction

1.4 Shop Drawings

.1 Submit shop drawings in accordance with Section 01 30 00.

.2 Indicate bar sizes, spacing, location and quantities of reinforcement, mesh, mechanical splices, chairs, spacers and hangers with identifying code marks to permit correct placement without reference to structural drawings; (to Reinforcing Steel Manual of Standard Practice - Metric Supplement 2004 by Reinforcing Steel Institute of Ontario).

.3 Detail placement of reinforcing where special conditions occur.

.4 Design and detail lap lengths and bar development lengths to CSA-A23.3, unless otherwise indicated.

1.5 Substitutes

.1 Substitution of different size bars permitted only upon written approval of the Consultant.

PART 2 - PRODUCTS

2.1 Materials

.1 Reinforcing Steel: billet steel, deformed bars to CAN/CSA G30.18-09 epoxy coated, unless indicated otherwise. Use Grade 400R bars for all reinforcing unless noted otherwise, to sizes as shown on the drawings.

.2 Welded Wire Fabrics: Where no reinforcement is shown, provide 152 x 152 MW 18.7 x MW 18.7 (6" x 6" x 6/6) welded wire fabric at 37mm (1½ ") below the finished surface of slabs on grade or walks, or toppings 62mm (2½") in thickness or greater. Lap ends and sides of fabric in accordance with requirements of CSA Standard CAN/CSA-A23.1, but in any event, not less than 300mm (12").

PART 3 – EXECUTION

3.1 Fabrication

.1 Fabricate reinforcing in accordance with CSA-A23.1.

.2 Obtain Consultant's approval for locations of reinforcement splices other than shown on steel placing drawings.

.3 Ship bundles of bar reinforcement, clearly identified in accordance with bar list.

3.2 Storage of Reinforcing

.1 Reinforcing shall be stored off the ground to keep it free from dirt and to maintain its fabricated form.

3.3 Field Bending

.1 Do not field bend reinforcement except where indicated or authorized by the Consultant.

.2 When field bending is authorized, bend without heat, applying a slow and steady pressure.

.3 Replace bars which develop cracks or splits.

3.4 Placing

.1 Place reinforcing steel as indicated on reviewed shop drawings and in accordance with CSA-A23.1.

.2 Obtain Engineer's approval of reinforcing steel and position.

.3 Locate reinforcing bars to provide proper concrete cover. Reinforcing cover will be carefully inspected by the Consultant, and reinforcing with inadequate cover will not be acceptable.

.4 Fold all the wires behind bars, away from form faces.

.5 Modify bars on site to accommodate box-outs, inserts, etc., as directed by the Consultant.

3.5 Field Cutting of Reinforcing

.1 Field cut reinforcing bars only where permitted by the Consultant.

END OF SECTION 03 20 00

PART 1 - GENERAL

1.1 General Requirements

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

1.2 Work in Other Sections

.1 Related Work Specified in Other Sections

Section 03 10 00	:	Concrete Formwork & Accessories
Section 03 20 00	:	Concrete Reinforcing
Section 04 20 00	:	Unit Masonry
Section 05 10 00	:	Structural Metal Framing
Section 05 50 00	:	Miscellaneous Metal
Section 06 10 11	:	Rough Carpentry
Division 15	:	Mechanical
Division 16	:	Electrical
Division 31	:	Earthwork
Division 33	:	Utilities

1.3 Reference Standards

CSA-A23.1-19 – Concrete Materials and Methods of Concrete Construction
CSA A23.2-19 – Test Methods and Standard Practices for Concrete
CSA G30.18-09 (R2019): Carbon steel bars for concrete reinforcement
ASTM A820/A820M-16, Standard Specification for Steel Fibres for Fibre Reinforced Concrete

1.4 Samples

.1 At least (3) weeks prior to commencing work, inform the Consultant of the proposed mix design and proposed source of ready mixed concrete.

.2 A sample of the finishes shall be prepared and remain as the minimum acceptable standard for the project.

1.5 Certificates

.1 Provide certification that plant, equipment, and materials to be used in concrete comply with requirements of CSA-A23.1.

.2 Provide certification that mix proportions selected will produce concrete of specified quality and yield and that strength will comply with CSA-A23.1.

1.6 Quality Assurance

.1 The Contractor shall employ an independent inspection and testing company to carry out all testing and inspection as required. The Consultant will appoint the inspection and testing company. The cost of inspection and testing shall be paid by the Contractor, out of the Cash Allowance carried for this testing under Division 1.

.2 Samples and methods of moulding shall conform to the requirements of CSA-A23.2.

.3 Additional testing shall be made if there is a distinct change in job conditions or if required by the Consultant or the authority having jurisdiction.

.4 Compression tests shall be performed in accordance with CSA-A23.2 and good practice.

.5 Failure to meet strength requirements will result in rejection of materials, strengthening or replacement of those portions that failed to develop the specified strength.

.6 Concrete slump shall be tested at time that cylinders are cast and at such other times deemed necessary.

.7 The addition of water and admixtures on the site is hereby prohibited and unacceptable for the project.

1.7 **Submittals**

.1 Submit shop drawings in accordance with Section 01 30 00 Submittals.

1.8 **Waste Management And Disposal**

.1 Designate a cleaning area for tools to limit water use and runoff.

.2 Carefully coordinate the specified concrete work with weather conditions.

.3 Ensure emptied containers are sealed and stored safely for disposal away from children.

.4 Prevent plasticizers, water-reducing agents and air-entraining agents from entering drinking water supplies or streams. Using appropriate safety precautions, collect liquid or solidify liquid with an inert, non-combustible material and remove for disposal. Dispose of all waste in accordance with applicable local, provincial and national regulations.

.5 Choose least harmful, appropriate cleaning method which will perform adequately.

PART 2 – PRODUCTS

2.1 **Materials**

.1 Formwork: As specified in Section 03 10 00.

.2 Formwork Lumber:

.1 Plywood and wood formwork materials to CSA-A23.1. Formwork materials brought on site shall be new.

.2 Panels shall be fabricated for use as form panels, finished one side with form coating, with sealed edges and a minimum thickness of 17mm.

.3 Panels shall be smooth and free from defects which would show up on concrete surfaces exposed to view.

.4 Form Coating: Formaseal, as manufactured by Sternson Construction Products.

.5 Joint Tape: Non-staining, water impermeable, self-releasing.

.6 Form Ties: Removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25mm diameter in concrete surface, and not leaving metal closer than 25mm to the surface of the concrete.

.7 Tie Hole Plugs: 25mm dia. tapered P.V.C. hole plugs.

.8 Reinforcing Steel: As specified in Section 03 20 00.

.9 Reinforcing Steel: Billet steel, grade 400R, deformed bars to CAN/CSA-G30.18-09 to sizes shown on structural drawings. Where none is shown, provide 15M bars at 300mm centres as minimum steel.

.10 Wire Mesh: Welded Wire Fabric to sizes and locations shown on drawings. Where none is shown, provide 152x152xMW18.7xMW18.7 W.W.F. one layer as minimum.

.11 Water: to CSA-A23.1.

.12 Aggregates: To CSA-A23.1. Coarse aggregates to be normal density. Use blend of 10mm and 20mm for coloured patterned concrete slabs.

.13 Colour Admixtures: Integral coloured pigments to C-979-86. Two (2) colours to be selected by Consultants from manufacturer's standard range.

.14 Non-Shrink Grout: Sternson M-Bed Superflow or approved equal.

.15 Floor Hardener: Surflex TR trap rock hardener, shake on, by Euclid Chemical Company. Application rate of 5kg/m^2 (1.0 lb/ft^2).

.16 Interior Cure and Seal Compound: Interior slabs shall be W. R. Meadows "Intex". No resin-based compounds will be accepted.

.17 Exterior Cure and Seal Compound: Exterior concrete slabs and gutters shall be W. R. Meadows "Sealtight CS-309".

.18 Expansion Joint Filler: Shall be Sealtight asphalt expansion joint filler, W. R. Meadows.

.19 Joint and Sawcut Filler: Shall be Loadflex by Sika or Jointflex by CPD.

.20 Joint Tape: Shall be Sealtight Gusset Tape by W. R. Meadows.

.21 Premoulded Membrane: Shall be Sealtight 7100-312 (PMPC), W. R. Meadows.

2.2 **Concrete Mixes**

.1 Proportion normal density concrete in accordance with CSA A23.1, to give following properties for concrete in footings, interior foundation walls, interior piers, interior slabs-on-grade, and any other unspecified concrete:

.1 Cement: Type GU Portland cement, minimum 325 kg/m^3

.2 Maximum 25% slag cement content

.3 Minimum compressive strength at 28 days: 25 MPa type N

.4 Nominal size of coarse aggregate: 20 mm.

.5 Slump at time and point of discharge: 50 to 100 mm.

.6 Air content: 0 to 3%.

.2 Proportion normal density concrete in accordance with CSA-A23.1, to give following properties: for concrete in exterior slabs-on-grade and sidewalks:

.1 Cement: Type GU Portland cement, minimum 325 kg/m^3

.2 Maximum 25% slag cement content

.3 Minimum compressive strength at 28 days: 32 MPa type C2.

.4 Nominal size of coarse aggregate: 20 mm.

.5 Slump at time and point of discharge: 60 to 100 mm.

.6 Air content: 5 - 8% maximum.

.3 Proportion normal density concrete in accordance with CSA-A23.1, to give following properties: for concrete in precast concrete toppings and composite deck toppings:

.1 Cement: Type GU Portland cement, minimum 275 kg/m^3

.2 Maximum 25% slag cement content

.3 Minimum compressive strength at 28 days: 25 MPa type N.

.4 Nominal size of coarse aggregate: 10 mm.

.5 Slump at time and point of discharge: 60 to 100 mm.

.6 Air content: 0 - 3% maximum.

.4 Proportion normal density concrete in accordance with CSA-A23.1, to give following properties: for concrete in exterior piers:

.1 Cement: Type GU Portland cement, minimum 275 kg/m^3

.2 Maximum 25% slag cement content

.3 Minimum compressive strength at 28 days: 32 MPa type F2.

.4 Class of exposure: C-2.

.5 Nominal size of coarse aggregate: 20 mm.

.6 Slump at time and point of discharge: 60 to 100 mm.

.7 Air content: 5 to 8%.

.5 Proportion normal density concrete in accordance with CSA-A23.1, to give following properties: for concrete in grouted masonry blocks:

.1 Cement: Type GU Portland cement, minimum 275 kg/m^3

.2 Maximum 25% slag cement content

.3 Minimum compressive strength at 28 days: 20 MPa type N.

.4 Nominal size of coarse aggregate: 10 mm.

.5 Slump at time and point of discharge: 50 to 100 mm.

.6 Air content: 0 - 3% maximum.

.6 Proportion normal density concrete in accordance with CSA-A23.1 to give following properties: for concrete fill.

.1 Cement: Type GU Portland cement, minimum 250 kg/m^3

.2 Maximum 25% slag cement content

.3 Minimum compressive strength at 28 days: 10 MPa type N.

.4 Nominal size of coarse aggregate: 20 mm.

.5 Slump at time and point of discharge: 100 mm.

.6 Air content: 0 - 4% maximum.

.7 Do not change job mix formula without prior approval of the Consultant.

.8 In addition to 28 day strength tests, 7 days test may be carried out. If average strength at 7 days is less then 70% of specified 28 day strength, check mix at once and adjust to ensure required

strength is obtained.

PART 3 - EXECUTION

3.1 Workmanship

.1 All concrete shall be as set forth in CSA-A23.1 and shall be composed of cement, fine and coarse aggregates and water.

.2 Concrete shall be delivered and discharged within 1½ hours after the introduction of the mixing water at the batch plant.

.3 Mixing, placing, compaction, curing, hot and cold weather protection shall conform to CSA-A23.1. Use power vibrators in sufficient number and in location and duration to the Consultant's complete satisfaction as required.

.4 Obtain the Consultant's approval before placing concrete. Provide 24 hour notice prior to placing of concrete.

.5 Pumping of concrete is permitted only after approval of equipment and mix.

.6 Ensure reinforcement and inserts are not disturbed during concrete placement in order to maintain proper coverage.

.7 Prior to placing of concrete obtain the Consultant's approval of proposed method for protection of concrete during placing and curing in adverse weather.

.8 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.

.9 Do not place load upon new concrete until authorized by the Consultant.

3.2 Formwork

.1 Verify lines, levels and column centres before proceeding with formwork and ensure dimensions agree with drawings.

.2 Construct forms to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CSA-A23.1.

.3 Align form joints and make watertight. Keep form joints to minimum.

.4 Use 25mm chamfer strips on all vertical and horizontal corners of exterior retaining walls as indicated on drawings.

.5 All surfaces of formwork which face concrete, which will be exposed to view are to be coated with protective form coating to minimize transfer of wood grain to finished concrete.

.6 Clean formwork in accordance with CSA-A23.1 before placing concrete.

.7 Re-use of formwork is subject to requirements of CSA-A23.1.

.8 When forms are stripped during the curing period, cure and protect the exposed concrete.

.9 Movement and displacement of formwork during construction, variations in excess of specified tolerances and marked and disfigured surfaces that cannot be repaired by specified methods will be considered defective work performed by this Section.

.10 Reconstruct defective formwork and replace concrete and reinforcement placed in defective formwork at no additional cost to the Owner.

3.3 **Inserts**

.1 Co-ordinate and verify that the Electrical Contractor has set all ducts, boxes and other inserts and openings as indicated or specified elsewhere. Sleeves and openings greater than 100 x 100 mm not indicated on structural or civil drawings must be approved by the Consultant.

.2 Co-ordinate and verify that the Mechanical Contractor has set all floor drains, cleanouts, trench drains to provide a smooth, flush appearance with the **'FINISHED FLOOR SURFACE'** and to ensure a positive and uniform slope towards the drains.

.3 Do not eliminate or displace reinforcement to accommodate inserts or hardware. If inserts cannot be located as specified, obtain approval of all modifications from the Consultant before placing of concrete.

.4 Set anchor bolts to templates under supervision of appropriate trade prior to placing concrete. With the Consultant's approval, grout anchor bolts in preformed holes or holes drilled after concrete has set. Formed holes to be at least 100 mm in diameter. Drilled holes to be minimum 25 mm larger in diameter than bolts used. Protect anchor bolt holes from water accumulations. Set bolts and fill holes with non-shrink grout or epoxy (as noted on drawings).

.5 Set hollow metal frames, plumbed, squared and braced with blocking in locations shown on drawings.

3.4 **Grouting**

.1 Grout underside of steel column bearing plates with non-shrinking grout to manufacturer's instructions. Place grout to cover steel shims left in place.

3.5 **Finishing**

.1 Finish all concrete surfaces in accordance with architectural and flooring requirements.

3.6 **Expansion Control**

.1 Expansion Joints: Install expansion joint material between slabs on grade and masonry walls, for interior slabs and at max. 6000mm spacing for exterior slabs and curbs, and between slabs on grade and concrete curbs.

.2 Control Joints: Sawcut control joints at a maximum spacing of 3000mm in each direction and where noted on drawings. Cut joints within 24 hours of placing and to a depth as detailed on

drawings.

3.7 **Precast Concrete Slab Toppings**

.1 Install structurally bonded 50 ± thick precast slab toppings as detailed on structural drawings.

.2 Bond concrete topping to precast concrete slabs via latex modified bonding agent installed in strict compliance with manufacturer's recommendations.

.3 Finish concrete toppings true, level, and smooth via power float and power trowel unless indicated otherwise.

.4 Provide depressions and roughened surfaces in designated areas as required to accommodate special floor finishes.

3.8 **Water/Vapour Control**

.1 Butt joints tight together and tight to foundation wall. Seal all joints with gusset tape including foundation wall junctions.

.2 Protect during placing of concrete to ensure the integrity of the barrier is maintained. Repair immediately any penetrations or areas damaged in accordance with the manufacturer's recommendations.

3.9 **Curing and Protection**

.1 Cure and protect newly finished slabs and steps in accordance with CSA A23.1.

.2 Coat exterior slabs, curbs with curing compound and leave for 30 days. Apply sealer after curing period has expired.

.3 Cure finished concrete surfaces in a manner which will leave the surface with a uniform appearance and with a minimum of discolouration after drying. Ensure that curing compounds are compatible with adhesives for finishes to be applied later.

.4 For all concrete slabs that are to remain exposed, curing compound is to be applied at a rate required for use as a sealer/hardener, in accordance with the manufacturer's instructions.

3.10 **Field Quality Control**

.1 Inspection and testing of concrete and concrete materials will be carried out by a Testing Laboratory designated by the Consultant in accordance with CSA-A23.1.

.2 The Consultant will take additional test cylinders during cold weather concreting. Cure cylinders on job site under same conditions as concrete which they represent.

.3 Inspection or testing by Consultant will not augment or replace contractor quality control nor relieve him of his contractual responsibility.

3.11 **Tolerances**

.1 Cast-in-Place concrete shall be constructed within the dimensional tolerances specified in CSA-A23.1, as specified elsewhere in this section. Concrete floor slabs shall be constructed as moderately flat slabs and within the tolerances listed below.

.2 Conform in line, level and plumbness to the following tolerances. These are maximum values.

.3 Variation from vertical, in lines and surfaces of walls piers:

:	In height of 3m (10')	-	6mm (1/4")

.4 Variation from level or from grades shown in floors grade:

:	In any 3m (10')	-	3mm (1/8")
:	In any bay up to 6m (20')	-	6mm (1/4")
:	In any 12m (40')	-	12mm (1/2")

.5 Variation from straight or from correct position in walls:

:	In length up to 6m (20')	-	12mm (1/2")
:	In any 12m (40')	-	12mm (1/2")

.6 Variation in size and location of sleeves, floor open and the like and in location of bolts, inserts and fastenings:

:		-	6mm (1/4")

.7 Variation in location of bolts, inserts, sleeves and fastenings when in group:

:		-	3mm (1/8")

.8 Variation in cross-section of slabs, walls and piers:

:	Maximum oversize	-	12mm (1/2")
:	Maximum undersize	-	6mm (1/4")

.9 There shall be no variations from required level at junction of walls and floors.

.10 Where drains occur, floors shall be properly and uniformly sloped to allow complete drainage of the area.

3.12 **Duct Bank (Interior)**

.1 Excavate to elevations shown and form duct bank as shown on electrical drawings.

.2 Place reinforcing steel as shown. Electrical Contractor to place ducts.

.3 Place coloured concrete and finish top surface with wood float.

3.13 **Defective Concrete**

.1 Concrete is defective when:

.1 Containing visible honeycombing or embedded debris.

.2 Concrete damaged by freezing or which is unsatisfactory due to placement at too high a temperature.

.3 Average 28 day strength of any three consecutive strength tests is less than specified minimum 28 day strength.

.4 Any 28 day strength test result in less than 88% of specified minimum 28 day strength.

.5 Cracking occurs in locations other than at control and construction joints.

.6 Curing is not carried out strictly according to the specifications.

.2 Remove and reconstruct in entirety any defective concrete footing, slabs, walls as directed by the Consultant.

Cold Weather Protection

.1 Refer to CSA Standards CSA-A23.1 and CSA-A23.2 Provisions and Publications. Include for tarped heated enclosures - no non-freeze additives such as calcium will be tolerated on this project.

END OF SECTION 03 30 00

Part 1 General

1.1 SECTION INCLUDES

.1 Materials and installation for concrete floor hardeners, slip resistant coatings, and sheet curing materials.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 51 00 - Temporary Utilities.

.3 Section 03 33 00 – Cast-in-Place Concrete.

1.3 REFERENCE STANDARDS

.1 Health Canada - Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.2 CSA-A23.1-09: Concrete Materials and Methods of Concrete Construction

1.4 SUBMITTALS

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section [02 61 33 - Hazardous Materials].

.1 WHMIS MSDS acceptable to Human Resources Development Canada-Labour and Health Canada for concrete floor hardeners.

.2 Indicate VOC content.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal [paper] [plastic] [polystyrene] [corrugated cardboard] packaging material [in appropriate on-site bins] for recycling.

.3 Dispose of unused chemical additive materials at an official hazardous materials collections site approved by Consultant.

.4 Unused chemical additive materials must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.

.5 Fold up metal banding, flatten and place in designated area for recycling.

.6 Dispose of unused chemical additive materials at an official hazardous materials collections site approved by Consultant.

1.6 ENVIRONMENTAL REQUIREMENTS

.1 Temporary lighting

.1 Minimum 1200 W light source, placed 2.5 m above floor surface, for each 40 m^2 of floor being finished.

.2 Electrical power

.1 Sufficient electrical power to operate equipment normally used during construction.

.3 Work area

.1 Water tight protection against rain and detrimental weather conditions.

.4 Temperature

.1 Maintain ambient temperature of not less than [10] degrees C from [7] days before installation to at least 48 hours after completion of Work and maintain relative humidity not higher than 40% during same period.

.2 Maintain substrate temperature at [10] degrees C minimum.

.5 Moisture:

.1 Ensure concrete substrate is within moisture limits prescribed by [flooring] manufacturer.

.6 Safety:

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.

.7 Ventilation:

.1 Ventilate area of work as directed by Consultant by use of approved portable supply and exhaust fans.

.2 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities.

.3 Provide continuous ventilation during and after coating application.

.4 Sufficient to prevent carbon monoxide or high levels of carbon dioxide and other injurious gases from affecting concrete.

1.7 SCOPE OF WORK

.1 Provide liquid hardener at all concrete exposed slab-on-grade areas where exposed concrete is indicated on architectural drawings or in room finish schedule.

Part 2 Products

2.1 FLOOR HARDENER

.1 Where concrete curing agent/sealer/hardener is specified on drawings, provide Shur-Seal as manufactured by Paul M. Wolff Co. Inc. (714) 974-0630, Sure Hard manufactured by Dayton Superior’s Canada ltd or Liqui-Hard by W.R. Meadows.

Part 3 Execution

3.1 EXAMINATION

.1 Examine area and conditions under which the work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work and which do not conform to manufacturer's recommendations. Do not proceed until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

.1 On freshly painted concrete surfaces, no additional surface preparation will be required.

.2 On areas where forms are recently removed, remove all form oil and breaking compound residue to assure penetration of the product into the surface.

.3 When applying near windows, mask the glass.

.4 Avoid contact with plant life, glass, aluminum, and other finished surfaces. Where contact occurs, immediately wipe with a damp cloth or flush with water.

.5 Avoid contact with asphaltic concrete.

.6 On previously sealed existing concrete floors, completely strip floor of sealers and contaminants prior to application. Apply as for freshly painted surfaces.

3.3 APPLICATION REQUIREMENTS

.1 Two applications are required. The first application at 200 ft□/gallon as the curing agent at the time of concrete placement. The second application at 400 ft□/gallon as final coat after final cleaning of the concrete.

3.4 APPLICATION

.1 Curing Application:

.1 Application should be made immediately following the final concrete finishing operation as soon as the concrete is firm enough to work on. This will help prevent temperature and hairline cracking.

.2 Application shall be made with low pressure spray. All concrete surfaces shall be kept wet for 30-45 minutes.

.3 After this period, when the treated surfaces become slippery under foot, lightly sprinkle the surfaces with water to aid penetration.

3.5 FINISH APPLICATION

.1 Apply sealer with low pressure sprayer at 400 ft^2/gallon coverage rate.

.2 Lambs wool or fine bristle broom the sealer evenly across the concrete surface. Do not allow pudding.

.3 Allow sealer to dry into the surface after 30 minutes.

.4 Keep standing water off concrete surface for 30 days. Do not wet scrub for 30 days.

END OF SECTION

PART 1 - GENERAL

1.1 General Requirements

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

1.2 Work in Other Sections

.1 Related Work Specified in Other Sections

Section 03 10 00	:	Concrete Formwork & Accessories
Section 03 30 00	:	Cast-in-Place Concrete
Section 04 20 00	:	Unit Masonry
Section 05 10 00	:	Structural Steel Framing
Section 07 84 00	:	Fire Stopping
Section 07 92 10	:	Joint Sealing
Section 09 65 16	:	Resilient Sheet Flooring
Section 09 68 00	:	Carpeting
Section 09 91 22	:	Painting

1.3 Qualification

.1 The work of this Section shall be carried out by an established concrete precasting company having a proven record of satisfactory workmanship for a period of at least 5 years prior to this contract and approved by the Consultant.

1.4 Scope of Work

.1 Supply all materials, labour and service to provide acceptable finished precast concrete floors, where indicated on the structural drawings.

1.5 Reference Standards

.1 Perform work of this Section to meet specified requirements of C.S.A. Standard CSA-A23.1-19, Concrete Materials and Methods of Concrete Construction.

.2 Additionally perform work of this Section to meet specified requirements of CSA-A23.4-19, Prestressed Concrete.

.3 Concrete shall have a minimum compressive strength of 25 MPa at transfer and 40 MPa at 28 days.

.4 Precast slabs shall be manufactured by an extrusion process using smooth rigid steel forms and cut to length as required on the project.

1.6 **System Description**

.1 Structural Requirements: Fabricate slabs to support dead loads, and live loads as indicated on Drawings, with maximum deflections of

: 1/360 of the span where ceilings are suspended from the slabs.

: 1/240 of the span where ceilings are not suspended from the slabs.

.2 Tolerances: Ensure that subfloor surfaces under finish flooring are levelled by filling compound or other means to within 3.2mm under a 3m long straightedge and within a maximum variation of 1.5mm in any running 300mm.

.3 Designer Qualifications: Design and supervise fabrication of precast concrete slabs specified in this Section by professional engineers licensed to practice at the place of building.

1.7 **Requirements of Regulatory Agencies**

.1 Fabricate precast concrete slabs that are validated by ULI, ULC or NRC tests for fire-protection or fire-resistance ratings in complete accordance with the test design specification. Precast concrete slabs provided otherwise, and which require a fire rating, will be approved only on presentation of affidavits that it is acceptable to the authorities having jurisdiction.

1.8 **Inspection Services**

.1 Submit affidavits that precast concrete slabs have been fabricated to meet requirements of the Specifications. Include copies of mill tests of reinforcement incorporated, and compression test results of tests made for each 38 cu.m, or part, of concrete.

1.9 **Submittals**

.1 Design Data: Submit, with shop drawings, calculations pertaining to the design of slabs including reinforcement, anchorage, connections and estimated camber, and in the same manner as for shop drawings.

.2 Submit shop and erection drawings.

.3 Include documentation of manufacturing procedures including means of checking strand slippage, concrete strength at time of detensioning, and methods used to determine slippage and concrete strength.

.4 Affix the seal of the engineer, signed and dated, who is responsible for structural analysis and design of concrete slabs on each shop drawing and supporting document.

.5 Affidavits: Submit affidavits as specified in this Section for products, if requested.

.6 Production Reports: Submit test reports of strand slippage with a performance evaluation of each slab.

1.10 **Delivery, Storage and Handling**

.1 Handle, transport and store precast concrete slabs as required by specified reference standards, and by use of methods devised or approved, or both, by fabricator to prevent staining, soiling and damage.

.2 Store precast concrete slabs to clear ground or other bearing surfaces, to prevent overstress, warp, twist, accumulation of water and snow in depressions and holes, and to afford free movement of air on all sides of each unit.

1.11 **Site Conditions**

.1 Environmental Requirements: Grout in anchorage and joints, and patch concrete, only when air and surface temperatures exceed 4 deg. C and will remain so until grout has cured.

PART 2 - PRODUCTS

2.1 **Materials**

.1 Incorporate materials to meet specified requirements of CSA-A23.4-16, and as required to meet specified performance.

.2 Reinforcement:

.1 Mild Steel Bars: Billet steel to meet specified requirements of CAN/CSA-G30.18-09 (R2019).

.2 Prestressing Tendons: Uncoated, 7 wire strand, high tensile steel to meet specified requirements of CSA G279-1975 (R1998).

.3 Water: Verify that no salts are present that will cause efflorescence.

.4 Bearing Pads: 3.2mm thick tempered hardboard, smooth on each side, to meet specified requirements of CGSB Specification 11-GP-3M, Type 2.

.5 Grout: Cement grout consisting of one part portland cement mixed with 2½ parts sand and sufficient water for placing and hydration.

.6 Sealant: To suit manufacturer's standards.

.7 Core Insulation: Rigid polystyrene to meet specified requirements of CGSB 41-GP-14a Type 4.

.8 Levelling Topping: Shall be cementitious based, minimum 3 mm in thick over the entire floor area (gypsum based products are not acceptable). The finish shall be smooth so as to prevent the telegraphing of finish through the floor covering.

.9 Bonding Agent: Latex modified bonding agent. W.R. Meadows Intralok or similar.

PART 3 - EXECUTION

3.1 Examination

.1 Verify, before delivery of materials to site, that construction to receive precast slabs is located correctly and at proper levels.

.2 Ensure that bearings are clean, smooth and level, and provision has been made for proper anchorage.

.3 Defective concrete slab installation caused by unsatisfactory construction previously completed will be considered the responsibility of this Section.

3.2 Preparation

.1 Take particular care to protect finished surfaces that are exposed to view from mortar droppings and smears.

.2 Protect visible edges of slabs that are exposed to possible damage.

.3 Protect slabs from damage from welding by use of non-combustible shielding.

3.3 Fabrication

.1 Fabricate slabs:

.1 To meet specified requirements of reference standards for fabrication and manufacturer's certification.

.2 To ensure that finished dimensions are within specified tolerances.

.3 To meet or exceed performance requirements.

.4 With concrete consolidated through full cross-section of slabs to provide full bond with reinforcement, and surfaces free of cold joints and honeycombing.

.5 With cambers incorporated.

.6 To include closure slabs of special widths to suit Project conditions.

.7 With surfaces of a uniform appearance where exposed to view, and with no visible seams.

.8 With raked finish where topping is to exceed 25 mm.

.2 Concrete:

.1 Of mix designed by fabricator to meet requirements of Specifications.

.2 Normal weight, with compressive strength of 40 MPa at 28 days.

.3 Reinforcement:

.1 Cover reinforcement with concrete to a thickness required by jurisdictional authorities to provide fire protection.

.2 Minimum strength of concrete at detensioning shall be 25 MPa.

.3 Record strand slippage.

.4 Curing: Cure slabs by normal curing process.

.5 Finishing: Provide smooth finishes as approved by the Consultant for carpet and vinyl tile floor finishes and for painting of ceiling.

.6 Provide cast-in plates and anchorages as noted on the drawings.

3.4 **Installation**

.1 Install slabs with uniform joint widths, and units aligned straight, plumb, level and square. Cumulative dimensional error in position of slabs will not be allowed.

.2 Install bearings and set slabs on them dry.

.3 Coordinate the location of holes through slabs with consultant drawings, and cut holes through slabs to ensure that no damage is caused to slabs or reinforcement.

.4 Supply information required for installation of anchors, supports, inserts and similar accessories that are required by this Section and are installed by other Sections. Assist or supervise, or both, in their installation.

.5 Install and grout in anchorage.

.6 Drypack completely under the edges of slab (full length) above and between beams, walls, etc.

.7 Do not grout one cell of the core throughout the length of the slab installation, to provide for installation of electrical, telephone and data services.

.8 Fill joints and keys between slabs completely with grout. Saturate surfaces of joints and keys with water before grouting.

.9 Apply topping of concrete over each floor area to provide a level smooth substrate for installation of finish flooring within tolerances as per CSA-A23.4 and as specified in Section 03 30 00.

.10 Do not install chipped, cracked, blemished, stained or otherwise defective units.

.11 Caulk between abutting slabs and at joints between slabs and adjoining construction to meet specified requirements in applicable sections of this specification.

3.5 Adjustment and Cleaning

.1 Patch holes and damaged surfaces where exposed to view with concrete to match adjacent area. Use bonding agent to ensure bond. Finish patches to match precisely the colour and texture of adjacent area. Remove and repatch areas that do not match.

.2 Co-ordinate location and size of holes with applicable sub-trades. Repair oversized, misaligned and incorrect openings in a manner acceptable to the Consultant.

.3 Clean surfaces of slabs exposed to view after joint treatment is complete. Use fibre brushes, water and mild cleaning agents only as recommended by precast fabricator. Remove deposits of foreign material, dirt, soil and stains. Do not use tools which will damage finish surfaces. Rinse thoroughly with clean water after cleaning.

.4 Protect adjoining surfaces from damage during cleaning.

END OF SECTION 03 40 00

PART 1 - GENERAL

1.1 General Requirements

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

1.2 Work in Other Sections

.1 Related Work Specified in Other Sections

Section 03 30 00	:	Cast-in-Place Concrete
Section 04 20 00	:	Unit Masonry
Section 05 10 00	:	Structural Metal Framing
Section 05 30 00	:	Metal Decking
Section 05 50 00	:	Miscellaneous Metal
Section 06 10 11	:	Rough Carpentry
Section 07 21 13	:	Board Insulation
Section 07 21 19	:	Foamed-in-Place Insulation
Section 08 11 14	:	Metal Doors & Frames
Section 09 22 16	:	Non-Structural Metal Framing
Section 09 21 16	:	Gypsum Board Assemblies
Section 09 84 10	:	Acoustic Wall Treatment
Section 09 91 22	:	Painting
Section 14 21 23	:	Hydraulic Passenger Elevators
Division 15	:	Mechanical
Division 16	:	Electrical

1.3 Reference Standard

.1 Do masonry mortar and grout work in accordance with CSA A179-14 (R2019) and CSA-A82.56-94 except where specified otherwise.

.2 All masonry mortar and grout work shall be carried out in accordance with CSA A179-14 (R2019) mortar and grout for unit masonry and CSA A82.56-94 aggregate for masonry mortar.

ASTM C270-89: Standard Specification for Mortar for Unit Masonry.

CSA A371-14 (R2019): Masonry Construction for Buildings.

CSA S304-14 (R2019): Masonry Design for Buildings (Limit States Design).

CAN/CSA A179-14 (R2019): Mortar and Grout for Unit Masonry

1.4 Qualifications

.1 Execute work of this section only by a Contractor who has adequate equipment and skilled tradesmen to perform it expeditiously and is known to have been responsible for satisfactory installations similar to that specified during a period of at least five (5) years.

1.5 **Submittals**

.1 Submit affidavit from an inspection company that all materials conform to the requirements of the specification.

1.6 **Delivery, Storage and Handling**

.1 Store all materials protected against moisture, freezing and excess heat and to prevent contamination by foreign materials.

PART 2 - PRODUCTS

2.1 **Materials**

.1 General: Ensure that water and aggregates used are all from same source and will meet required strengths. Batch mortar and grouts are acceptable provided source is approved prior to commencement of work.

.2 Mortar and grout: Types M, N, S and O to CSA A179-94

.3 Colour: To match brick used. As manufactured by Harcross Pigments.

.4 Masonry Cement – CAN/CSA-A8, Type H.

.1 Portland Cement – CAN/CSA-A3001, Normal

.2 Hydrated Lime - CSA A82.43.

.3 Sand Aggregate CSA A82.56.

.4 Water - Verify that water used contains no salts to cause efflorescence.

.5 Mortar - Shall be grey dirt resistant and conform to the following:-

Loadbearing	:	Type S and M
Non-Loadbearing	:	Type N and S

.5 Dirt resistant additives: aluminum tristearate, calcium stearate or ammonium stearate.

.6 Use aggregate passing 1.18 mm sieve where 6 mm thick joints are indicated.

2.2 **Material Source**

.1 Use same brands of materials and source of aggregate for entire project.

2.3 **Mortar Types**

.1 Mortar for exterior masonry:

.1 Loadbearing: Type S and M.

.2 Non-loadbearing: Type N and S.

2.4 **Dirt-Resistant Mortar**

.1 For dirt-resistant mortar add aluminum tristearate, calcium stearate, or ammonium stearate to mortar in amount of 3% of weight of Portland cement.

.2 Use dirt-resistant mortar for all masonry work for the project.

2.5 **Grout**

.1 Non-shrink Grout: to CSA A179-14 Table 3 by Embeco by Master Builders, In-Pakt by C.C. Chemicals, or M-Bed Superflow by Sternson.

.2 Concrete grout for reinforced masonry shall consist of one part Portland cement and three parts sand with water to provide a minimum compressive strength of 10MPa at 28 days. Maximum aggregate size shall be 10mm. Slump for the grout shall be 200 to 250mm.

PART 3 - EXECUTION

3.1 Mixing

.1 Mix mortar to consistency required for working.

.2 Mix grout to semi-fluid consistency.

.3 Incorporate colour and admixtures into mixes in accordance with manufacturer's instructions. Use clean mixer for coloured mortar.

.4 Prehydrate pointing mortar by mixing ingredients dry, then mix again adding just enough water to produce damp unworkable mix that will retain its form when pressed into ball. Allow to stand for not less than 1 hour nor more than 2 hour then remix with sufficient water to produce mortar of proper consistency for pointing.

3.2 Installation

.1 Grout fully all pockets in concrete foundation walls where structural components installed, under bearing plates at piers and elsewhere as noted on drawings.

.2 Grout solid all reinforcing installed in concrete block walls.

.3 Protect all mortar and grout installed from freezing or from excessive heat which will prevent bonding or decrease the required compressive strength.

END OF SECTION 04 10 00

PART 1 - GENERAL

1.1 General Requirements

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

1.2 Work in Other Sections

.1 Related Work Specified in Other Sections

Section 03 30 00	:	Cast-in-Place Concrete
Section 04 10 00	:	Mortar & Grout
Section 05 10 00	:	Structural Metal Framing
Section 05 50 00	:	Miscellaneous Metal
Division 7	:	Thermal and Moisture Protection
Division 8	:	Openings
Division 31	:	Earthwork

.2 Products Supplied Under Work of Other Sections

and Installed Under Work of This Sections

Section 07 21 13	:	Board Insulation
Section 08 11 14	:	Metal Doors & Frames

1.3 Qualifications

.1 Execute work of this section only by a contractor who has adequate equipment and skilled tradesmen to perform it expeditiously and is known to have been responsible for satisfactory installations similar to that specified during a period of at least five years.

1.4 Reference Standards

CAN/CSA-A5/A8/A362-93 - Blended Hydraulic Cement
CAN/CSA-A165 SERIES-14 (R2019) - Concrete Block Masonry Units
CAN/CSA A82:14 (R2018), ASTM C216-10 – Fired Masonry Brick Made from Clay or Shale
CSA A371-14 (R2019) – Masonry Construction for Buildings
CSA S304.14 (R2019) – Design of Masonry Structures
CSA-A23.1:19 - Concrete Materials and Methods of Concrete Construction

.1 Install flashings in masonry as follows:

.1 Install flashings under exterior masonry bearing on foundation wall.

1.5 Supervision

.1 Work of this Section shall be executed under the continuous supervision and direction of a competent foreman for each class of work.

.2 One thoroughly experienced, reliable and competent tradesman shall be in charge of mortar mixing.

.3 Ensure that all items required to be built into masonry walls by all other trades are known and co-ordinated prior to commencement of work.

.4 Consult the approved shop drawings for all sections of the specifications to determine the exact location of items to be built into masonry.

1.6 **Submittals**

.1 Submit for approval clearly labelled samples of masonry materials to be used in the work. Submit for approval any alternative materials if requested by the Consultant.

.2 Provide a mock-up sample, 1200mm HIGH by 1800mm LONG, for each of the following items, prior to commencing work:-

: exterior brick
: interior brick

1.7 **Defects Defined**

.1 In addition to non-compliance with specified requirements or other contract requirements, the following will be considered defect:

.1 Shrinkage in individual units and erected walls.

.2 Spalling, efflorescence, cracking or chipping of units.

.3 Poor colour or texture blending of units.

.4 Surface deterioration dusting.

.5 Discolouration, crumbling and similar deterioration of mortar, grout.

.6 Failure of built-in items to remain anchored.

1.8 **Storage of Materials**

.1 Store cementitious material in accordance with CAN/CSA-A5/A8/A362. Store aggregates in accordance with CSA-A23.1. Stack masonry units to avoid chipping. Manufacturer's seals and labels shall be intact. Refer to cold weather protection Article 3.6 for requirements of preheating masonry materials prior to building in.

1.9 **Wind Bracing**

.1 Brace walls during construction until the structure provides sufficient lateral support. **This is a mandatory requirement**.

1.10 **Protection**

.1 Cover top of completed and partially completed masonry walls not protected by permanent work. Use waterproof coverings draped 600 mm (min.) down each side of wall and securely anchored.

PART 2 - PRODUCTS

2.1 **Materials**

.1 General: Use only materials specified herein.

.2 Masonry Cement: As specified in Section 04 10 00.

.3 Portland Cement: As specified in Section 04 10 00.

.4 Hydrated Lime: As specified in Section 04 10 00.

.5 Sand aggregate CSA A82.56: As specified in Section 04 10 00.

.6 Water: Verify that water used contains no salts to cause efflorescence.

.7 Concrete Masonry Units:

.1 Bubble cured units or Autoclaved units to meet requirements of CSA-A165 Series 14.

.2 Type H/15 A/M normal weight block.

.3 Size Metric

.4 Special Shapes - Supply corner block, "L" shape block, bullnose block, header block, lintel block and the like as shown on the drawings, or as required.

.8 Acoustical Concrete Masonry Units to CSA-A165-14, purpose made with slots to provide the acoustical characteristics specified:

.1 Size and extent as shown on the drawings.

.2 Reinforcing patterns as shown on the structural drawings.

.3 Type H/15.0 A/M normal weight block.

.4 Incombustible fibrous cavity filler.

.5 Richvale York Block ‘Acoustade’

.9 Insulation: As specified in Section 07 22 00.

.10 Glass Fibre Board: Glass fibre insulation, semi-rigid board, density of 20.8 kg/m^3 (1.3

lbs./cu.ft.).

.11 Bellows for Control and Expansion Joint: Bituminous membrane type compatible with wall membrane.

.12 Dampproof/Thru-Wall Flashing: Fibre reinforced membrane, coated one side with 0.61 kg/m^2 (2 oz./sq.ft.) copper, to meet quality standard of Copper-Bar by Gummed Papers Limited or Bituminous reinforced membrane manufactured by Monsey Bakor Inc.

.13 Asphalt Emulsions: As specified in CGSB 37-GP-2M.

.14 Air Barrier Membrane: As specified in Section 07 22 00.

.15 Brick Vents: Flexible PVC offset "T" shape with vertical leg slotted to allow passage of air, for installation in vertical joints, to meet quality standard of GOODCO brick vent.

.16 Wall Reinforcing: As shown on Structural drawings.

.17 Cavity Wallbonding Box Tie: 4.76mm (3/16") galvanized high tensile steel wire, truss type reinforcing with box ties @ 400 o/c in two sections to form a hook and eye, Blok-Lok Limited or equivalent by Dur-O-Wal Limited.

.18 Flexible Anchor: To suit conditions and to allow for differential movement between the structure and masonry work. Typically: 4.76 mm (3/16") diameter steel, galvanized, bent into an equilateral triangular shape with its apex flexibly secured to structure, and with its two legs terminating in 25 mm (1") inward bent hooks extending a minimum of 100 mm (4") into masonry anchored.

.19 Wall Ties: 22 gauge galvanized corrugated steel.

.20 Stud Anchors: 14 gauge, hot-dipped galvanized steel plate anchors with 4.76mm (3/16") diameter galvanized steel wire ties for cavity wall.

.21 Bond Anchor: 4.76 mm (3/16") diameter steel galvanized with 50 mm (2") end bent 90°.

.22 Galvanizing: To specified requirements of ASTM Specification A153, Class B.3 coatings, for all bolts and hardware, ASTM Specification A116, Class 3 coating, for masonry ties other than above.

.23 Cleaner: Vanatrol as manufactured by C.P.D., Ratio 6:1 unless otherwise noted by brick/mortar/grout manufacturer. (MURIATIC ACID NOT ACCEPTED).

PART 3 - EXECUTION

3.1 General Workmanship

.1 Employ properly qualified masons for laying up masonry units.

.2 Distribute exposed masonry units of varying colours, tones and textures evenly over wall surface to avoid patches and streaks and to produce a pleasing appearance.

.3 Gaining to meet spandrels, etc., leaving courses uneven or with visibly thicker mortar joints will not be acceptable. Any such work must be removed and rebuilt to approval of Consultant.

.4 Construct masonry evenly in maximum lifts of 1200 mm per working day. Rake back ends of unfinished walls; do not tooth and bond new masonry.

.5 Chases, fixtures, outlets must be built - not cut. Co-ordinate with Mechanical and Electrical.

.6 Install aluminium and hollow metal door frames by building in lugs and filling voids with mortar. Keep frames free of mortar stains. Protect as required.

.7 Chipped or blemished units may be used where concealed. Chipped, cracked or broken units are considered deficiencies where exposed to file and shall be removed and replaced.

.8 Build masonry with accurately plumbed faces, truly horizontal bed joints and accurately aligned vertical joints.

.9 Notwithstanding current trade practices in this regard, fill all vertical collar and bed joints through the entire wall thickness solidly with mortar.

.10 Cut masonry neatly with a carborundum saw where it comes in contact with the structure and where else required and build tightly against the structure except where expansion control and deflection joints are required. Build masonry up and neatly fit to all openings, and all anchors for frames for such openings shall be built securely into joints.

.11 Do all cutting, fitting and patching in masonry work to receive work of other trades. Install items supplied by other trades to be built into masonry walls, plumb, level, rigid and secure. Build in all miscellaneous metal work, loose lintels, bearing plates, sleeves, anchor bolts, wood nailer and all other items which require building into the masonry. Set access doors with front face flush with final wall finish. Locate such fittings precisely as directed.

3.2 **Lintels**

.1 Set loose lintels supplied under Section 05 10 00 for bridging openings in masonry.

.2 Bridge openings not exceeding 450 mm in width with 6 mm mild steel plate lintels bearing 100 mm on each side of opening. Width of plate shall be wall thickness less 25 mm. Joint at lintel to be dry packed. Provide minimum brick vents per lintel at 800 o/c.

.3 Install concrete block lintels where indicated on drawings. Fill with 25 MPa concrete and reinforce as shown. Temporarily support until concrete is cured.

3.3 **Structural Bearing**

.1 Install bearing pads in all load bearing walls to receive structural components by:

: Two courses of solid masonry units at least 400mm (16") in upper course and 800mm (32") long in lower course or by lintel blocks at least 800mm (32") long filled with 25MPa (3600 psi) concrete and reinforced with two 10mm (3/8")

diameter bars, in bearing course only.

: Co-ordinate this work with fixing devices provided under the work of Section 05 10 00.

3.4 **Dampproof Course/Thru-Wall Flashings**

.1 Install bituminous membrane on walls and partitions rising from footings below grade and in locations indicated on Drawings. Lap and seal all joints. Install thru-wall flashings at all lintels, grade junctions and roof junctions and in locations indicated on the drawings. Lap and seal all joints.

3.5 **Control Joints**

.1 Control joints shall be located at maximum spacings of 4800 to 6000 centres and be located as shown on the drawings.

3.6 **Cold Weather Protection**

.1 Refer to the Ontario Masonry Contractor's Association's provision and publications. Include for tarped heated enclosures, heated mortar mixing pans - no non-freeze additives such as calcium will be tolerated on this project.

3.7 **Bonding**

.1 Lay face brick and concrete block units coursing in running bond pattern. Lay soldier and header coursing. Corbel brick piers and friezes as shown on drawings.

.2 Lay brick coursing to course every second block course. Course soldier coursing to course on three stretcher courses.

.3 Construct quoins, header courses and soldier and corbelling to protrude 25mm.

.4 Lay stone in random pattern. Dry pack solid all stone.

.5 Cut brick to provide opening dimensions shown only as necessary. Cut ends are not to be exposed.

.6 Anchor brick to back-up at 400 o/c vertical and horizontal maximum with ties.

3.8 **Joints**

.1 Ensure cavity width is maintained and keep free of droppings. Back trowel to prevent build-up of mortar.

.2 Rake brick joints to size and depth in accordance with recommended trade practices.

.3 Keep control joints, expansion joints and air spaces free from mortar and droppings.

.4 Construct Control Joints in locations shown. **DO NOT SAW CUT**. Sealing to be carried out in conformance with Section 07900. Install bellows to maintain membrane air barrier

integrity. Keep joints free of mortar droppings.

.5 Make joints of uniform thickness with vertical joints plumbed over each other. Do not butter corners of units, allow mortar scrapings in joints excessively or shift and tap units after mortar has initially set.

.6 For solid masonry units completely fill with mortar both bed and vertical joints.

.7 For hollow masonry units ensure that mortar covers all available bearing surfaces fully and fills vertical joints, except for weep and vent holes.

.8 When work is resumed on walls previously laid with mortar either partially or totally set, remove loose masonry and mortar from top and adjoining surfaces. Remove mortar completely when masonry is removed and replaced with new.

.9 Form tooled concave joints for concrete block walls wherever exposed to view, whether behind cabinets, fitments, and wall accessories, or not. When mortar has become "thumbprint" hard by a tool having a minimum 500mm long bearing surface to avoid uneven depressions. Clean off burrs with trowel or burlap.

.10 Rake out joints at juncture of interior and exterior walls with columns, at intersections of walls and partitions where joint reinforcement is installed, and at other caulked joints.

.11 Form reglets required for metal flashing in masonry.

.12 Flush-in solidly with mortar between cavity filler strips and interior face of brick veneer.

.13 Cut joints off flush where treatment is not otherwise specified. No mortar shall protrude from joints on wall surfaces to which insulation will be applied.

.14 Install insulation using adhesive recommended by the manufacturer. Insulation is to be tight fitting with no joints.

3.9 **Laying Masonry**

.1 Stop off horizontal runs of walls by racking back a half unit in each horizontal course: do not tooth.

.2 Wet clay and shale masonry units before placing. Do not wet concrete units. Wet faces of work in place before laying new work. Units shall not have water adhering to their surfaces when laid; but shall be wet only to ensure that complete hydration takes place, during hot drying weather, and when unit absorption rates are greater than 0.025 oz/sq.in./ minute, so that the initial rate of absorption does not exceed above rate when laid.

.3 Distribute masonry units of varying colours and textures to avoid spotty appearance over wall surfaces exposed to review. Do not use units which contrast too greatly with overall range.

.4 Use chipped and blemished units only where concealed. Do not use defective or broken units. Do not lay concrete units that will appear smooth or slick where exposed to view, whether painted or not.

.5 Brace walls and piers continuously during construction until structure provides support.

.6 Extend all walls to construction above except where otherwise noted on Drawings. Leave deflection space over non-load bearing walls as specified later.

.7 Cope, cut and split concrete masonry units with power-driven abrasive discs. Cut units wherever electrical outlets, grilles, and pipes occur. Allow 4 mm minimum clearance around items which are incorporated in walls.

.8 Lay hollow concrete masonry units so that effective shells rest and align one over the other. If they do not in bond courses, use solid bonding units.

.9 Install solid masonry units at all locations required for fixing of handrails, metal partitions and accessories of all description.

.10 Flush smooth with mortar masonry surfaces that flashings rest against to ensure that they are not punctured.

.11 Install brick vents at 600 mm (24") o.c. in vertical joints of masonry courses that rest on dampproofing and thruwall flashing and at top of masonry wall at steel lintels.

.12 Locate bearings and piers as indicated on Drawings; provide solid masonry units at bearings. Grout under bearing plates installed on masonry with non-shrink grout.

.13 Co-operate at all times with persons carrying out the work of Section 07220, Cavity Wall Insulation.

.14 Keep cavity spaces free of mortar in cavity walls.

.15 Build, do not cut, chases. Do not incorporate chases in walls of 200mm (8") thick or less, nor locate them within 500mm (20") of lateral support provided for wall, nor exceed one-third of wall thickness for chase depth. Provide lintels over chases that exceed 500mm (20") in width and that are more than one-third of wall thickness in depth. Locate adjoining chases with a minimum clear distance between them of four times wall thickness.

3.10 **Masonry Reinforcing**

.1 Reinforce all masonry walls using joint reinforcement in horizontal joints.

.2 Place joint reinforcement continuously in horizontal joints. Lap a minimum of 150mm (6") at splices.

.3 Reinforcing Schedule

: Inner Wythe of Cavity Walls (Non Load Bearing): Heavy duty joint reinforcement every second course between bonding ties.

: Load-Bearing Exterior and Interior Walls: Heavy duty joint reinforcement every block course.

: Non-Load-Bearing Partitions: Standard joint reinforcement every second course with additional course over all openings carried at least 800 mm (32") beyond jambs.

: Refer to Structural Drawings for size and placement of vertical reinforcing steel.

.4 Do not reinforce face veneers.

.5 Where changes in wall thicknesses occur extend horizontal reinforcement 500 mm (20") beyond on each side. Carry reinforcement all around every course in masonry cover to structural steel.

.6 Do not carry reinforcement through control or expansion joints.

.7 Wherever walls and partitions intersect one another, or each other, continue reinforcement through. Do not carry it through where lateral support anchors are installed, or intersection occurs at a solid pier.

3.11 **Masonry Anchorage and Support**

.1 Anchor masonry construction to ensure its stability and to withstand loads imposed by intended use and by natural elements.

.2 Anchor masonry construction at structural steel work with flexible anchor every 400mm (16") in height. Weld flexible tab section of anchor to structural steel.

.3 Unless indicated or specified otherwise, space anchors at a maximum of 600mm (24") vertically and 800mm (32") horizontally.

.4 Wall Anchorage:

: For Non-Load-Bearing Partitions: Anchor partitions that abut or intersect other walls or partitions by corrugated galvanized wall ties spaced at not more than every third course apart vertically or by joint reinforcement.

: For Load-Bearing Exterior and Interior Walls: Anchor walls that face or abut other load-bearing walls or solid masonry piers by toothing, or blocking, with 100 mm (4") minimum and 200 mm (8") maximum offsets into which strap anchors are set at a maximum spacing of 800 mm (32") vertically. Use lateral support anchors, but with 75 mm (3") hooks. Extend anchors a minimum of 450 mm (18") into masonry at both sides of intersection. Where this is not possible, install cross pins in lieu of hooks to provide equivalent anchorage. At corners, provide true bonding of at least 50% of the units of one wall imbedded in the other. Provide for caulked joints at intersecting walls as part of the work of Section 07 90 00.

.5 Lateral Support: shall be provided for masonry walls and partitions as indicated on Drawings, specified, and required by jurisdictional authorities; perpendicular to wall faces; and either horizontally or vertically to wall panel edges. Provide lateral support for interior walls and partitions.

: Horizontally: by wedging masonry against structure, by clips or dowel plates specified in Section 05 50 00 at a maximum spacing of 1800mm (6'-0") o.c. where concealed in the final work or by continuous cover angles where exposed.

: Vertically: at junction with poured-in-place concrete by corrugated metal veneer anchors spaced at not more than every third course apart, one for every 4" or part thereof of masonry wall thickness, securely fastened to concrete by an approved method.

.6 Deflection Space:

: Provide a deflection space between tops of non-load-bearing walls and partitions and structures to prevent transference of structural loads to masonry.

: Fill deflection space with Type AF100 glass fibre board compressed to 50% of original thickness to completely fill space.

: Fill voids in accordance with Section 07950 for assemblies requiring a fire resistance rating:

: Deflection space shall be 1" unless otherwise designated on Drawings.

: Co-ordinate work with installation of lateral support specified in Section 05500.

3.12 **Dampproof Flashing**

.1 Install dampproof flashing continuously through exterior masonry walls, under sills and elsewhere as indicated on Drawings. Lap joints 150 mm (6").

.2 Flush up surfaces to receive dampproof flashing with mortar, and install flashing. Ensure that no coarse aggregate or other protrusions will pierce flashing, and protect it until work resumes.

.3 Through-wall flashings shall be dressed through full thickness of exterior wythe, across airspace and turn-up at least 150 mm (6") against inner wythe applied with approved adhesive. Install flashings prior to application of cavity wall insulation to details as shown on Drawings.

.4 When mortar bed for flashing has set resume laying of masonry.

.5 Where flashing is exposed to view or must bridge air-space without support, use sheet metal flashings provided and installed as part of the work of Section 07560. Install sheet metal flashings after dampproof flashings but prior to others.

3.13 **Mechanical Louvres, Grilles, Unit Ventilators**

.1 Construct openings in wall to accommodate sizes and details required by mechanical trades.

.2 Seal completely around penetrations to prevent air infiltration.

3.14 **Patching**

.1 Patch masonry walls damaged by installation of work specified under other Sections, and which have been rejected as defective or otherwise damaged.

3.15 **Pointing and Cleaning**

.1 Point all holes in mortar joints and in concrete masonry unit faces.

.2 Cut out defective mortar joints and repoint.

.3 Wash down and brush brick and grout/mortar to remove mortar laitance and stains. Use specified cleaners only. Consult with brick/block/grout and mortar supplier for solution strength and recommendations.

.4 Clean concrete masonry units with brushes and as otherwise recommended by the supplier to remove mortar and stains.

.5 Do not use wire brushes for cleaning.

.6 Should specified cleaning methods be insufficient, proceed with other methods only with approval of the Consultant.

.7 Protect adjacent materials and work from damage while cleaning.

END OF SECTION 04 20 00

Part 1 General

1.1 RELATED SECTIONS

.1 This section to be read in conjunction with Section 04 22 00 for Execution Requirements

.2 Section 01 33 00 – Submittal Procedures

.3 Section 03 30 00 – Cast-in-Place Concrete

.4 Section 05 12 23 – Structural Steel for Buildings

.5 Section 03 41 00 – Plant- Precast Structural Concrete

.6 Section 04 20 00 – Unit Masonry

.7 Section 07 21 13 – Board Insulation

1.2 REFERENCES

.1 American Society for Testing and Materials International (ASTM).

.1 ASTM C126-99, Standard Specification for Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units.

.2 Brick Industry Association (BIA).

.1 Technical Note No. 20-2000, Cleaning Brick Masonry.

.3 Canadian Standards Association (CSA International).

.1 CAN/CSA A82-06: Fired Masonry Brick Made from Clay or Shale
.2 CAN/CSA-A165 SERIES-04 (R2009): Concrete Block Masonry Units
.3 CSA-A371-04 (R2009): Masonry Construction for Buildings
.4 CAN/CSA-A3001: Portland Cement
.5 CSA-A8-M88: Masonry Cement
.6 CSA S304.1-04: Design of Masonry Structures

1.3 SUBMITTALS

.1 Product Data.

.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Manufacturer's Instructions.

.1 Submit manufacturer's installation instructions.

1.4 QUALITY ASSURANCE

.1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.3 For clay units, in addition to requirements set out in referenced CSA and ASTM Standards include data indicating initial rate of absorption for units proposed for use.

1.5 PRODUCT DELIVERY STORAGE AND HANDLING

.1 Ensure that materials are delivered to job site in dry condition.

.2 Except where wetting of units is specified, keep materials dry until use.

.3 Store under waterproof cover on pallets or plank platforms held off ground by means of plank or timber skids.

1.6 COLD WEATHER REQUIREMENTS

.1 Supplement Clause 5.15.2 of CSA A371 with the following

.1 Maintain temperature of mortar between 5°C and 50°C until used.

1.7 HOT WEATHER REQUIREMENTS

.1 As per Clause 6.7.4 of CSA A37.

1.8 PROTECTION

.1 Until completed and protected by flashings or other permanent construction, keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain. Use waterproof coverings draped 600 mm (min.) down each side of wall and securely anchored.

.2 Protect masonry and other work from marking and other damage. Protect completed work from mortar droppings. Use non-staining coverings.

.3 Provide temporary bracing of masonry work during and after erection until permanent lateral support is in place.

1.9 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material in appropriate on-site for recycling in accordance with Waste Management Plan.

1.10 JOB MOCK UP

.1 Construct mock-up panel of exterior masonry wall construction, 2000 mm x 2000 mm, showing all masonry materials and colors, fixtures, jointing, coursing, mortar and workmanship.

Part 2 Products

2.1 MANUFACTURED UNITS

.1 Clay Brick Veneer Units:

.1 All units: 57 mm x 90 mm x 290 mm (HxDxL) Norman in a smooth finish as manufactured by:

.1 Brampton Brick, Brampton, ON, tel. (800) 462-7425.

.2 Canada Brick (prev. Meridian Brick), tel. (800) 263-6229

.3 I.X.L. Building Products, Mississauga, ON L5T 2C9 (905) 565-0886

.2 **Masonry Veneer "A"** (Colour **– Dark Grey**)**:**

.1 Brampton Brick 'Sioux City Brick' – Colour EBONITE SMOOTH

.2 Canada Brick 'Canada Architectural Series' - Colour IRONSTONE

.3 I.X.L. - Hebron - Colour OPUS

.4 Thames Valley Brick & Tile – Colour MANGANESE IRONSPOT *(Velour)*

.3 All units are to be manufactured from single continuous run to ensure minimum colour and texture variations.

.4 Hollow core units may be used. Provide solid units where required for corners and edges.

.5 Install in a one-third lapped running bond pattern.

.2 Manufactured Pre-cast (Stone) Veneer:

.1 Designated as **Masonry Veneer "B"** on Architectural Exterior Elevations.

.1 "Vivace Masonry Veneer", by Brampton Brick or approved alternative. Contact: Mike Kriesel Tel. 905 691-2034. Colour to be: "Dover" light grey.

.2 "Lafitt Stone" pre-cast veneer, by Permacon International. Tel. 905 875-4215 or 1 800 668-4805. Colour to be: "Scandina Grey" light grey.

.2 60% combo, 40% large.

.3 Submit samples and confirm order/delivery schedule to Architect at outset of contract.

.4 All units to be manufactured from single continuous run to ensure minimum colour and texture variations.

.5 Provide special sizes and shapes as required including but not limited to plain ends halves, jambs, sash, lintel, special angle corners and other shapes whether drawn or not. Submit shop drawings of all shapes.

.3 Pre-cast Concrete Sills (Colour – Natural Grey):

.1 All units: 90 mm x 140 mm x 5380 mm (HxDxL) and 90 mm x 140 mm x 1800 mm (HxDxL) as illustrated on drawings and manufactured by:

.1 Brampton Brick, Brampton, ON, tel. (800) 462-7425.

.2 Day & Campbell, Hamilton, ON, tel.: (905) 385-5315

.3 Richvale York Block Inc., Toronto, tel (877) 792-5625

.2 Locations: at all locations shown on drawings.

.2 Portland Cement:

.1 To CAN/CSA-A3001.

.3 Masonry Cement:

.1 To CAN/CSA A8.

.4 Hydrated Lime:

.1 To ASTMC207-74.

.5 Aggregate:

.1 To CSA A82.56-M1976.

.6 Water:

.1 Ensure that water contains no salts which may cause efflorescence.

.7 Thru-wall Flashing and Air/Vapour Barrier Sheet Membrane Treatment**:** Self-adhering SBS modified bitumen membrane reinforced with non-woven fibrous glass. Acceptable materials: Blueskin TW by Bakor Inc., Mississauga or sheet air/vapour barrier membrane as specified as in Section 07 27 10 – Air Barriers.

.8 Bolts and Anchors: To CAN3-A370.

.9 Mortar:

.1 Generally: Use materials only as specified in CSA A179. Ensure that weather and aggregate used in mortar, other than in walls buried in earth, will not cause efflorescence.

.2 Bonding Agent**:** Acrylic latex type by Sternson Limited, W.R. Meadows or Thoro Building Products. Use for all mortar except clay brick.

.3 Mixes: Mix mortars as specified in CSA A179 using the Proportion Specification. Add bonding agent in accordance with manufacturer's instructions.

.4 Mortar Types:

.1 For masonry walls in contact with earth and bedding for bearing plates and lintels: Mortar Type "S".

.2 For load-bearing walls: Mortar Type "S".

.3 For clay brick: Mortar Type "N" (1:1:6) premixed "Betomix 1-1-6" Type "S" portland cement hydrated lime as supplied by Daubois Inc., Jiffy Mortar Systems. Mix on site with sand and water.

.4 For all other (non-structural) masonry walls, use regular Type "N" mortar.

.5 Colouring Additive: A mineral-oxide pigment, harmless to mortar set and strength, shall be provided. Colour shall be one (1) colour per masonry unit type, as selected by the Consultant. Dark grey bricks to have dark grey mortar colour additive.

.6 Grout: To CSA A179 Table 3.

.10 Mortar Dropping Control Device: "Mortar Net" manufactured by Mortar Net USA (Telephone: 1-800-664-6638).

.11 Weepholes**:** 90 mm x 90 mm x 10 mm purpose made PVC, designed to drain cavities and with mesh to prevent insects from entering. Colour to be chosen by Architect from manufacturer's full range.

.12 Date Stone: Date stone to be 390 x 390 x 90 deep solid limestone. Font: Technic Lite, 100mm high. Beveled edges. Polish finish. Location to be determined by Architect.

.13 Veneer Ties: Fero slotted block tie (Type II) c/w V-Tie manufactured from 4.76 mm diameter wire conforming to CSA Standard G30.3, hot dipped galvanized to ASTM A153.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 WORKMANSHIP

.1 Build masonry plumb, level, and true to line, with joints in proper alignment.

.2 Layout coursing and bond to achieve correct coursing heights, and continuity of bond above and below openings, with minimum of cutting.

3.3 TOLERANCES

.1 Clause 5.3 of CAN/CSA-A371 applies except as follows: Walls to receive thinset ceramic tile: plumb within 1:600.

3.4 EXPOSED MASONRY

.1 Remove chipped, cracked, and otherwise damaged units in exposed masonry and replace with undamaged units.

.2 Parging on the face of exposed masonry units will be rejected.

3.5 JOINTING

.1 Except where indicated otherwise on drawings or details or as below, make concave joints, allow joints to set just enough to remove excess water, then tool with round jointer to provide smooth, compressed, uniformly concave joints. Where joints are to receive plaster, tile, insulation, or other applied material except paint or similar thin finish coating, strike flush.

3.6 WEEPHOLES

.1 Provide 10 x 90 x 90 mm PVC weepers at regular intervals at both top and bottom of walls as indicated on Drawings. Ensure weepers are clear and not blocked by mortar or mortar droppings.

3.7 JOINING OF WORK

.1 Where necessary to temporarily stop horizontal runs of masonry, and in building corner, Step-back masonry diagonally to lowest course previously laid. Do not "tooth" new masonry. Fill in adjacent course before heights of stepped masonry reach 1200 mm.

3.8 CUTTING

.1 Cut out neatly for electrical switches, outlet boxes, and other recessed or built-in objects.

.2 Make cuts straight, clean, and free from uneven edges. Use masonry saw where necessary.

3.9 BUILDING-IN

.1 Build in items required to be built into masonry by other trades.

.2 Prevent displacement of built-in items during construction. Check for plumbness, alignment, and correctness of position, as work progresses.

.3 Brace door jambs to maintain plumbness. Fill door frame with concrete.

3.10 WETTING OF UNITS

.1 Except during winter, wet units having an initial rate of absorption exceeding 1g/min/100mm2; wet to uniform degree of saturation, to 24 hours before laying, and do not lay until surface is dry.

.2 Similarly, wet tops of walls built of units qualifying for wetting, when recommencing work on such walls.

3.11 SUPPORT OF LOADS

.1 Except where drawing requirements are more stringent, comply with Clause 6.3 of CSA S304.1.

.2 Where concrete fill is used in lieu of solid units, use minimum 25 MPa concrete to Section 03 30 00.

.3 Install building paper below voids to be filled with concrete; keep paper 25 mm back from faces of units.

3.12 PROVISION FOR MOVEMENT

.1 Leave 5 mm space below shelf angles.

.2 Leave 6 mm space and do not use wedges between tops of non-load bearing walls and partitions and structural elements.

3.13 LINTELS

.1 Install steel lintels above windows, doors and all mechanical and electrical as shown on structural drawings. Centre over opening width.

.2 Install loose steel lintels supplied by Section 05 12 23. Centre lintel over opening width. Minimum 150 mm solid bearing each end.

.3 Lintels over 2000 mm span to be complete with bearing plate and anchors each end.

.4 Bridge openings less than 450 mm wide with 6 mm thick mild steel plate lintels, bearing minimum 100 mm on each side of opening and set on dry pack grout. Width of plate to be equal to the wall thickness less 25 mm.

.5 Install precast concrete lintels supplied under Section 03 30 00.

3.14 CONTROL AND EXPANSION JOINTS

.1 Except as noted following, control joints required at maximum of 6000 mm o.c. in continuous walls having no openings, intersections or column locations. Refer to elevations for locations on exterior walls and advise Consultant of variances prior to executing the work. Control joints are not shown for clarity on the drawings for interior walls. If in doubt, request assistance from the Consultant.

.2 At doorway locations, unless indicated otherwise on elevation drawings, use one side of doorway beyond lintel. Use building paper to prevent that end of lintel to bond.

.3 Use standard block with concrete filled end core to form key. Line one side of core with building paper before filling core to prevent bonding. Complete vertical separation, full height and thickness of wall are required.

.4 Stop masonry reinforcing at each side of the joints. Caulking specified in Section 07 92 10 – Joint Sealers.

.5 At expansion joints in brick and veneer, install Rapid Expansion joint DA 2015, to leave vertical joint free of mortar to allow for horizontal expansion.

3.15 INSPECTION & TESTING

.1 Refer to Section 01 11 00 – Summary of Work, section 1.29.

3.16 CLEANING

.1 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.

.2 On a weekly basis and at completion of work remove all debris, cut blocks and bricks, and mortar droppings.

.3 Power wash or brush exterior masonry surfaces at completion of work.

.1 Soft, clean cloths.

.4 Clean concrete brick masonry as work progresses.

.1 Allow mortar droppings on masonry to partially dry then remove by means of trowel, followed by rubbing lightly with small piece of veneer and finally by brushing.

.5 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

PART 1 - GENERAL

1.1 General Requirements

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

1.2 Work In Other Sections

.1 Related Work Specified in Other Sections

Section 03 30 00	:	Cast-in-Place Concrete
Section 03 40 00	:	Precast Hollow Core Slabs
Section 04 20 00	:	Unit Masonry
Section 05 30 00	:	Metal Decking
Section 05 50 00	:	Miscellaneous Metal
Section 07 81 00	:	Applied Fireproofing
Section 08 11 14	:	Metal Doors and Frames
Section 09 91 22	:	Painting

.2 Products Supplied Under Work of this Section

and Installed Under Work of Other Sections

Section 03 30 00	:	To install anchor bolts and loose bearings plates

1.3 Reference Standards

CSA S16-19: Design of Steel Structures
CSA W59-18: Welded Steel Construction (Metal Arc Welding)
CSA G40.20-13 (R2018): General Requirements for Rolled or Welded Structural Quality Steel
CSA G40.21-13 (R2018): Structural Quality Steel
CSA W48-14: Filler Metals and Allied Materials for Metal Arc Welding
CAN/CSA G164-18: Hot Dip Galvanizing of Irregularly Shaped Articles
ASTM F3125/F3125M-15a: Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Minimum Tensile Strength

The Ontario Building Code, (O. Reg. 332/12)

.1 Do structural steel work in accordance with CAN/CSA-S16.14 latest edition except where specified otherwise.

.2 Do welding in accordance with CSA W59-13 except where specified otherwise.

.3 All work shall conform to National Building Code and any other Provincial or local application, provided that, in any case or conflict or discrepancy, the more stringent requirements shall apply and govern.

.4 CAN/CSA-S16.1 latest edition, "Limited States Design of Steel Structures" shall be the basis for design and construction of all structural steel on this project.

1.4 **Source Quality Control**

.1 Submit 2 certified copies of mill reports covering chemical and physical properties of steel used in this work.

.2 Submit affidavits from the manufacturer or fabricator that materials supplied comply with this Specification.

.3 At least one-third of the joists are to be fabricated and ready for delivery prior to calling the inspection company, thus limiting the number of visits required to three (3). All deficiencies are to be corrected prior to delivery.

.4 The Owner will appoint an independent inspection and testing company to ensure that the Work of this Section is performed in accordance with the Specifications. The cost of all inspections/testing shall be paid for from the cash allowance allocated for this in Section 01 45 23 - Allowances.

1.5 **Design of Details and Connections**

.1 Design details and connections in accordance with requirements of CAN/CSA-S16, latest edition, to resist forces, moments and shears indicated.

.2 For non-standard connections, submit sketches and design calculations stamped and signed by qualified professional Engineer registered in the Province of Ontario.

.3 For standard connections, select details from CISC Handbook of Steel Construction to ensure structural adequacy.

.4 Submit shop fabrication details stamped and signed by a qualified professional licensed in the Province of Ontario.

1.6 **Shop Drawings**

.1 Submit shop drawings in accordance with Section 01 33 00 Submittals.

.2 Indicate shop and erection details including cuts, copes, connections, holes, bolts and welds. Indicate welds by welding symbols defined in CSA-W59-18.

.3 Submit copy of erection drawings to the Consultant for review and reference.

.4 Submit a copy of stamped shop drawings for the cold formed steel, including all connections.

.5 Submit all weld procedures pertinent to the work prior to or along with the first submission of shop drawings, for subsequent review and acceptance by the Consultant.

1.7 **Storage and Handling**

.1 Handle all materials with the necessary care to prevent damage to fittings, finishes and alignments.

.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 Consultant.

.3 Replace promptly all items verified as received in a damaged condition.

1.8 **Examination**

.1 Examine surfaces with which Work is to be anchored or connected.

.2 Report to the Consultant, all unsatisfactory conditions likely to prevent or prejudice the proper installation of the work.

.3 Commencement of Work implies unconditional acceptance of substrate and surface and condition to which all members are to be anchored and secured.

1.9 **Quantity of Items**

.1 Where a component, device, item or part of material is referred to in the singular number, such reference shall mean as many as are required to complete the work

PART 2 - PRODUCTS

2.1 **Materials**

.1 Structural steel: to CAN/CSA-G40.21 Grade 350W for rolled sections and plates, Grade 350W for Hollow Structural sections.

.2 Anchor bolts: to CAN/CSA-G40.21, Grade 300W.

.3 Bolts, nuts and washers: to ASTM A325M.

.4 Welding materials: to CSA W48 Series.

.5 Shop paint primer: to CGSB 1-GP-40M. Refer to Formulas in Section 09900.

.6 Hot dip galvanizing: galvanize steel, where indicated, to CAN/CSA G164, minimum zinc coating of 600 g/m^2.

.7 Cold Formed Steel: to CSA S136

.8 Lintels: As required to complete all work as part of this project. Steel Lintels shall be approved over all openings including mechanical, electrical and architectural drawings and as shown on the drawings.

PART 3 - EXECUTION

3.1 Inspection and Co-ordination

.1 The Contractor shall field check all dimensions and elevations affecting his trade at the site. All discrepancies shall be reported to the Consultant before proceeding with the work.

.2 The Contractor shall report in writing all defects in the work prepared under other sections of the Specifications which will affect the work of this Section. Commencement of the work will imply acceptance of previously prepared work.

.3 Verify all requirements and dimensions of existing, proceeding and following Work before commencing fabrication.

3.2 Fabrication

.1 Fabricate structural steel, as indicated, in accordance with CAN/CSA-S16.1 and in accordance only with reviewed and stamped shop drawings.

.2 Supply fastenings, anchors and accessories required for fabrication and erection of Work. Make exposed metal fastenings and accessories of same material, texture, colour and finish as base metal on which they occur unless otherwise shown or specified. Keep exposed fastenings to absolute minimum and inconspicuous, spacing them evenly and setting them out neatly. Make fastenings of permanent type.

.3 Beams shall be rolled sections, combined as noted. Beam connections shall be standard double angle clip type, developing full strength of all the members.

.4 Clean all steel members by scraping, wire brushing or other effective means to remove loose mill scale, rust, oil or other foreign matter. Surfaces shall be thoroughly dry before painting.

.5 Apply one (1) shop coat of paint, conforming to CGSB 1-GP-40D primer, to all surfaces except surfaces to be in contact with or encased in concrete and surfaces and edges to be field welded or high tension bolted.

.6 Apply two (2) shop coats of paint, conforming to CGSB 1-GP-40D primer to all surfaces which will be inaccessible after assembling. Touch up all bolts, welds and surfaces of connecting members damaged during construction.

.7 All steel exposed to weather including steel lintels in exterior walls shall be hot dip galvanized.

.8 All members shall be assembled true and without twists or open joints. Shop connections shall be welded.

.9 High tensile bolted connections, where used, shall be in accordance with CAN/CSA-S16 latest edition. Holes shall be accurately spaced and of size to allow insertion of bolts of 1.5 mm (1/16") diameter less than hole diameter.

.10 Welding shall be executed so as to avoid damage or distortion to the work. Welds on exterior work shall be continuous to provide proper weathering; all welds on exposed finished work shall be ground smooth.

.11 There shall be no burning of holes in members in the shop or field without the permission of the Consultant. If consent is given, burned members shall be finished to an acceptable appearance.

.12 Mark materials in accordance with CAN/CSA-G40. Do not use die stamping. If steel is to be left in unpainted condition, place marking at locations not visible from exterior after erection. Shop mark bearing assemblies and splices for fit and match.

3.3 **Erection**

.1 Erect structural steel as indicated in accordance with CAN/CSA-S16 latest edition and in accordance with shop drawings.

.2 Continuously seal members by continuous welds where indicated. Grind smooth.

.3 Obtain written permission of the Consultant prior to field cutting or altering of structural members.

.4 Touch up shop primer to bolts, rivets, welds and burned or scratched surfaces at completion of erection.

.5 Erection of structural steel on site shall be properly co-ordinated by the Contractor with the work of all other trades. Co-ordinate the work to incorporate all electrical appurtenances, and protect same from damage during erection.

.6 Bolted assemblies for base connections shall not be tightened until at least 72 hours after the grout pad has been placed.

.7 All bolts shall be tightened by using a suitable torque wrench, torquing as required in CAN/CSA-S16 latest edition.

.8 Damaged work will not be accepted on site. Damaged work arriving on site will be returned to the shop for repair and/or refinishing.

.9 All temporary supports shall be attached to the work in such a manner so as not to mar the surface on the finished section.

.10 All steel shall be set accurately to the lines and elevations shown on the Drawings.

.11 Assume full responsibility for the correct plumbing, alignment and setting of all members; set all guys, braces, etc., necessary to maintain the structure during erection, and until such time as the work of other trades is in place.

3.4 **Open Web Steel Joists**

.1 Minimum bearing, unless otherwise detailed, shall be 63.5mm (2½") on steel and 100mm (4") on concrete or masonry. Where joists span from one side only they shall bear directly over centre of beam unless otherwise shown. Open web steel joists and their design shall conform to CAN/CSA-S16 latest edition.

.2 Shoes are to be designed so that the allowable bearing pressure on the supporting material is not exceeded.

.3 Provide bridging in accordance with CAN/CSA S16 latest edition.

.4 Extend and if necessary, deepen top chords of joists with cantilevered ends to carry the specified loading indicated or implied.

END OF SECTION 05 10 00

PART 1 – GENERAL

1.1 General Requirements

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

1.2 Work in Other Sections

Related Work Specified in Other Sections

Section 05 10 00	:	Structural Metal Framing
Section 05 50 00	:	Miscellaneous Metal
Section 06 10 00	:	Rough Carpentry
Division 7	:	Thermal and Moisture Protection

1.3 Reference Standards

CSA S136S1:19: North American Specification for the Design of Cold-Formed Steel Structural Members.
CSA W59-13: Welded Steel Construction (Metal Arc Welding)
CSA W47.1:09 (R2019): Certification of Companies for Fusion Welding of Steel
CSA W48-18: Filler Metals and Allied Materials for Metal Arc Welding

.1 Work of this section shall conform to CSA-S136-16 and to meet the specified requirements of the Canadian Sheet Steel Building Institute "Standard for Steel Roof Deck" and "Standard for Steel Floor Deck".

.2 Welding shall meet requirements of CSA-W59-13 and undertaken to meet requirements of CSA-W47.1:09 (R2019) and CSA-W55.3-08 (R2018)

1.4 Design Criteria

.1 Metal deck shall be of suitable design and thickness to safely support the indicated live and dead loading over the spans shown without exceeding the maximum working stress of 143.8 MPa.

.2 Deflection under live load only shall be not more than 1/240th of span for roof units, and 1/360th for floor units.

.3 Metal roof deck and composite concrete slab sections shall have a depth not less than 38mm (1½").

.4 Metal deck units shall span over three or more supports except where structural steel layout does not permit.

1.5 Qualifications

Execute the work of this Section only by a Subcontractor who has adequate plant, equipment and skilled tradesmen, and is known to have been responsible for satisfactory work similar to that specified during a period of at least five years.

1.6 **Shop Drawings**

Submit shop drawings in accordance with Section 01 33 00 Submittals.

1.7 **Product Handling**

.1 Deliver materials as required for erection. If storage becomes necessary stack bundles of steel deck on wood blocking clear of ground and tilted slightly so as to avoid water lying on the material. Storage area to be as close to the building as is practical.

.2 Protect deck against damage. Damaged materials shall be replaced by this Contractor without extra cost to the Owner.

.3 Protect the work of other trades from damage during erection, welding, and cutting operations, and make good any such damage where caused.

PART 2 - PRODUCTS

2.1 **Materials**

.1 Metal roof deck shall be fabricated from galvalume coated steel. Heavy AZ180 for deck surfaces within the arena portions and standard AZ150 for the remainder of the steel deck conforming to ASTM A792/A792M-10(2015).

.2 Metal roof deck for all roof areas except noted below shall be fabricated from zinc-coated steel conforming to A.S.T.M. designation A446-G5T Grade 'A' minimum steel, with a minimum decimal core thickness of 0.76 mm and a zinc coating class of G90.

.3 Incombustible, non-hygroscopic glass fibre insulation, with a density of 1.1 lbs. per cubic foot, shaped to completely fill all flutes on the top side of acoustic deck.

.4 Metal deck shall be manufactured by Robertson, Vic-West, or Canadian Metal Rolling Mills.

2.2 **Floor Deck Accessories**

.1 Cover plates shall be of the same material gauge as decking or of greater thickness, if required. Closures shall be tight to prevent leakage of concrete. Form to match deck contour, minimum 6 inches wide.

.2 Column flashing shall be provided to close spaces between floor units and columns, weld in place.

.3 End closures shall be provided to close open ends of cells at columns, walls and openings in floors.

.4 Closures shall be provided for closing voids between cells over partitions that are perpendicular to direction of cells. Closures may be rubber or steel metal. Closures above fire-resistant partitions shall be sheet metal at both sides of partition. Fibrous glass insulation shall fill spaces between pair of closures.

.5 Provide angles and other steel members not designated as structural steel or miscellaneous metal work, but which are required for a complete and rigid deck installation.

PART 3 - EXECUTION

3.1 Installation

.1 The metal roof units shall be placed on the supporting steel framework and adjusted to final position before being permanently fastened. Each unit shall be brought to proper bearing on the supporting structure. The roof units shall be placed in straight alignment for the entire length of run of cells and with close registration of the cells of one unit with those of abutting units.

.2 Align deck end to end to provide accurate fit with corresponding sections, with sections parallel, level and straight. All laps over supporting members shall be uniform and a minimum of 100 mm length, countersunk to provide proper nesting for deck thickness greater than 1.5 mm. Touch up all welds and fasteners with paint.

.3 Deck units shall be securely fastened to the steel framework at the ends of the units and at intermediate supports by welds not less than 20 mm diameter, spaced not more than 300 mm along the steel frame or in other manner approved by the Consultant. Where two units abut, each unit shall be welded to the steel frame. Welds shall be free of sharp points or edges.

.4 All welds for roof deck shall be made so that the finished deck surface is capable of sustaining an upward force of 1.44 kN/m^2.

.5 The side laps of adjacent units shall be fastened between supports by clinching at intervals not exceeding 600 mm, or by 25 mm long welds at intervals not exceeding 1 m.

.6 Damaged, bent or dished sheets shall be rejected and removed from the site.

.7 Install closures running parallel to flutes of deck to stiffen deck at roof edges.

3.2 Openings

.1 For openings 150 mm to 450 mm in diameter or square, provide not less than 50 mm x 50 mm x 6 mm angle reinforcing to frame across holes in direction perpendicular to flutes, and weld at least two flutes on each set of holes.

.2 Do not cut openings until final sizes have been verified on shop drawings or until steel framing provided under other sections of work is in place.

.3 For openings larger than 450mm in diameter or square, refer to Structural, Mechanical and Architectural drawings for sizes and locations.

3.3 Touch Up and Replacement

.1 Touch up adjacent primed surfaces burned, scratched or otherwise damaged during erection with prime paint to match shop coat, when erection is completed.

.2 Paint over bare areas on galvanized surfaces and welds with zinc rich paint.

.3 Replace dented, punctured or weld perforated deck where exposed to view.

END OF SECTION 05 30 00

PART 1 - GENERAL

1.1 General Requirements

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

1.2 Work In Other Sections

.1 Related Work Specified in Other Sections

Section 03 30 00	:	Cast-In-Place Concrete
Section 03 40 00	:	Precast Hollow Core Slabs
Section 04 20 00	:	Unit Masonry
Section 05 10 00	:	Structural Metal Framing
Section 05 30 00	:	Metal Decking
Section 05 50 00	:	Miscellaneous Metal
Section 06 40 00	:	Architectural Woodwork
Division 7	:	Thermal and Moisture Protection
Division 8	:	Openings
Section 09 21 16	:	Gypsum Board Assemblies
Section 09 51 13	:	Acoustic Panel Ceilings
Section 09 84 10	:	Acoustical Wall Treatment
Division 15	:	Mechanical
Division 16	:	Electrical

1.3 Scope of Work

.1 Work of this Section shall include the supply and installation of all load bearing and non - load bearing steel studs including all fasteners, bridging and bracing.

1.4 Qualifications

.1 Execute Work of this Section only by a Subcontractor who has adequate plant, equipment and skilled tradesmen to perform it expeditiously, and is known to have been responsible for satisfactory applications similar to that specified during a period of at least five (5) years.

1.5 Product Handling

.1 Package all materials and store off the ground and covered until ready for use.

1.6 Submittals

.1 Submit Shop Drawings to Consultant for approval prior to erection of all load bearing steel studs in accordance with Section 01 33 00 - Submittals.

PART 2 - PRODUCTS

2.1 **Materials**

.1 Load-bearing, Wind-Loaded and Non-loadbearing Channels: to ASTM C645-81, 3_" (92mm) and/or 4" (102.0mm) stud size, roll formed from electrogalvanized steel sheet, for screw attachment of composite building panel. Knock-out service holes at 460mm centres. Deflection for 25 p.s.f. horizontal load to be limited to $^{L}/360$mm. Refer to Structural Drawings for extent of loadbearing steel stud walls. Include all bridging necessary for the heights shown.

.2 Floor and ceiling tracks: to ASTM C645-81, in widths to suit stud sizes, 38mm flange height.

.3 Furring channels: to CSA A82.30-M1980, 38mm and 19mm.

PART 3 - EXECUTION

3.1 **Erection**

.1 Align partition tracks at floor, steel deck and framing, and ceilings, and secure at 600mm o.c. maximum.

.2 Place studs vertically at 600mm o.c. and not more than 50mm from abutting walls, and at each side of openings and corners. Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.

.3 Erect metal studding to tolerance of 3mm in 3000mm.

.4 Attach studs to bottom track and ceiling track using screws. Secure and brace back to structure as required to prevent movement.

.5 Attach gypsum board and/or exterior sheathing where noted, securely with tight fitting joints.

.6 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.

.7 Erect track at head of door opening to accommodate intermediate studs. Secure track to studs at each end. Install intermediate studs above opening in same manner and spacing as wall studs.

.8 Install wood blocking securely anchored to studs for anchorage of fixtures, accessories, brackets, etc. as shown on drawings.

END OF SECTION 05 40 10

PART 1 - GENERAL

General Requirements

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

Work in Other Sections

Related Work Specified in Other Sections

Section 03 30 00	:	Cast-in-Place Concrete
Section 04 20 00	:	Unit Masonry
Section 05 10 00	:	Structural Metal Framing
Section 06 10 11	:	Rough Carpentry
Section 06 40 00	:	Architectural Woodwork
Section 07 21 13	:	Board Insulation
Division 8	:	Openings
Section 09 91 22	:	Painting

Products Supplied Under Work of This Section
and Installed Under Work of Other Sections

Section 03 30 00	:	To install anchors, bolts and inserts
Section 04 20 00	:	To install anchors, bolts and inserts
Section 06 10 11	:	To install items included in work of this Section as specified

1.1 **Reference Standards**

CSA S16-14 (R2019): Design of Steel Structures
CSA W59-13: Welded Steel Construction (Metal Arc Welding)
G40.20-13 (R2018): General Requirements for Rolled or Welded Structural Quality Steel
G40.21-13 (R2018): Structural Quality Steel
CSA W47.1:19 Certification of Companies for Fusion Welding of Steel
W48-18: Filler Metals and Allied Materials for Metal Arc Welding
CAN/CSA G164-18: Hot Dip Galvanizing of Irregularly Shaped Articles
The Ontario Building Code, (O. Reg. 350/12)

1.2 **Qualifications**

.1 Execute the work of this Section only by a Subcontractor who has adequate plant, equipment and skilled tradesmen, and is known to have been responsible for satisfactory work similar to that specified during a period of at least five years.

1.3 **Shop Drawings**

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittals.
.2 Indicate connections, details, dimensions, and all other data as required to accommodate installation.

1.4 **Product Handling**

.1 Deliver materials as required for erection. If storage becomes necessary stack materials on wood blocking clear of ground and tilted slightly so as to avoid water lying on the material. Storage area to be as close to the building as is practical. Protect finished surfaces from damage or rust.

.2 Damaged materials shall be replaced by this Contractor without extra cost to the Owner.

PART 2 - PRODUCTS

2.1 **Materials**

.1 Steel Sections and Plates: to CAN/CSA-G40.21, Grade 350W.

.2 Hollow Structural Sections: to CAN/CSA-G40.21 Grade 350W.

.3 Welded Wire Fabric: WWF 50 x 50 x MW11.1 x MW11.1.

.4 Welding Materials: to CSA W48 Series.

.5 Hot rolled structural steel shapes: to CAN/CSA-G40.21, Grade 350W.

.6 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m^2 to CAN/CSA-G164-M92.

.7 Stainless Steel: bars and rods to ASI Type 316, No. 4 finish.

.8 Anchors: strap type or approved self-drilling type minimum 3 per member.

.9 Fasteners: as shown on drawings and as required for secure anchorage.

PART 3 - EXECUTION

3.1 **Fabrication**

.1 The jointing in built-up sections 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 similar fastenings. All screws shall be countersunk unless otherwise noted.

.2 Provide positive anchorage to the building structure by means of through bolts, welding, or approved inserts cast into the building structure.

.3 Apply a coat of primer to all interior ferrous metals before leaving the factory unless noted otherwise. Touch up any galvanized surfaces damaged after erection with galvafroid paint as approved by the Consultant.

.4 All items shall be fabricated, finished and assembled in the shop as much as possible, consistent with the size and shipping problems. Assembly on the job shall be kept to a minimum.

.5 All welds, unless noted specifically otherwise, are to be continuous where exposed and ground smooth.

3.2 **Schedule of Fabrication**

.1 Generally: Ensure that all Drawings and Specification Sections, including those for architectural, structural, mechanical and electrical work, are consulted to establish the limits of work included in this Section.

.2 Columns, Plates and Anchor Bolts:

: Steel of sizes shown on structural drawings, details.
: Finish: prime painted.

.3 Lintels:

: As required to complete all work as part of this project. Steel lintels shall be provided over all openings including Mechanical, Electrical and Architectural Drawings and as shown on the drawings.

: Steel of sizes shown on Lintel Schedule, Structural Drawings.

: Provide concealed angle clips welded to lintels and anchored with bolts at lintel supports.

: Finish: Prime paint for interior and galvanized for exterior locations.

: Finish: Prime paint for interior and prime painted for exterior locations.

: These items refer to components which are not normally supplied by the manufacturer but required to secure the Miscellaneous Specialty items.

.4 Miscellaneous Channels and Clip Angles:

: Provide all miscellaneous fastenings required, including supports, anchor bolts and other items as required and indicated to complete all work as part of this project.

.5 Lateral Support:

: Install deflection space and lateral support for non-load-bearing masonry walls and partitions in accordance with specified requirements of CSA-A371-94 and CSA-S304.1-94.

: Angles to be per details on the structural drawings.

: Finish: Prime paint.

.6 Fixed Steel Bollards:
: Schedule 40 steel pipe, quantity, sizes and lengths as detailed on the drawings.

3.3 Erection

.1 Erect work in accordance with shop drawings and in co-ordination with trades whose work relates to this Section.

.2 Erect work plumb, straight, square and accurately fitted with tight joints at intersections.

.3 Where possible install work in one continuous piece.

.4 Anchor all components to structure, walls, floors as required with weld or other methods of anchorage approved by the Consultant.

3.4 Touch-up and Replacement

.1 Touch up adjacent primed surfaces burned, scratched or otherwise damaged during erection with prime paint, to match shopcoat, or galvafroid for galvanized when erection is completed.

.2 Paint over bare areas on galvanized surfaces and welds with zinc rich paint.

.3 Replace damaged or unacceptable materials indicated by the Consultants.

END OF SECTION 05 50 00

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 03 30 00 - Cast-in-Place Concrete.

.3 Section 04 20 00 – Unit Masonry

.4 Section 05 10 00 - Structural Metal Framing

.5 Section 05 21 00 - Steel Joist Framing.

.6 Section 05 31 00 - Steel Deck.

.7 Section 06 10 11 - Rough Carpentry

.8 Section 06 40 00 - Architectural Woodwork

.9 Section 07 21 13 - Board Insulation

.10 Section 09 91 22 - Painting.

Products Supplied Under Work of This Section
and Installed Under Work of Other Sections

Section 03 30 00	:	To install anchors, bolts and inserts
Section 04 20 00	:	To install anchors, bolts and inserts
Section 06 10 11	:	To install items included in work of this Section as specified

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)

.1 ASTM A53/A53M-[02], Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.

.2 ASTM A269-[02], Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

.3 ASTM A307-[02], Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.40-[97], Anti-corrosive Structural Steel Alkyd Primer.

.2 CAN/CGSB-1.181-[92], Ready-Mixed, Organic Zinc-Rich Coating.

.3 Canadian Standards Association (CSA International)

.1 G40.20-04: General Requirements for Rolled or Welded Structural Quality Steel

.2 G40.21-04 (R2009): Structural Quality Steel

.3 CAN/CSA G164-M92 (R2003): Hot Dip Galvanizing of Irregularly Shaped Articles

.4 CSA S16.1-09: Limit States Design of Steel Structures

.5 CSA W47.1-09: Certification of Companies for Fusion Welding of Steel

.6 CSA W59-03 (R2008): Welded Steel Construction (Metal Arc Welding)

.7 CSA S16-14 (R2019): Design of Steel Structures

.8 CSA W59-13: Welded Steel Construction (Metal Arc Welding)

.9 G40.20-13 (R2018): General Requirements for Rolled or Welded Structural Quality Steel

.10 G40.21-13 (R2018): Structural Quality Steel

.11 CSA W47.1:19 Certification of Companies for Fusion Welding of Steel

.12 W48-18: Filler Metals and Allied Materials for Metal Arc Welding

.13 CAN/CSA G164-18: Hot Dip Galvanizing of Irregularly Shaped Articles

.14 The Ontario Building Code, (O. Reg. 350/12)

.4 The Environmental Choice Program

.1 CCD-047a-[98], Paints, Surface Coatings.

.2 CCD-048-[98], Surface Coatings - Recycled Water-borne.

1.3 SUBMITTALS

.1 Shop Drawings

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Packing, Shipping, Handling and Unloading:

.1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Storage and Protection:

.1 Cover exposed stainless steel surfaces with pressure sensitive heavy protection paper or apply strippable plastic coating, before shipping to job site.

.2 Leave protective covering in place until final cleaning of building. Provide instructions for removal of protective covering.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Divert unused metal materials from landfill to metal recycling facility approved by Consultant.

1.6 QUALIFICATIONS

.1 Execute the work of this Section only by a Subcontractor who has adequate plant, equipment and skilled tradesmen, and is known to have been responsible for satisfactory work similar to that specified during a period of at least five years.

1.7 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittals.

.2 Indicate connections, details, dimensions, and all other data as required to accommodate installation.

Part 2 Products

2.1 MATERIALS

.1 Steel sections and plates: to CSA-G40.20/G40.21, Grade 350 for hollow structural sections and Grade 300W for Plates and Flat Shapes.

.2 Welding Materials: to CSA W48 Series.

.3 Bolts and anchor bolts: to ASTM A307.

.4 Stainless steel tubing: to ASTM A269, Type 302 or 304 alloy, Seamless welded with AISI No. 4 finish.

.5 Stainless Steel: bars and rods to ASI Type 316, No. 4 finish.

.6 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

.7 Hollow Structural Sections: to CAN/CSA-G40.21 Grade 350W.

.8 Welded Wire Fabric: WWF 50 x 50 x MW11.1 x MW11.1.

.9 Hot rolled structural steel shapes: to CAN/CSA-G40.21, Grade 350W.

.10 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m^2 to CAN/CSA-G164-M92.

.11 Anchors: strap type or approved self-drilling type minimum 3 per member.

.12 Fasteners: as shown on drawings and as required for secure anchorage.

2.2 PRIMERS, COATINGS AND SHOP PAINTING

.1 Interior Steel in Dry Areas: Quick drying oil alkyd conforming to CISC/CPMA 2.75.

.2 Exterior Steel, Interior Steel in Unheated Areas, Steel Embedded in Concrete**:** Hot dip galvanized conforming to CSA G164, minimum Z275 coating. Galvanizing of structural steel components and loose lintels: refer to Section 05 12 23.

.3 Galvanized Coating Touch-Up**:** W.R. Meadows "Galvafroid" or Kerry Industries "Z.R.C." zinc rich coating or similar manufacturer containing minimum 90% zinc by weight.

.4 Apply two (2) shop coat(s) of primer or coating as indicated above and according to manufacturers recommendations. Do not prime aluminum, stainless steel or those components to be galvanized or encased in concrete.

.5 Use primer unadulterated, as provided by manufacturer. Paint on dry surfaces free from rust scale and grease. Do not paint when temperature is lower than 10 deg. Celsius and rising.

.6 Clean surfaces to be field welded; do not paint.

2.3 FASTENINGS

.1 Use nuts and bolts conforming to ASTM A307, A325, and A563 as applicable.

.1 For interior work, use cadmium-plated fastenings where other protection is not specified.

.2 For exterior work, use Type 300 or 400 stainless steel.

2.4 ANCHORS AND SHIMS

.1 For exposed anchorage of aluminum, if applicable, use stainless steel and otherwise to match metal anchored. For non-exposed work, anchors and shims may be galvanized steel.

2.5 PIPE

.1 To ASTM A53, extra strong steel pipe for bollards.

2.6 BITUMINOUS PAINT

.1 Alkali-resisting to meet specified requirements of CAN/CGSB-1.108, Type 2. Use to insulate contact between dissimilar metals.

2.7 FABRICATION

.1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.

.2 Use self-tapping shake-proof flat headed screws on items requiring assembly by screws or as indicated.

.3 Where possible, fit and shop assemble work, ready for erection.

.4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

.5 Weld all connections where possible, and bolt where not possible unless indicated otherwise on drawings.

.6 Weld all stainless steel by the Argon Arc Process. Grind smooth and polish joints, crence-free, and flush without seams.

2.8 LIST OF MISCELLANEOUS METAL FABRICATIONS

.1 This Section includes, but is not limited to the following list. Note-: Galvanize all exterior items and other items noted. Prime paint all interior items.

.1 Anchors, Bolts, Inserts, Sleeves for work in this Section.
.2 Stairs, railings, handrails.
.3 Stainless Steel handrails.
.4 Mechanical Room Steel Stairs, railings, handrails.
.5 Metal Swing Gate.
.6 Hangers and Supports (for work in this Section).
.7 Lintels (if not by Structural Steel).
.8 Bollards (see ADs)
.9 Gates (see ADs)
.10 Shelf Brackets and Hooks (see Drawings)
.11 Steel Ladders, rungs & guardrails (see ADs)
.12 Miscellaneous steel L-angle dividers for Applications Classroom -Wood Storage Compartment (see ADs).
.13 Miscellaneous angles at edges of exposed ceilings to cover insulation in deck flutes.
.14 Miscellaneous steel trim angles at doors where intumescent paint is applied.
.15 Miscellaneous horizontal, vertical closure plates and bent plates and channels identified on drawings (ie. at columns, beams, curtain wall etc…)
.16 Steel plates at top and bottom of mechanical louvers.
.17 Overhead door bent plate jambs.
.18 Gym under stage chair storage dollies; see drawings for details. General Contractor to coordinate fastening of panel faces with Millwork Contractor.

Part 3 Execution

3.1 GENERAL

.1 Supply and install all miscellaneous metal work indicated on the Drawings and not indicated in work of other Sections in addition to items listed below.

.1 The jointing in built-up sections 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 similar fastenings. All screws shall be countersunk unless otherwise noted.

.2 Provide positive anchorage to the building structure by means of through bolts, welding, or approved inserts cast into the building structure.

.3 Apply a coat of primer to all interior ferrous metals before leaving the factory unless noted otherwise. Touch up any galvanized surfaces damaged after erection with galvafroid paint as approved by the Consultant.

.4 All items shall be fabricated, finished and assembled in the shop as much as possible, consistent with the size and shipping problems. Assembly on the job shall be kept to a minimum.

.5 All welds, unless noted specifically otherwise, are to be continuous where exposed and ground smooth.

.6 Generally: Ensure that all Drawings and Specification Sections, including those for architectural, structural, mechanical and electrical work, are consulted to establish the limits of work included in this Section.

.7 Columns, Plates and Anchor Bolts:

: Steel of sizes shown on structural drawings, details.
: Finish: prime painted.

.8 Lintels:

: As required to complete all work as part of this project. Steel lintels shall be provided over all openings including Mechanical, Electrical and Architectural Drawings and as shown on the drawings.

: Steel of sizes shown on Lintel Schedule, Structural Drawings.

: Provide concealed angle clips welded to lintels and anchored with bolts at lintel supports.

: Finish: Prime paint for interior and galvanized for exterior locations.

: Finish: Prime paint for interior and prime painted for exterior locations.

: These items refer to components which are not normally supplied by the manufacturer but required to secure the Miscellaneous Specialty items.

.9 Miscellaneous Channels and Clip Angles:

: Provide all miscellaneous fastenings required, including supports, anchor bolts and other items as required and indicated to complete all work as part of this project.

.10 Lateral Support:

: Install deflection space and lateral support for non-load-bearing masonry walls and partitions in accordance with specified requirements of CSA-A371-94 and CSA-S304.1-94.

: Angles to be per details on the structural drawings.

: Finish: Prime paint.

.11 Fixed Steel Bollards:
: Schedule 40 steel pipe, quantity, sizes and lengths as detailed on the drawings.

3.2 ERECTION

.1 Do welding work in accordance with CSA W59 unless specified otherwise.

.2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

.3 Provide suitable means of anchorage acceptable to Consultant such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.

.4 Exposed fastening devices to match finish and be compatible with material through which they pass.

.5 Provide components for building by other sections in accordance with shop drawings and schedule.

.6 Make field connections with bolts to CSA-S16.1, or weld.

.7 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.

.8 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.

.9 Touch-up galvanized surfaces with zinc rich primer where burned by field welding. Spray or brush apply a minimum of three (3) coats of zinc-rich paint to achieve a dry film thickness of 8 mils. Apply a finish coat of aluminum paint to provide a colour blend with the surround galvanizing.

.12 Where possible install work in one continuous piece.

.13 Anchor all components to structure, walls, floors as required with weld or other methods of anchorage approved by the Consultant.

.14 Touch up adjacent primed surfaces burned, scratched or otherwise damaged during erection with prime paint, to match shopcoat, or galvafroid for galvanized when erection is completed.

.15 Paint over bare areas on galvanized surfaces and welds with zinc rich paint.

.16 Replace damaged or unacceptable materials indicated by the Consultants.

3.3 WALL UPPER SHELF

.1 Steel Angles, Steel Channel, Flat Bar Steel, Steel Rod as indicated on details.

.2 Use secure round head fasteners or countersink holes for flat head screws.

.3 Prime paint: Galvafroid.

.4 Chamfer cut ends of Rod 2 mm.

.5 Refer to AD drawings.

3.4 MECHANICAL ROOM STEEL STAIRS

.1 Refer to Structural Drawing for Stair Construction Components.

.2 Refer to drawings for dimensions, location, and guardrail details.

.3 Note: install stairs, handrails, plumb, level, rigid and secure, as per details shown on Drawings.

3.5 GATE

.1 Welded steel pipe construction, as shown on AD drawings. Galvanize after fabrication.

3.6 ACCESS STAIR & LADDER

.1 Fabricate interior and exterior roof access ladders as described on AD drawings in Binder C. Typical Construction is detailed on Structural Drawings.

3.7 WALL BRACKETS AND HOOKS

.1 As shown on Drawings - prime paint.

3.8 BOLLARDS

.1 Supply and install galvanized steel bollards as shown on Drawings. Bollards shall be 150 mm x 9.5 mm thick wall at 1200 mm high, seamless steel pipe. Install 1200 mm into a concrete foundation. Fill bollard with 25 MPa concrete and round top. Round top of footing also. For number of Bollards required - refer to Drawings.

.2 Refer to drawing AD drawings..

3.9 GALVANIZED STEEL

.1 Galvanize steel members, fabrications, and assemblies after fabrication by the hot dip process in accordance with CSA G164, minimum Z275 coating.

.2 Galvanize bolts, nuts and washers and iron and steel hardware components in accordance with CSA G164.

.3 Safeguard products against steel embrittlement in conformance with ASTM A143.

.4 Design features which may lead to difficulties during galvanizing shall be pointed out prior to dipping.

.5 The composition of metal in the galvanizing bath shall be not less than 98.0% zinc.

3.10 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 03 10 00 – Concrete Forms and Accessories.

.2 Section 08 11 14- Steel Doors and Frames.

.3 Section 07 50 13 – Common Work Results for Roofing*

.4 Section 07 50 16 – Rough Carpentry for Roofing *coordinate responsibilities with this Section and Work Division Table in Section 07 50 13.

1.2 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CSA B111-[1974(R1998)], Wire Nails, Spikes and Staples.
.2 CAN/CSA-G164-[M92(R1998)], Hot Dip Galvanizing of Irregularly Shaped Articles.
.3 CSA O121-[M1978(R1998)], Douglas Fir Plywood.
.4 CAN/CSA-O141-[91(R1999)], Softwood Lumber.
.5 CSA O151-[M1978(R1998)], Canadian Softwood Plywood.
.6 CAN/CSA-O325.0-[92(R1998)], Construction Sheathing.

.2 National Lumber Grades Authority (NLGA)

.1 Standard Grading Rules for Canadian Lumber [2000].

1.3 QUALITY ASSURANCE

.1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

.2 Plywood identification: by grade mark in accordance with applicable CSA standards.

.3 Plywood, OSB and wood based composite panel construction sheathing identification: by grademark in accordance with applicable CSA standards.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Divert unused wood materials from landfill to recycling, reuse, composting facility approved by Consultant.

.3 Do not dispose of preservative treated wood through incineration.

.4 Do not dispose of preservative treated wood with materials destined for recycling or reuse.

.5 Dispose of treated wood, end pieces, wood scraps and sawdust at sanitary landfill approved by Consultant.

.6 Dispose of unused wood preservative material at official hazardous material collections site approved by Consultant.

.7 Do not dispose of unused preservative material into sewer system, into streams, lakes, onto ground or in other locations where they will pose health or environmental hazard.

Part 2 Products

2.1 LUMBER MATERIAL

.1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:

- .1 CAN/CSA-O141.
- .2 NLGA Standard Grading Rules for Canadian Lumber.

.2 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers:

- .1 Douglas fir Graded 122-C, construction or No. 2 Pine, pressure treated in accordance with CSA 080M.
- .2 Board sizes: "Standard" or better grade.
- .3 Dimension sizes: "Standard" light framing or better grade.
- .4 Post and timbers sizes: "Standard" or better grade.

2.2 PANEL MATERIALS

.1 Douglas fir plywood (DFP): to CSA O121, standard construction, good one side with waterproof adhesive.

2.3 ACCESSORIES

.1 Nails, spikes, staples, screws, bolts anchors lag screws, special fastening devices and supports required for erection of all carpentry components: to CSA B111. Use galvanized components where exposed to exterior atmosphere.

2.4 FINISHES

.1 Galvanizing: to CAN/CSA-G164, use galvanized fasteners for exterior work and interior highly humid areas.

Part 3 Execution

3.1 GENERAL

.1 Supply and install all other carpentry shown on drawings or as required for completion of work. Co-operate with other trades in installing items supplied by other sections, cut openings in woodwork when so required and make good disturbed surfaces.

3.2 PREPARATION

.1 Do all wood framing in accordance with the Ontario Building Code and Can3-086M-1983.

.2 Machine dressed work shall be slow fed using sharp cutters and finished members shall be free from drag, feathers, slivers or roughness of any kind.

.3 Frame materials with tight joints rigidly held in place.

.4 Design construction methods for expansion and contraction of the materials.

.5 Erect work plumb, level, square and to required lines.

.6 Be responsible for methods of construction for ensuring that materials are rigidly and securely attached and will not be loosened by the work of other trades.

3.3 FURRING AND BLOCKING

.1 Supply and install furring and blocking, required.

.2 Align and plumb faces of furring and blocking to tolerance of 1:600.

3.4 ROUGH BUCKS AND NAILERS

.1 Install wood bucks and nailers, as indicated, including wood bucks and linings around frames for doors and windows.

.2 Except where indicated, otherwise, use material at least 38 mm thick secured with 9 mm bolts located within 300 mm from ends of members and uniformly spaced at 1200 mm between.

.3 Countersink bolts where necessary to provide clearance for other work.

3.5 ROOF FASCIAS, CANTS, NAILERS CURBS

.1 Install wood cants, fascia backing, nailers, curbs and other wood supports for roofing, sheet metal fork, roof mounted equipment.

.2 Secure with galvanized 9 mm bolts, where indicated, galvanized nails elsewhere. Locate fastenings within 300 mm from ends and uniformly spaced between. Space bolts at 1200 mm and nails at 600 mm centres, except where indicated otherwise.

.3 Staple vapour retardant sheet strip to underside of nailers before installation. Apply strip continuous with 200 mm overlap at joints, free of wrinkles and tears, with at least 200 mm exposed for overlap on roof deck.

.4 Install wood nailers for roof hoppers, dressed, tapered and recessed slightly below top surface of roof insulation.

3.6 SUPPORTS FOR MECHANICAL UNITS

.1 Performed by Section 07 50 16. Refer to Section 07 50 13 for work division.

3.7 PRESSURE TREATED WOOD

.1 Use wood pressure treated in accordance with CSA 080M for all wood members in contact with exterior walls and roofs.

.2 Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.

3.8 GARBAGE ENCLOSURE DOORS

.1 Supply and install 38 mm x 140 mm pressure treated wood slats to front of garbage enclosure doors.

.2 Fasten each slat to steel frames with 2 screws at top, bottom and at diagonal bracing.

3.9 INSTALLATION OF HOLLOW METAL FRAMES

.1 Set frames plumb and square in their exact location and at correct elevation. Firmly block and brace to prevent shifting. Shim up where required to ensure proper alignment dimensions from finished floor to head of frame. Install temporary wood spreaders at mid-height.

.2 Where pressed steel frames are installed in concrete walls, secure frames to concrete using lead expansion shields and anchor bolts through pipe sleeves. Perform drilling of concrete as required. Fill recessed bolt heads flush to frame face with approved metal filler and sand smooth.

.3 Install fire rated door frames in accordance with requirements of National Fire Code Volume 4, produced by The National Fire Protection Association (NFPA 80).

3.10 GENERAL

.1 Supply and install all other carpentry shown on drawings or as required for completion of work. Co-operate with other trades in installing items supplied by other sections, cut openings in woodwork when so required and make good disturbed surfaces.

3.11 ERECTION

.1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

.2 Countersink bolts where necessary to provide clearance for other work.

3.12 SCHEDULES

.1 Provide electrical equipment backboards for mounting electrical equipment as indicated. Use 19mm thick plywood on 19 x 38 mm furring around spacing, perimeter and at maximum 300 mm intermediate

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 06 10 11 – Rough Carpentry.

.3 Section 06 47 00 – Plastic Laminates.

.4 Section 08 80 50 – Glazing.

1.2 REFERENCES

.1 American National Standards Institute (ANSI)

- .1 ANSI A208.1-[99], Particleboard.
- .2 ANSI A208.2-[94], Medium Density Fiberboard (MDF).

.2 American Society for Testing and Materials (ASTM)

- .1 ASTM E1333-[96], Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates From Wood Products Using a Large Chamber.
- .2 ASTM D2832-[92(R1999)], Standard Guide for Determining Volatile and Non-volatile Content of Paint and Related Coatings.
- .3 ASTM D5116-[97], Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products.

.3 Architectural Woodwork Manufacturers Association of Canada (AWMAC)

- .1 AWMAC Quality Standards for Architectural Woodwork.

.4 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB-71.20-[M88], Adhesive, Contact, Brushable.

.5 Canadian Standards Association (CSA)

- .1 CSA B111-[74(R1998)], Wire Nails, Spikes and Staples.
- .2 CSA O112.4-[M1977(R1999)], Standards for Wood Adhesives.
- .3 CSA O112.5-Series-M-[1977(R1999)], Urea Resin Adhesives for Wood (Room- and High-Temperature Curing).
- .4 CSA O112.7-Series M-[1977(R1999)], Resorcinol and Phenol-Resorcinol Resin Adhesives for Wood (Room- and Intermediate-Temperature Curing).
- .5 CSA O115-[M1982(R2001)], Hardwood and Decorative Plywood.
- .6 CSA O121-[M89(R1998)], Douglas Fir Plywood.
- .7 CAN/CSA O141-[91R1999], Softwood Lumber.
- .8 CSA O151-[M1978(R1998)], Softwood Plywood.
- .9 CSA O153-[M1980(R1998)], Poplar Plywood.
- .10 CSA Z760-[94], Life Cycle Assessment.

.6 Environmental Choice Program (EPC)

.1 ECP-44-[92], Adhesives.

.2 ECP-45-[92], Sealants and Caulking Compounds.

.3 ECP-76-[98], Surface Coatings.

.7 International Organization for Standardization (ISO)

.1 ISO 14040-[97], Environmental Management-Life Cycle Assessment - Principles and Framework.

.2 ISO 14041-[98], Environmental Management-Life Cycle Assessment - Goal and Scope Definition and Inventory Analysis.

.8 National Electrical Manufacturers Association (NEMA)

.1 NEMA LD-3-[95].

.9 National Hardwood Lumber Association (NHLA)

.1 Rules for the Measurement and Inspection of Hardwood and Cypress [, January 1996].

.10 National Lumber Grades Authority (NLGA)

.1 Standard Grading Rules for Canadian Lumber [, 2000].

1.3 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Indicate details of construction, profiles, jointing, fastening and other related details.

.1 Scales: profiles full size, details 1/2 full size.

.3 Indicate materials, thicknesses, finishes and hardware.

1.4 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit duplicate samples: sample size 300 x 300 mm samples of each type of paneling laminate, melamine and each type of solid wood or plywood to receive stain or natural finish.

.3 Submit a typical prototype unit representative of the work of this section.

1.5 QUALIFICATION

.1 Millwork manufacturer to have not less than 5 years proven first class experience in institutional millwork, shall be a member of AWMAC or shall be able to provide a maintenance bond as specified.

1.6 GUARANTEE

.1 This architectural woodworker shall furnish the owner with a two (2) year AWMAC Guarantee Certificate, or an equivalent maintenance bond, to the full value of the architectural woodwork sub-contract, certifying that the architectural woodwork has been manufactured and/or installed in accordance with the standards incorporated in the AWMAC Quality Standards Manual, (edition in effect at time of tender). Those providing the maintenance bond, instead of the Guarantee Certificate, to submit a letter from their insurer stating that they will provide the bond. A copy of this letter to be attached to their tenders. The Guarantee shall cover replacing and/or refinishing to make good any defects in architectural woodwork due to faulty workmanship or defective materials supplied by this architectural woodworker, which appear during a two (2) year period following the date of substantial completion of the project.

1.7 INSPECTION

.1 Architectural woodwork shall be manufactured and/or installed to the specified AWMAC Quality Standards and may be subject to an inspection at the plant and site by ainspector. Such inspection costs shall be paid from Cash Allowances. Shop drawings shall be submitted for review or approval before any work is commenced. Any work which does not meet AWMAC Quality Standards, as specified, shall be replaced by this architectural woodworker, at no additional cost to the owner and to the satisfaction of the consultant and the inspector.

1.8 DELIVERY, STORAGE, AND HANDLING

.1 Protect millwork against dampness and damage during and after delivery.

.2 Store millwork in ventilated areas, protected from extreme changes of temperature or humidity.

Part 2 Products

2.1 MATERIALS

.1 Softwood lumber: unless specified otherwise, S4S, moisture content 10 % or less for interior work in accordance with following standards:

.1 CAN/CSA-O141.

.2 NLGA Standard Grading Rules for Canadian Lumber.

.3 AWMAC premium grade, moisture content as specified.

.2 Hardwood lumber: moisture content 10% or less for interior work in accordance with following standards:

.1 National Hardwood Lumber Association (NHLA).

.2 AWMAC premium grade, moisture content as specified.

.3 Species: to be Maple unless otherwise noted.

.3 Hardwood plywood: to CSA O115, of thickness indicated, rotary cut face veneer, birch plywood, veneer core, No. 1 grade. Select veneers to provide book match veneer strips to be 240 mm wide minimum.

.1 Species: to be Birch, unless otherwise noted.

.4 Nails and staples: to CSA B111, galvanized for exterior work, interior high-humidity areas and for treated lumber; plain finish elsewhere. Use spiral thread nails except where specified elsewhere.

.5 Particle Board core: to CAN3-0188.1-M78, Grade R, 720 kg/m3 density in thicknesses indicated.

.6 Plywood core for shelving: to CSA 0120.

2.2 PLASTIC LAMINATE

.1 Refer to Section 06 47 00.

2.3 MELAMINE FACED PARTICLEBOARD

.1 To CAN3-0.188.1-M78, Grade "R" particleboard sanded faces, 13 mm, 16 mm, and 19 mm thickness, faced with laminated plastic. Melamine resin impregnated cover sheet with coloured and/or pattern paper inner layer. Thermally fuse to rigid particleboard substrate. Melamine faces shall be 8 mil thickness. Wood grain pattern to be chosen by Consultant from manufacturer's full range.

.1 Acceptable Material: Melamine faced particleboard as manufactured by Flakeboard, Formica or Arborite Division of Domtar Construction Materials Ltd., are of acceptable quality but colour/pattern requires approval prior to confirmation of full acceptance.

2.4 EDGE BANDING

.1 Solid polyvinyl chloride (PVC), 3 mm thickness x full width of panel edge, colour/pattern to match finished face of melamine panel or as selected by Consultant. All exposed edges of banding to be radiused to 2 mm radius after installation on panels. Submit sample of edge-banded panel with radiused edges to Consultant for approval prior to fabrication of architectural woodwork.

.1 Acceptable Material: Solid PVC edging as manufactured by "Woodtape" Edge-Banding.

.2 Acceptable Material: Solid PVC edging as manufactured by "Complast Inc."

.3 Provide solid hardwood edging, and plastic laminate edging where specified on AD drawings.

2.5 CABINET HARDWARE

.1 Furnish and install all hardware to custom casework as follows:

.1 Cupboard Doors - 19 mm thick.:

.1	Hinges	200 Series 110° Salice
.2	Roller Catches	807N 2G (SgDr) Onward
.3	Door Pulls	CBH235-3 1/2" C32D
.4	Cupboard Locks	CB 250 or 255 double door dead bolt by Hafele (to eliminate use of elbow catches)

.2 Drawers - 19 mm thick.:

.1	Drawer Slides	"Accuride Slide" 3832-2G full extension with ball bearing rollers, 100lb. capacity
.2	Drawer Pulls	CBH235-3 1/2" C32D
.3	Drawer Locks	8703 - 14a National

.3 Shelving:

(Note: AD drawings may graphically represent and note holes for adjustable shelving, however, pilaster strips and shelf clips are to be used):

.1	Pilaster strips	KV255 Zinc Knape & Vogt
.2	Shelf Clips	KV256 Zinc Knape & Vogt

.4 Teacher's Closet Doors - 35 mm thick.:

.1	Hinges	F179 76x76 Stanley C15
.2	Roller Catches	504N Onward C26
.3	Surface bolt	043-4 X Angle Strike C15
.4	Teacher's Closet Locks	supplied and installed under Section 08 71 10 & 08 71 15.

.5 Closet Rods and Flanges

.1	Rods:	chrome finish, Ø 33 mm.
.2	Flanges:	chrome finish, closed flanges at both ends of rods.

.6 Shelf and Rod — Steel, white enamel, model No. 1797, manufactured by Hager.

.7 Display Case:

.1 Pilaster Strips: Brush Finish
.2 Shelf Brackets: Brush Finish
.3 Aluminum sliding track, top and bottom to accommodate sliding glass doors
.4 Lock sets and all required hardware for sliding glass door display system
.5 Glazing: 12mm tempered glass for shelves. 8mm tempered glass for sliding doors. Glazing to display cases to be provided by Section 08 80 50 and installed by the Section 06 40 00.

.8 Counter Brackets:

.1 Teacher's Workroom Counter & Computer Room Counter (750mm counter depth) Support Bracket
Model: Hafele Hebgo Bracket, model no. 287-44-489, 150 kg capacity per pair, grey powder coat, refer to AD 600 series.

.2 Library Workroom Counter (635mm counter depth) Support Bracket
Model: Hafele Hebgo Bracket, model no. 287-45-477, 150 kg capacity per pair, grey powder coat, refer to AD 600 series.

.3 Copier Workroom #110 Counter (400mm counter depth) Support Bracket
Model: Hafele Hebgo Bracket, model no. 287-44-443, 150 kg capacity per pair, grey powder coat, refer to AD 600 series.

.10 Safety Release Coat Hook:

.1 High strength polycarbonate coat hook with safety release weight under downward pressure to not exceed 12 kg (26 lbs.)

.2 Supply all suitable mounting hardware for a vandal proof, secure installation using stainless steel sleeve bolts on partition doors or panels. Do not supply standard Robertson or Phillips head screws.

.3 Colours: 2 premium colours from manufacturer's complete range.

.4 Acceptable Materials: "Henkel Hook" as manufactured/distributed by Henkel Diversified Inc, London ON, Tel. (519) 641-5872.

.5 Locations: to all Childcare and Kindergarten 'Cubbies'; (two per individual cubbie as shown on AD drawings in Binder C) and Teachers Closets. Hooks for these areas noted above are to be supplied by this section. All other areas, (washroom and change rooms) safety hooks are to be supplied by Section 10 11 25.

.6 Samples: submit test data and samples for review as specified in Section 013330 – Submittal Procedures.

.11 Bench Support Brackets:

.1 Bench support brackets to be Hafele Hebgo bracket. Model to be coordinated by millwork contractor based on size and load capacity of 150 kg per 600mm.

.12 Heavy Duty Lock Castors:

.1 Swivel Castors with brake, 2" x 2-1/2" (40kg): Part 00K21.21, as distributed by Lee Valley Tools, 1-800-267-8767, www.leevalley.com, or approved alternate.

.2 Quantity: Quantity and Location as described on AD drawings.

.13 Grommets:

.1 Cable grommets: round, one-piece chrome polished '429.94.258' by Hafele or approved alternative.

.2 Quantity: Quantity and Location as described on AD drawings.

.2 This section shall also include accessories such as rubber door silencers (2 per drawer or door), and other items necessary for the completion of the millwork.

.3 Cabinet Keying: Key all cabinet and drawer locks alike for the entire school, except teachers" closets.

2.6 MELAMINE CLAD CABINETWORK

Casework shall be melamine clad unless otherwise specified within this section and/or AD Drawings.

.1 All cabinet frames whether for base, wall or tall floor standing cases, shall be fabricated so each is a self-contained module. Front side top and bottom, exterior and interior surfaces shall be finished allowing future relocation of any module, into any bench arrangement, without need of any additional finishing.

.2 Gables and panels shall be fabricated from 19 mm thick melamine surfaced panels with a P.V.C. edging applied to exposed edges.

.3 Bottoms shall be fabricated utilizing the same materials and edge finish as gables. Front edge will be edged with P.V.C. edging. All other edges will be thoroughly sealed and moisture proofed prior to attachment to gables.

.4 Rails shall be fabricated and machined to join the gables and form a rigid cabinet frame.

.5 Tops (applies to wall and tall units only) shall be fabricated utilizing the same material and edge finish as gables. Front edge will be edged with P.V.C. edging.

.6 Toe kick rail shall have a 100 mm x 19 mm section, machined to receive four screw nails for attachment to bottom front edge of gables. Cabinet base shall be plywood attached to melamine cabinet separately, insuring the melamine particle core gables do not come in contact with the floor.

.7 Backs in base cupboards shall be fabricated from a 13 mm hardboard.

.8 Backs in wall and tall cabinets shall be fabricated from 13 mm thick melamine surfaced panels securely glued and screw nailed into the check out provided in the backs of gables, tops, and bottoms.

.9 Shelves shall be fabricated from 19 mm melamine faced particle board with PVC edging. All shelves shall be adjustable at 13 mm increments and each will be supported by a shelf support resting in four pilaster strips attached to the gables.

.10 Doors shall be fabricated from 19 mm thick melamine surfaced panels. All four edges shall be P.V.C. edging.

.11 Drawer fronts shall be fabricated utilizing the same material and edge finish as doors. All four edges shall P.V.C. edging. Fronts will be secured to drawer bodies with five screw nails through the front of the drawer body into the core of the drawer front.

.12 Drawer bodies shall consist of box construction fabricated from 13 mm birch plywood with solid birch edge, front, sides and back with a 13 mm hardboard bottom dadoed and glued into box members. Joint front, sides and back with carefully fitted glued and tenoned joints. Alternately, Blum Metabox drawer body and side can be used.

.13 35 mm thick doors shall be solid core with plastic laminate both sides and on all four edges, color and grain to match melamine.

.14 Solid hardwood glazed door fronts and frames shall receive lacquer finish. Glazing shall be 3mm tempered clear glass.

.15 Finish:

.1 Melamine surfaced panels shall be finished both sides in the same colours, patterns, and grain as selected by the Consultant.

.2 Solid hardwood glazed doors and drawer bodies shall be sanded, then sealer coated, and sanded with two finish coats of catalytic type acid resistant varnish.

2.7 PLASTIC LAMINATE on PLYWOOD cabinetwork

Refer to AD drawings (binder C) for locations

.1 Plastic Laminate factory glued to plywood core, thickness as shown or specified.

.2 Plastic laminate graphics to be book matched or run in same direction where applicable. All exposed finished casework, drawer, cupboard and door fronts shall have vertical grain orientation.

.3 Use solid hardwood for exposed edges, typical for Library/Learning Commons millwork. Casework in Library / Learning Commons to be plastic laminate on plywood cabinetwork as indicated in this section and AD Drawings.

.4 Case bodies: ¾" plywood, finish with plastic laminate factory adhered. Typical for gables and panels

.6 Backs: ¼" plywood, finished with plastic laminate. Backs in wall and tall cabinets shall be securely glued and screw nailed into the check out provided in the backs of gables, tops, and bottoms.

.7 Shelving: ¾" plywood, finish with plastic laminate factory adhered. All shelves shall be adjustable at 13mm increments and each will be supported by a shelf support resting in four pilaster strips attached to the gables.

.8 Drawers:

.1 ¾" plywood, finish with plastic laminate. All four edges shall have plastic laminate edging. Fronts will be secured to drawer bodies with five screw nails through the front of the drawer body into the core of the drawer front.

.2 Drawer box including front, back and sides shall consist of box construction, carefully fitted glued and tenoned joints.

.3 Drawer bottom to be ¼" plywood, plastic laminate finished, dadoed and glued into box members.

.9 Casework doors: ¾" plywood, plastic laminate finished with plastic laminate to all four sides. Locks to be provided as indicated on details.

.10 All cabinet frames whether for base, wall or tall floor standing cases, shall be fabricated so each is a self-contained module. Front side top and bottom, exterior and interior surfaces shall be finished allowing future relocation of any module, into any bench arrangement, without need of any additional finishing.

.11 Rails shall be fabricated and machined to join the gables and form a rigid cabinet frame.

.12 Tops (applied to wall and tall units only) shall be fabricated utilizing the same material and edge finish as gables.

.13 Toe kick rail (behind rubber or ceramic base, as applicable) shall have a 4" x 3/4" section, waterproof fir plywood, machined to receive four screw nails for attachment to bottom front edge of gables. Cabinet base shall be plywood attached to cabinet separately, insuring the plastic laminate plywood gables do not come in contact with the floor.

2.8 SHOP FABRICATION

.1 Shop install cabinet hardware.

.2 Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.

.3 Shop assemble work for delivery to site in size easily handled and to insure passage through building openings.

2.9 BENCHES

.1 32 x 92 solid maple boards with 32 x 108 solid maple edges. Lengths, as indicated on Plans, secured to metal supports. Polyurethane finish, semigloss.

.2 Bench support brackets to be Hafele Hebgo bracket. Model to be coordinated by millwork contractor based on size and load capacity of 150 kg per 600mm.

2.10 SLATWALL

.1 Maple, birch or white oak (with clear coat) veneered slatwall panels, with metal inserts

.2 Standard slatwall panel sizes 1219 mm x 2438 mm (4'x8') x 19mm (3/4") thick.

.3 Grooves 150mm (6") OC (industry standard) to accept standard industry slatwall accessories.

.4 To be used in various locations in millwork (ADs in Binder C) and applied to walls per Interior Elevations.

2.11 PLASTIC LAMINATED TOPS

.1 Coordinate with Section 06 47 00.

.2 19 mm thick particle board core with post-forming grade plastic laminate finish bonded with resorginal formaldehyde resin glue to a particleboard core. All countertop front face to return vertically 35 mm ± . All front and backsplash edges to be rounded.

.3 Underside to receive a backing sheet, sanded one side and bonded same as surfacing material.

.4 Exposed edges to be finished with same material as used for the top.

.5 Drip grooves to be cut into underside of the top where exposed edges occur.

.6 Splash backs, curbs and curb shelves are to be of similar construction as the tops.

.7 At all wall termination, provide backsplash return.

2.12 INTERIOR SIGNAGE PANELS (ISP)

.1 Noted ‘ISP’ on drawings.

- .1 Plastic laminate on 16mm particle board.
- .2 600mm wide by 2200mm high.
- .3 Location: adjacent doors where indicated on floor plans.
- .4 Solid white acrylic numbers and ‘KINDER’ to be applied to the millwork panels. Coordinate room names and numbers with consultant.

2.13 MOULDING AND TRIMS

.1 Fabricate mouldings in maximum practical lengths to profile shown. Install with concealed fasteners.

2.14 FABRICATION

.1 Set nails and countersink screws apply wood filler to indentations, sand smooth and leave ready to receive finish.

.2 Shop install cabinet hardware for doors, shelves and drawers. Recess shelf standards unless noted otherwise.

.3 Shelving to cabinetwork to be adjustable unless otherwise noted.

.4 Provide cut-outs for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.

.5 Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings.

.6 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.

.7 Ensure adjacent parts of continuous laminate work match in colour and pattern.

.8 Form shaped profiles and bends as indicated, using postforming grade laminate to laminate manufacturer's instructions.

.9 Use straight self-edging laminate strip for flatwork to cover exposed edge of core material. Chamfer exposed edges uniformly at approximately 20 degrees. Do not mitre laminate edges.

.10 Apply laminate backing sheet to reverse side of core of plastic laminate work.

.11 Apply laminated plastic liner sheet where indicated.

2.15 SCIENCE CLASS UPPER CABINETS

.1 6 mm tempered Glazing to upper cabinet units in science classroom to be provided to Millworker by Section 08 80 50.

2.16 SCIENCE CLASSROOM COUNTERTOPS

.1 .Cast Epoxy Resin Countertops:

- .1 Chemical and abrasion resistant, 25 mm thick cast epoxy resins and inert products, cast flat, with a uniform low-sheen black surface.
- .2 Backsplash curb: same material as top. Include end curb where top abuts end wall.
- .3 Fabricate countertop and backsplash sections in as long a length as practicable.
- .4 Cut holes for fittings, accessories, and equipment.

.5 Round or chamfer exposed edges and corners of cutouts.

.2 Location: Science Classroom

.3 Colour: Black

2.17 DISPLAY CASES

.1 Display Cases: Provide and install appropriate hinges, keyed locks and wood/glass shelf supports required for all display cases as described on drawings. Glazing to be provided by section 08 80 50. Refer to Section 08 80 50.

.2 Display/Trophy Case Finish:

.1 Linseed oil, Forbo Tackboard surfacing to interior of all display cabinets where felt or tackboard is indicated: supplied by Architectural School Products or equivalent product by other manufacturer approved by the Consultant. Colour to be selected by Architect.

2.18 DISPLAY AND BENCH CUSHIONS:

.1 Cushions to be marine grade vinyl by Spradling, or approved alternate, wrapping 75mm high density foam with a 13mm dacron wrap, as described on AD drawings.

2.19 STAGE CHAIR DOLLIES

.1 Stage Chair Dollies: Provide and install stage front fascia white oak panels and trim edging and wood chair dolly fronts as shown on Drawing A21 fabricated from 38mm thick quarter sawn white oak veneer plywood, complete with two hand holes cut at top of front, typical for all doors. Coordinate installation with miscellaneous metals fabricator at shop drawings. Refer to plans and details for approximate size (to be confirmed on site prior to fabrication). Refer to Drawing A23 for number of doors required.

2.20 INSTALLATION

.1 Do architectural woodwork to Quality Standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC), except where specified otherwise.

.2 Install prefinished millwork at locations shown on drawings. Position accurately, level, plumb straight.

.3 Set and secure all material and components in place, rigid, plumb and square.

.4 Provide heavy duty fixture attachments for wall mounted cabinets.

.5 Use draw bolts in countertop joints.

.6 At junction of plastic laminate counter back splash and adjacent wall finish, apply small bead of sealant.

.7 Apply water resistant building paper over wood framing members in contract with masonry or cementitious construction.

.8 After installation, fit and adjust operating hardware for wood and laminated plastic cabinet doors, drawers and shelves.

2.21 CLEANING

.1 Clean millwork, cabinet work, drawers and outside surfaces.

.2 Remove excess glue from surfaces.

2.22 PROTECTION

.1 Protect millwork and cabinet work from damage until final inspection.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 062000: Finish carpentry

.2 Section 064000:Architectural Woodwork

1.2 REFERENCES

.1 CAN/CGSB-71.20-M88 Adhesive, Contact, Brushable

.2 CAN3-A172-M79 High Pressure Paper Base, Decorative Laminates.

.3 CSA O112 Series-M1977(R2001) CSA Standards For Wood Adhesives.

.4 CSA O121-M1978(R2003) Douglas Fir Plywood.

.5 CSA O151-04 Canadian Softwood Plywood.

1.3 SAMPLES

.1 Submit duplicate samples of joints, edging, cutouts and postformed profiles in accordance with the General Conditions.

1.4 MAINTENCE DATA

.1 Provide maintenance data for laminated plastics work for incorporation into Operation and Maintenance Manual.

1.5 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. Do not remove until immediately before final inspection.

.2 Do not store or install materials in areas where relative humidity is less than 25% or greater than 60% at 22 deg C.

Part 2 Products

2.1 GENERAL

.1 Products manufactured by one of the following companies are suggested for use on this project.

.1 Cyanamid Canada Inc., Montreal (Formica).
.2 Domtar Construction Materials, Arborite Division, LaSalle Quebec (Arborite).
.3 Wilsonart International, Temple, Texas (Wilsonart).

.4 Nevamar Corporation, Odenton Md.

.2 Allow for 8 colours of matte finish from manufacturer's full range. Final Selection of Plastic Laminate surface characteristics including colour, texture and pattern is to be made by the Consultant by means of a Colour Schedule to be issued at a later date. Use the following materials specifications as a base bid:

2.2 MATERIALS

.1 Laminated plastic for flatwork: to CAN3-A172, Grade GP, Type SD, 1.25mm (0.050") thick; based on solid colour range with velour finish. Acceptable products:

.1 Formica Laminate Grade 10.

.2 Nevamar H-5 General Purpose Grade.

.3 Wilsonart General Purpose HGS Type 107.

.2 Laminated plastic for postforming work: to CAN3-A172, Grade PF, Type S, 1.07mm (0.042") thick, based on solid colour range with velour finish. Acceptable products:

.1 Formica Laminate Grade 12.

.2 Nevamar HF-5 Horizontal Post Forming Grade.

.3 Wilsonart Postforming Type 350.

.3 Laminated plastic backing sheet: supplied by same manufacturer as facing sheet; not less than 0.508 mm (0.02") thick and same colour as face laminate. Sanded one side. Acceptable products:

.1 Formica Laminate Grade 20.

.4 Laminated plastic cabinet liner sheet material or for MCP Board or Cladboard material: supplied by same manufacturer as facing sheet, not less than 0.760 mm (0.028") thick, white colour. Acceptable products:

.1 Formica Laminate Grade 20.

.2 VF-3 Vertical Post Forming Grade by Nevamar.

.3 Wilsonart Vertical Surface Type 335.

.5 Plywood core: Douglas Fir Plywood to CSA-O121 or Canadian Softwood Plywood to CSA-O151 solid two sides, 19 mm (¾") thick.

.6 Particleboard core: to CAN3-O188.1, Grade R, sanded faces, of thickness indicated.

.7 Adhesive for laminated plastic: to be CSA approved and one of the following types as selected by the laminate manufacturer as being suitable for the application:

.1 Urea resin adhesive to CSA O112 Series.

.2 Contact adhesive to CAN/CGSB-71.20.

.3 Resorcinol resin adhesive to CSA O112.

.4 Polyvinyl adhesive to CSA O112.

.5 Two component epoxy thermosetting adhesive.

.8 Sealer: water resistant sealer or glue acceptable to laminate manufacturer.

.9 Sealant: of a type recommended by the laminate manufacturer and in accordance with Section 079210 - Joint Sealers; colour to be selected by the Consultant.

.10 Draw bolts and splines: as recommended by fabricator.

.11 Apply laminate backing sheet to reverse side of core of plastic laminate work.

.12 Apply laminated plastic liner sheet to interior of cabinetry, including all exposed surfaces such as gable ends, doors and drawers, and where otherwise indicated.

Part 3 Execution

3.1 INSTALLATION

.1 Install work plumb, true and square, neatly scribed to adjoining surfaces.

.2 Make allowances around perimeter where fixed objects pass through or project into laminated plastic work to permit normal movement without restriction.

.3 Use draw bolts and splines in countertop joints. Maximum spacing 450 mm (18") oc, 75 mm (3") from edge. Make flush hairline joints.

.4 Provide cutouts for inserts, grilles, appliances, outlet boxes and other penetrations. Round internal corners, chamfer edges and seal exposed core.

.5 At junction of laminated plastic counter back splash and adjacent wall finish, apply small bead of sealant.

.6 Where laminated plastic is site applied, adhere laminated plastic over entire surface. Make corners with hairline joints. Use full sized laminate sheets. Make joints only where indicated or approved. Slightly bevel arises. Cap exposed edges with anodized aluminum extrusions.

.7 For site application, offset joints in plastic laminate facing from joints in core.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Materials and installation for asphalt for use as waterproofing.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 51 00 - Temporary Utilities.

.3 Section 312310- Excavating, Trenching and Backfilling

.4 Section 033000- Cast- in-Place Concrete

.5 Section 042113- Masonry

1.3 REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-37.2-[M88], Emulsified Asphalt, Mineral-Colloid Type, Unfilled, for Dampproofing and Waterproofing and for Roof Coatings.

.2 CAN/CGSB 37.3-[M89], Application of Emulsified Asphalts for Dampproofing or Waterproofing.

.3 CAN/CGSB 37.5-[M89], Cutback Asphalt Plastic Cement.

.4 CGSB 37-GP-6Ma-[83], Asphalt, Cutback, Unfilled, for Dampproofing.

.5 CGSB 37-GP-9Ma-[83], Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing.

.6 CGSB 37-GP-11M-[76(R1984)], Application of Cutback Asphalt Plastic Cement.

.7 CGSB 37-GP-12Ma-[84], Application of Unfilled Cutback Asphalt for Dampproofing.

.8 CGSB 37-GP-15M-[76(R1984)], Application of Asphalt Primer for Asphalt Roofing, Dampproofing and Waterproofing.

.9 CAN/CGSB 37.16-[M89], Filled, Cutback, Asphalt for Dampproofing and Waterproofing.

.10 CAN/CGSB 37.28-[M89], Reinforced Mineral Colloid Type, Emulsified Asphalt for Roof Coatings and for Waterproofing.

.11 CGSB 37-GP-36M-[76], Application of Filled Cutback Asphalts for Dampproofing and Waterproofing.

.12 CGSB 37-GP-37M-[77], Application of Hot Asphalt for Dampproofing or Waterproofing.

.2 Canadian Standards Association (CSA International)

.1 CSA A123.4-[98], Bitumen for Use in Construction of Built-Up Roof Coverings and Dampproofing and Waterproofing Systems.

.3 Health Canada

.1 Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.4 National Research Council Canada (NRC)/Institute for Research in Construction (IRC)

.1 Canadian Construction Materials Centre (CCMC)

1.4 PRODUCT DATA

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures .

.2 Submit product data sheets for bituminous dampproofing products. Including:

.1 Product characteristics.
.2 Performance criteria.
.3 Application methods.
.4 Limitations.

.3 Manufacturer's Instructions: Provide to indicate special handling criteria, installation sequence, and cleaning procedures.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Provide and maintain dry, off-ground weatherproof storage.

.2 Store materials on supports to prevent deformation.

.3 Remove only in quantities required for same day use.

.4 Store materials in accordance with manufacturer's written instructions.

.5 Store solvent base liquids away from excessive heat and open flame.

.6 Store emulsion liquids at above freezing temperatures, free from contact with cold or frozen surfaces.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Ensure emptied containers are sealed and stored safely.

.3 Fold up metal banding, flatten and place in designated area for recycling.

.4 Divert unused bituminous waterproofing, sealing compounds and asphalt primer materials from landfill to recycling facility approved by Consultant.

1.7 PROJECT/SITE ENVIRONMENTAL REQUIREMENTS

.1 Temperature, relative humidity, moisture content.

.1 Apply waterproofing materials only when surfaces and ambient temperatures are within manufacturers' prescribed limits.

.2 Do not proceed with Work when wind chill effect would tend to set bitumen before proper curing takes place.

.3 Maintain air temperature and substrate temperature at dampproofing installation area above 5 degrees C for 24 hours before, during and 24 hours after installation.

.4 Do not apply dampproofing in wet weather.

.2 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of asphalt, sealing compounds, primers and caulking materials.

.3 Ventilation:

.1 Ventilate area of Work as directed by Consultant by use of approved portable supply and exhaust fans.

.2 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities.

.3 Provide continuous ventilation during and after waterproofing application. Run ventilation system 24 hours per day during installation; provide continuous ventilation for 7 days after completion of waterproofing installation.

1.8 QUALIFICATIONS AND QUALITY ASSURANCE

.1 Waterproofing shall be carried out by applicators skilled and with previous similar experience in this work in strict accordance with manufacturer's printed instructions. Submit proof of experience upon Consultant’s request.

.2 Manufacturer’s representative shall be called by the applicator to inspect the substrate prior to commencement of work.

.3 Manufacturer’s representative shall be retained by installer to provide technical assistance on a as-needed basis during course of installation of membrane.

1.9 EXTENDED WARRANTY

.1 Contractor performing the work of this Section, shall provide a full materials and labour warranty for 5 years from the date of Substantial Performance of the Contract.

.2 Contractor hereby warrants that the waterproofing membrane will stay in place and remain leakproof in accordance with the Contract, but for 5 years.

.3 Waterproofing membrane manufacturer shall provide a written warranty that the waterproofing membrane will remain in a watertight condition and will not leak as a result of faulty materials for a period of ten years.

Part 2 Products

2.1 MATERIALS

.1 Locations: Walls below grade in elevator pits and all foundations adjacent to sodded and planted areas.

.2 Primary Waterproofing Membrane for Vertical Foundation Walls: Cold applied elastomeric asphalt emulsion waterproofing membrane in compliance with CGSB 37.2 shall be Aqua-Bloc 720-38 Elastomeric Asphalt Emulsion Waterproofing Membrane as manufactured by Bakor, a one component waterproofing compound compatible with sheet waterproofing membranes and substrates, having the following characteristics, or Terra Shield WC 100, as manufactured by Poly-Tuff Systems International.

- .1 Elongation: 2000%,
- .2 Maximum VOC: 10 g/l
- .3 Water vapour permeance: 10 ng/Pa.m².s, ASTM E96,
- .4 Chemical resistance: Alkalis, calcium chloride, mild acid and salt solutions.

.3 Fabric Reinforcement for Cold Applied Waterproofing: Fabric reinforcement shall be 990-06 Yellow Jacket as supplied by Bakor, a glass reinforcement sheet capable of allowing the membrane to bleed through adequately to provide a monolithic reinforced membrane system.

.4 Prefabricated Drainage Board for Vertical Surfaces: Bakor DB 2000 Prefabricated Composite Drain Board, a polypropylene core board with polypropylene fabric attached, having the following physical properties:

- .1 Flow Rate: 223 L/min/m,
- .2 Compressive Strength: 11,000 psf,
- .3 Thickness: 10 mm

.5 Prefabricated Drainage Board Accessories

- .1 Securement Bars: Continuous 6mm x 20mm (1/4” x 3/4”) HDPE bar for screw attachment.
- .2 Moulding Strip: Continuous 90mm wide “Z” flashing strip to fit over exposed top edge of drain board.
- .3 Drain Board Plugs & Nails: HDPE pre-moulded washer to fit dimples c/w high strength, corrosion resistant concrete nails, UCAN AFH 37 or equal.
- .4 Termination Sealant: Polybitume 570-05 Polymer Modified Sealing Compound as manufactured by Bakor, a polymer modified sealing compound, compatible with sheet waterproofing membrane, substrate and insulation materials, complies with CGSB 37.29, remains flexible with ageing and chemically resistant to alkalis, calcium chloride, mild acid and salt solutions.
- .5 Approved alternate: Meeting the above specifications as manufactured by Tremco Inc., W.R. Meadows or Carlisle Coatings and Waterproofing.

Part 3 Execution

3.1 WORKMANSHIP

.1 Keep hot asphalt:

.1 Below its flash point.

.2 At or below its final blowing temperature.

.3 Within its equiviscous temperature range at place of application.

3.2 PREPARATION

.1 Before applying waterproofing:

.1 Seal exterior joints between foundation walls and footings, joints between concrete floor slab and foundation and around penetrations through waterproofing with sealing compound.

.2 Before commencing work, ensure environmental and site conditions are suitable for installation of waterproofing membrane.

.3 The substrate shall be clean and dry, free from surface water, ice, snow or frost, dust, dirt, oil, grease, curing compounds or any other foreign matter detrimental to the adhesion of the waterproofing membrane.

.4 Can be applied to damp or new green concrete. Ensure concrete is smooth and free from voids and honeycombing prior to application of waterproofing membrane.

.5 Voids, cracks, holes and other damages to horizontal or vertical surfaces shall be repaired before application of the membrane.

.6 Notify Consultant and Contractor in writing of unsuitable surfaces and working conditions. Commencement of work shall imply acceptance of surfaces and working conditions.

3.3 MOCK UP

.1 Construct a 3 m x 2 m mock-up area for each separate job condition for inspection by the Consultant prior to proceeding with the work. Mock-up may be part of finished work.

.2 Notify Consultant and allow 24 hours for inspection by Consultant.

3.4 DECK TO VERTICAL JUNCTURES, FOOTINGS/FOUNDATION WALLS, CRACKS IN SLABS AND PROTRUSIONS

.1 Coat penetrations, such as brackets, clips, braces, etc. that are set into the concrete with a 2.3 mm (90 mil) coating of primary waterproofing membrane to the height of the wearing course and around projections to ensure a complete seal prior to coating the entire area.

.2 Penetrations subject to movement should be flashed with fabric reinforcement set into a minimum thickness of 2.3 mm (90 mil) of primary waterproofing membrane to required height on the wall and at least 100 mm (4”) on the slab, embed fabric reinforcement into wet coating followed by second coat.

.3 To all cracks and cold joints less than 3 mm (1/8") apply a coat of primary waterproofing membrane at a minimum thickness of 2.3 mm (90 mil) and reinforce with fabric reinforcement.

.4 To all cracks greater than 3 mm (1/8"), prime area and install self-adhered flashing membrane. Overlap end joint of sheet a minimum 75 mm (3").

.5 At monolithic wall/slab junctures, apply primary waterproofing membrane at a minimum thickness of 2.3 mm (90 mil) to required height on the wall and at least 100 mm (4") on the slab and embed fabric reinforcement into wet primary waterproofing membrane followed by a second coat.

.6 At non-monolithic wall/slab junctures, prime area, trowel-in fillet bead to inside corners and install self-adhered flashing membrane sheet to the required height on the wall and at least 100 mm (4") on the slab. Lap primary waterproofing membrane over a minimum of 50 mm (2").

.7 At footing to foundation wall junctions apply a coat of primary waterproofing membrane at a minimum thickness of 2.3 mm (90 mil) and reinforce with fabric reinforcement followed by second coat.

3.5 WATERPROOFING MEMBRANE VERTICAL APPLICATION

.1 Apply a full and continuous coat of primary waterproofing membrane at approximately 1.5 l/m^2 (3.6 gal. US/100ft^2) and embed fabric reinforcement into coating ensuring no fishmouths or wrinkles are created and allow to set.

.2 Apply second full and continuous coat of primary waterproofing membrane at 1.5 l/m^2 (3.6 gal./100$ft.^2$) and allow to cure.

3.6 WATERPROOFING MEMBRANE HORIZONTAL APPLICATION

.1 Apply a full and continuous coat of primary waterproofing membrane at approximately 1.5 l/m^2 (3.6 gal. US/100ft^2) and embed fabric reinforcement into coating ensuring no fishmouths or wrinkles are created and allow to set.

.2 Apply second full and continuous coat of primary waterproofing membrane at 1.5 l/m^2 (3.6 gal./100$ft.^2$) and allow to cure.

3.7 INSTALLATION OF PROTECTION BOARDS

.1 Protection Boards shall be installed over the waterproofing membrane to prevent damage from materials used in backfilling.

.2 Allow waterproofing to cure dry and apply protection board adhesive in 12mm wide strips spaced at 450 mm o/c to cure waterproofing membrane. Immediately embed protection board and press into adhesive to ensure full contact.

.3 Do not backfill until adhesive has cure dried. Do not use excessive levels of adhesive.

3.8 APPLICATION OF DRAINAGE BOARD VERTICAL

.1 Align and hang drainage up to foundation wall. Position bottom edge of drainage board to be in moderate contact with weeping tile system.

.2 Secure drainage board to foundation wall with nails and washers spaced 450 mm o/c horizontally. Install minimum of 2 rows staggered and spaced 150 mm apart and min 150 from top edge.

.3 Align and install termination strip along top edge with nails spaced 300 mm o/c and seal with termination sealant.

.4 Align and install moulding strip over completed top edge detail.

.5 Overlap end laps, pull back loose fabric to expose drain core and position core of second panel over the overlap flange of first panel.

.6 Bend drain board to create inside corners and cut board to create outside corners, provide 75 mm of extra fabric to wrap corner.

.7 Stagger or offset joints of drain board sheets.

.8 Place all subsequent sheets in an overlapping single fashion.

.9 Backfill bottom edge in conjunction with weeping tile system.

3.9 APPLICATION

.1 Do sealing work in accordance with CGSB 37-GP-11M except where specified otherwise.

.2 Do priming of surface in accordance with CGSB 37-GP-15M except where specified otherwise.

.3 Apply primer.

3.10 SCHEDULE

.1 Apply continuous, uniform coating to entire exterior faces of foundation walls from 50 mm below finished grade level to and including tops of foundation wall footings of foundation wall footings where described in Item 2.1.1. of this specification section.

.2 Apply continuous, uniform coating to exterior side of foundation walls enclosing rooms below finished grade. Include exterior portion of interior walls where floors in adjacent rooms are at different elevations.

.3 Apply two additional coats of dampproofing to vertical corners and construction joints for a minimum width of 230 mm on each side, and all around and for 230 mm along pipes passing through walls.

3.11 CLEANING

.1 Promptly as the work proceeds and on completion clean up and remove from site all rubbish and surplus materials resulting from the foregoing work.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures.

.2 Section 04 21 13 – Masonry.

.3 Section 07 27 10 – Air Barriers.

.4 Section 07 55 00 – Roof insulation.

.5 Section 07 21 19 – Spray in Place Urethane Foam Insulation.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).

.1 ASTM E96-[00e1], Test Methods for Water Vapour Transmission of Materials.

.2 Canadian General Standards Board (CGSB).

.1 CGSB 71-GP-24M-[77(R1983)], Adhesive, Flexible, for Bonding Cellular polystyrene Insulation.

.3 Underwriters Laboratories of Canada (ULC).

.1 CAN/ULC-S604-[91], Type A Chimneys.

.2 CAN/ULC-S701-[01], Thermal Insulation, Polystrene, Boards and Pipe Coverings.

.4 Environmental Choice Program (EPC).

.1 CCD-016-[97], Thermal Insulation.

1.3 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's insulation products and adhesives.

.2 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

1.4 QUALITY ASSURANCE

.1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.3 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material [n appropriate on-site bins for recycling.

Part 2 Products

2.1 INSULATION

.1 Extruded polystyrene (XPS): to CAN/ULC-S701.

.1 RSI 3.52/R20.
.2 Thickness: **100 mm** or as indicated on drawings.
.3 Edges: ship-lapped.
.4 For use at typical cavity wall construction and at miscellaneous detail locations calling for rigid insulation.
.5 Acceptable Material: "**Styrofoam Cavity-Mate**" as manufactured by Dow Chemical Canada Inc.
.6 Acceptable Material: "**Foamular C200**" as manufactured by Celfortec Inc. (Owen Corning).
.7 or approved equal.

.2 Extruded polystyrene (XPS): to CAN/ULC-S701.

.1 RSI 3.94/R 22.
.2 Thickness: **112 mm** (4.4") or as indicated on drawings.
.3 Edges: Ship lapped.
.4 For use on foundation wall construction" below through-wall flashing below slab on grade as shown typical foundation details,
.5 Acceptable Material: "**Styrofoam SM**" as manufactured by Dow Chemical Canada Inc.
.6 Acceptable Material: "**Foamular C300**" as manufactured by Celfortec Inc. (Owen Corning).

.3 Extruded polystyrene (XPS): to CAN/ULC-S701.

.1 RSI 2.65/R 15.
.2 Thickness: **75 mm** or as indicated on drawings.
.3 Edges: Ship lapped.

.4 For use under slab on grade as shown typical foundation details,

.5 Acceptable Material: "**Styrofoam SM**" as manufactured by Dow Chemical Canada Inc.

.6 Acceptable Material: "**Foamular C300**" as manufactured by Celfortec Inc. (Owen Corning).

2.2 ADHESIVE

.1 Adhesive (for polystyrene): to CGSB 71-GP-24.

.1 Bakor Air Bloc 21.

.2 Compatible with respective rigid insulation, air/vapour and waterproofing membranes and recommended by manufacturers of those products. Use Bakor 230-21 rigid insulation adhesive for rigid insulation in contact with Blueskin air vapour barrier.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 WORKMANSHIP

.1 Install insulation after building substrate materials are dry.

.2 Install insulation to maintain continuity of thermal protection to building elements and spaces.

.3 Fit insulation tight around electrical boxes, plumbing and heating pipes and ducts, around exterior doors and windows and other protrusions.

.4 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures, and minimum 50 mm from sidewalls of CAN4-S604 type A chimneys and CAN/CGA-B149.1 and CAN/CGA-B149.2 [type B] [and] [L] vents.

.5 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.

.6 Offset both vertical and horizontal joints in multiple layer applications.

.7 Do not enclose insulation until it has been inspected and approved by Consultant.

3.3 EXAMINATION

.1 Examine substrates and immediately inform Consultant in writing of defects.

.2 Prior to commencement of work ensure:

.1 Substrates are firm, straight, smooth, dry, free of snow, ice or frost, and clean of dust and debris.

3.4 RIGID PERIMETER FOUNDATION INSULATION INSTALLATION

.1 Apply adhesive to polystyrene in accordance with manufacturer's recommendations.

.2 Apply adhesive to insulation board by spot method with daubs 40 mm diameter x 25 mm high at 200 mm o.c. each way

.3 Interior application: extend boards vertically below bottom of finish floor slab as indicated on drawings, installed on inside face of perimeter foundation walls.

.4 Exterior application: extend boards below finish grade as indicated on drawings. Install on exterior face of perimeter foundation wall with adhesive.

.5 Under slab application: extend boards as indicated on drawings. Lay boards on level compacted fill.

3.5 RIGID CAVITY WALL INSULATION INSTALLATION

.1 System Comprised of:

.1 Specified thickness of rigid ship-lapped insulation on Henry-Bakor Blueskin SA air/vapour barrier.

.2 Henry-Bakor Airbloc 21 adhesive to be applied to all sides of insulation and continuous layer to all insulation surfaces in contact with air/vapour barrier. Butter all sides and back to ensure full air barrier integrity. Apply adhesive to polystyrene in accordance with manufacturer's recommendations

.3 Butter Air Bloc 21 at all brick tie penetrations to ensure a complete seal

.4 Install plastic LOC-Wedges at masonry veneer ties to ensure securement to structural wythe or back up wall and in full contact with air/vapour barrier on wall surfaces.

3.6 CLEANING

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 04 21 13 - Masonry.

.2 Section 01 45 00 - Quality Control.

.3 Section 01 51 00 - Temporary Utilities.

.4 Section 07 21 13 – Board Insulation.

.5 Section 07 55 00 – Protected Membrane Roofing.

.6 Section 07 62 00 – Sheet Metal Flashing & Trim.

.7 Section 07 27 10 – Air Barriers.

1.2 APPROVED ALTERNATE

.1 In relation to Cavity Wall Insulation only, this spray foamed-in-place insulation may be used as an approved alternate. Note that base cavity wall insulation is rigid board as specified in Section 07 21 13 and shown on drawings

1.3 REFERENCES

.1 Canadian Urethane Foam Contractors' Association Inc. (CUFCA)

.2 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S101-[1989], Fire Endurance Tests of Building Construction and Materials.

.2 CAN/ULC-S102-[1988(R2000)], Surface Burning Characteristics of Building Materials and Assemblies.

.3 CAN/ULC-S705.1-[01], Standard for Thermal Insulation Spray Applied Rigid Foam, Medium Density, Material Specification.

.4 CAN/ULC-S705.2-[02], Standard for Thermal Insulation Spray Applied Rigid Foam, Medium Density, Installer's Responsibilities-Specification.

1.4 TEST REPORTS

.1 Submit test reports, verifying qualities of insulation meet or exceed requirements of this specification, in accordance with Section 01 45 00 - Quality Control.

.2 Submit test reports in accordance with CAN/ULC-S101 for fire endurance and CAN/ULC-S102 for surface burning characteristics.

1.5 QUALITY ASSURANCE

.1 Applicators to conform to CUFCA Quality Assurance Program.

1.6 SAFETY REQUIREMENTS

.1 Protect workers as recommended by CAN/ULC-S705.2 and manufacturer's recommendations:

.1 Workers must wear [gloves] [respirators] [dust masks] [long sleeved clothing] [eye protection] [protective clothing] when applying foam insulation.

.2 Workers must not eat, drink or smoke while applying foam insulation.

1.7 PROTECTION

.1 Ventilate area in accordance with Section 01 51 00 - Temporary Utilities.

.2 Ventilate area to receive insulation by introducing fresh air and exhausting air continuously during and [24] hour after application to maintain non-toxic, unpolluted, safe working conditions.

.3 Provide temporary enclosures to prevent spray and noxious vapours from contaminating air beyond application area.

.4 Protect adjacent surfaces and equipment from damage by overspray, fall-out, and dusting of insulation materials.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material in appropriate on-site bins for recycling.

.3 Fold up metal banding, flatten and place in designated area for recycling.

.4 Dispose of waste foam daily in location designated by Consultant and decontaminate empty drums in accordance with foam manufacturer's instructions and CAN/ULC-S705.2.

.5 Divert metal drums from landfill to metal recycling facility as approved by Consultant and to CAN/ULC-S705.2.

1.9 ENVIRONMENTAL REQUIREMENTS

.1 Apply insulation only when surfaces and ambient temperatures are within manufacturers' prescribed limits.

Part 2 Products

2.1 MATERIALS

.1 Insulation: spray polyurethane to CAN/ULC-S705.1.

.1 Density: 30.4 kg/m3 (1.9 lb/ft3) minimum.

.2 Compressive Strength: >185 KPa (per ASTM D1622)

.3 Tensile Strength: > 330 KPa (per ASTM D1623)

.4 Air Barrier Classification:

.1 Type III (NRC) - permeance: 0.02 L/sec/m2 maximum at 75 Pa pressure differential.

.2 Air Barrier System Performance with leakage not exceeding 0.0054 l/m^2 @75 Pa pressure when tested in Accordance with CCMC Air Barrier System Requirements.

.3 All manufacturers/applicators shall submit test data reports prior to acceptance.

.5 Water Permeance: 125 ng/Pa.m2.s @25mm specimen thickness

.6 Submit manufacturer's Material Data Safety Sheets in accordance with and Sections 013300 – Submittal Procedures and 013530 – Health and Safety.

.7 Thickness: as required for thermal resistance indicated, or to match rigid board insulation thickness.

.8 Acceptable material: Products meeting these specifications by BASF Canada Inc: Walltite CMO1, Heatlok 0240, Heatlok Soya, Polar Foam 7300 and Polarfoam Soya, Elastochem Insulathane Extreme, Genyk Boreal Nature Elite, CertaSpray Closed Cell Foam by CertainTeed Canada and Icynene MDC200.

.9 Acceptable materials: products by other manufacturers meeting or exceeding these specifications as approved in writing by the Architect following specification, WMIS and test data submission.

.10 Installation shall only be by applicators specifically approved by the manufacturer/distributor.

.11 Blowing agents must have a GWP of 150 or lower per Environment Canada Regulations effective January 1, 2021.

.2 Primers: in accordance with manufacturer's recommendations for surface conditions.

.3 Sheet Air/Vapour Barrier Transition Membrane and Thru-Wall Flashing:

.1 Self adhering SBS modified bitumen membrane reinforced with non-woven fibrous glass:

.1 Thickness: minimum 1.45 mm

.2 Water Vapour Permeance: 0.05 perms max value. (2.8 ng/Pa.m2.s)

.3 Air Permeance: less than 0.01 l/m2 at 75 Pa pressure differentials.

.4 Adhesion: 7 day min. Peel adhesion at 5 deg. C :

.1 to primed Concrete: > 20 N/cm

.2 to selfedge: > 20 N/cm

.3 to primed plywood: > 25 N/cm

.4 to metal: > 30 N/cm

.5 Submit manufacturer's Material Data Safety Sheets in accordance with and Sections 01333 – Submittal Procedures and 013520 – Health and Safety.

.6 Acceptable Material: Blueskin SA by Bakor and Blueskin TW as thru-wall transition at masonry locations.

.2 Overlap typically minimum 150 mm on all adjacent layers/materials or as detailed.

Part 3 Execution

3.1 APPLICATION

.1 Apply insulation to clean surfaces in accordance with CAN/ULC-S705.2 and manufacturer's printed instructions. Use primer where recommended by manufacturer.

.2 Apply sprayed foam insulation in thickness as indicated.

3.2 WORKMANSHIP

.1 Certification

.1 Installation is to be only by certified CUFCA/NECA applicators and manufacturer of the product being applied. Applicator shall provide proof of both approvals.

.2 Examination

.1 Install insulation after building substrata materials are dry, thoroughly clean and capable of providing a firm, uniform bonding surface and temperatures are within the range recommended by product manufacturers.

.2 Verify that surfaces and conditions are suitable to accept work required in this section.

.3 Report, in writing, defects in surfaces or conditions which may adversely affect the performance of products installed under this section to the Consultant; prior to commencement of work.

.4 Do not commence work until defects have been corrected.

.3 Preparation-Sprayed Insulation:

.1 Mask and cover adjacent areas to protect from overspray.

.2 Apply primers for special conditions as required by foam manufacturer.

.3 Clean work area prior to commencing spray operations.

.4 Preparation-Peel & Stick Membrane:

.1 Prime all surfaces using Blueskin Primer by Bakor or primer specifically approved by membrane manufacturer. Allow primer to dry. Apply primer only to areas to receive membrane within the same working day, or reprime surfaces.

.5 Application-Sprayed Insulation:

.1 Apply insulation to clean surfaces in accordance with CAN/CGSB 51-39-92 and manufacturer's printed instructions. Use primer where recommended by manufacturer. Ensure full adhesion to transition membrane.

.2 Completely fill jambs of all hollow metal frames with insulation and ensure continuous contact with sheet membrane used at head of frames.

.6 Application-Peel & Stick membrane:

.1 Ensure membrane widths capable of sealing to all door opens at heads of frames.

.2 Lap sides and ends a minimum of 100 mm or as per details. Ensure full adhesion as per details.

.3 Position membrane for alignment with release film in place. Roll back, remove release film and press firmly in place. Roll all areas and laps with a steel or polyurethane roller.

.4 Seal ends of membrane to substrate using Polybithume by Bakor. or product approved specifically by membrane manufacturer.

.7 Tolerance

.1 Maximum variation from required thickness for sprayed insulation: 6 mm.

.8 Firestopping

.1 Required in all cavity walls 25 mm air space or greater.

.2 Install firestopping at 20 m intervals maximum horizontally and 3 m maximum vertically, in accordance with OBC requirements and manufacturer's approved method of Roxul AFB and transition membrane protection.

.3 At wall extending more than 1 storey in height, install additional firestopping horizontally at intermediate floor elevation.

3.3 LOCATIONS

.1 Cavity Walls Above Grade: as an approved alternate to Rigid Cavity Installation.

.2 If used as alternate to rigid board insulation in wall cavity, provide mineral wool horizontal and vertical fire stopping to perimeter of building cavity as required by OBC Division B.

.3 If used as alternate to rigid board insulation in wall cavity, provide 450mm high band of rigid board insulation at the base of the wall cavity below the foamed in place insulation, to avoid sag and blocking of weep holes.

.4 On all structural steel in concealed locations exterior to insulation wall assemblies where steel penetrates through thermal barrier of wall forming a "cold bridge, whether shown on drawings or not.

.5 Concealed within Soffit Conditions: Refer to drawings.

.6 Jambs of Hollow Metal Frames: Refer to Section 081115 – Door Schedule.

.7 Behind Metal Siding/composite panels: Refer to Section 074143 – Aluminum Composite Panels.

.8 All other miscellaneous locations to ensure integrity of a continuous air/vapour barrier and insulation layer.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Materials and installation methods providing [primary] airvapour barrier materials and assemblies.

.2 Air/vapour barrier materials to provide continuous seal between components of building envelope and building penetrations.

1.2 RELATED SECTIONS

.1 Section 04 21 13 - Masonry.

.2 Section 07 51 12 – Built-Up Bituminous (BUR) Roofing.

.3 Section 07 46 13 – Preformed Metal Cladding Siding.

.4 Section 07 21 13 – Board Insulation

.5 Section 07 21 19 – Spray in Place Urethane Foam Insulation.

.6 Section 07 62 00 – Sheet Metal Flashing & Trim.

1.3 REFERENCES

.1 Canadian Construction Documents Committee

.1 CCDC 2 - Stipulated Price Contract.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-19.13M-[M87], Sealing Compound, One Component, Elastomeric Chemical Curing.

.2 CAN/CGSB-19.18M-[M87], Sealing Compound, One Component, Silicone Base Solvent Curing.

.3 CAN/CGSB-19.24M-[M90], Multi-Component, Chemical Curing Sealing Compound.

.4 CGSB 19-GP-14M-[76], Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing.

.3 NBCC 1995; Part 5 - Environmental Separation

.4 Sealant and Waterproofer's Institute - Sealant and Caulking Guide Specification.

1.4 SUBMITTALS

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit manufacturer’s product data sheets in accordance with Section 01 33 00 - Submittal Procedures.

.3 Submit manufacturer□s installation instructions in accordance with Section 01 33 00 - Submittal Procedures.

1.5 QUALITY ASSURANCE

.1 Perform Work in accordance with Sealant and Waterproofer's Institute - Sealant and Caulking Guide Specification requirements for materials and installation.

.2 Maintain one copy of documents on site.

1.6 QUALIFICATIONS

.1 Applicator: Company specializing in performing work of this section with documented experience with installation of air/vapour barrier systems. Completed installation must be approved by the material manufacturer. .

.2 Applicator: Company who is currently licensed by National Air Barrier Association or certifying organization must maintain their license throughout the duration of the project.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Deliver, store and handle materials in accordance with manufacturer□s written instructions.

.3 Avoid spillage. Immediately notify Consultant if spillage occurs and start clean up procedures.

.4 Clean spills and leave area as it was prior to spill.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Place materials defined as hazardous or toxic waste in designated containers.

.2 Ensure emptied containers are sealed and stored safely for disposal away from children.

1.9 PROJECT ENVIRONMENTAL REQUIREMENTS

.1 Do not install solvent curing sealants or vapour release adhesive materials in enclosed spaces without ventilation.

.2 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities.

.3 Maintain temperature and humidity recommended by materials manufactures before, during and after installation.

1.10 SEQUENCING

.1 Sequence work to permit installation of materials in conjunction with related materials and seals.

Part 2 Products

2.1 SHEET MATERIALS

.1 Refer to technical data sheets for physical properties of product.

.2 Sheet Seal Type [1]: Self-Adhesive bitumen laminated to high-density polyethylene film, nominal total thickness of 1 to 4 mm as indicated.

.1 Acceptable material: Bakor Blueskin AG, adhesive grade membrane, use ‘peel and stick’ Blueskin where Air-Bloc 21 not present or equal Blueskin SA or TG or Soprema ‘Sopraseal Stick.’

.2 Sealant and Adhesive as recommended by Manufacturer.

.3 Transition membrane adhesive to be Bakor Air-Bloc 21.

.4 Air Barrier Membrane to be Bakor Air-Bloc 21.

2.2 SEALANTS

.1 Sealants in accordance with Section 07 92 10 - Joint Sealing.

.2 Primer: Recommended by sealant manufacturer and Appropriate to application.

.3 Substrate Cleaner: Non-corrosive type recommended by sealant manufacturer and compatible with adjacent materials.

2.3 ADHESIVES

.1 Adhesive to be ‘Air-Bloc 21’ by Bakor.

2.4 ACCESSORIES

.1 Thinner and cleaner for As recommended by sheet material manufacturer.

.2 Stick-Clips: Perforated Galvanized steel anchors.

Part 3 Execution

3.1 EXAMINATION

.1 Verify that surfaces and conditions are ready to accept the Work of this section.

.2 Ensure all surfaces are clean, dry, sound, smooth, continuous and comply with air barrier manufacturer□s requirements.

.3 Report any unsatisfactory conditions to the [Engineer] [Consultant] in writing.

.4 Do not start work until deficiencies have been corrected. Commencement of Work implies acceptance of conditions.

3.2 PREPARATION

.1 Remove loose or foreign matter which might impair adhesion of materials.

.2 Ensure all substrates are clean of oil or excess dust; all masonry joints struck flush, and open joints filled; and all concrete surfaces free of large voids, spalled areas or sharp protrusions.

.3 Ensure all substrates are free of surface moisture prior to application of self-adhesive membrane and primer.

.4 Ensure metal closures are free of sharp edges and burrs.

.5 Prime substrate surfaces to receive adhesive and sealants in accordance with manufacturer's instructions.

3.3 INSTALLATION

.1 Install materials strictly in accordance with manufacturer's instructions.

.2 Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

3.4 PROTECTION OF WORK

.1 Protect finished Work in accordance with Section 01 61 00 - Common Product Requirements.

.2 Do not permit adjacent work to damage work of this section.

.3 Ensure finished Work is protected from climatic conditions.

3.5 SCHEDULES

.1 Wall Air/Vapour Barrier Over Outer Surface of Inner Wythe of Masonry: Trowel seal Type F over masonry unit surface to a thickness of 6 mm, seal masonry anchor penetrations air tight.

.2 Wall Air/Vapour Barrier Over Exterior Surface of Gypsum Sheathing: Place sheet seal Type G over sheathing surfaces with Adhesive Type E. Seal with Type Y sealant.

.3 Window Frame Perimeter: Lap sheet seal Type H from wall air seal surface with 75 mm of full contact over firm bearing to window frame with 25 mm of full contact. Edge seal with Type Z sealant.

.4 Wall and Roof Junction: Lap sheet seal Type J from wall seal material with 150 mm of contact over firm bearing to roof air seal membrane with 100 mm of full contact. Seal with Type X sealant.

.5 Roof System Air/Vapour Barrier Over Steel Deck: Gypsum sheathing, taped joints, apply membrane air seal Type K over sheathing surfaces with Adhesive Type D; edge seal membrane with Type Y sealant

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 07 27 10 – Air Barriers.

.3 Section 07 21 13 – Board Insulation.

.4 Section 05 50 00 - Metal Fabrications.

.5 Section 07 44 56 – Composite Panels.

1.2 REFERENCES

.1 American Association (AA)

.1 DAF-45-[03], Designation System for Aluminium Finishes.

.2 American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)

.3 American Society for Testing and Materials International, (ASTM)

.1 ASTM A653/A653M-[02a], Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM A792/A792M-[02], Specification for Steel Sheet, 55% Aluminium-Zinc Alloy-Coated by the Hot-Dip Process.

.3 ASTM D523-[89(1999)], Test Method for Specular Gloss.

.4 ASTM D822-[01], Standard Practice, For Conducting Test on Paint and Related Coatings and Materials Using Filtered Open-Flame Carbon-Arc Light and Water Exposure Apparatus.

.5 ASTM D2832-[92 (1999)], Guide for Determining Volatile and Nonvolatile Content of Paint and Related Coatings.

.4 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-93.1-[M85], Sheet, Aluminium Alloy, Prefinished, Residential.

.5 Canadian Standards Association (CSA International)

.1 CSA S136-[01], North American Specification for the Design of Cold-Formed Steel Structural Members.

.2 CSA S136.1-[01], Commentary on North American Specification for the Design of Cold-Formed Steel Structural Members.

.6 Environmental Choice Program (ECP)

.1 CCD-016-[97], Thermal Insulation.

.2 CCD-046[95], Adhesives.

.3 CCD-046-[95], Sealants and Caulking Compounds.

1.3 SYSTEM DESCRIPTION

.1 Design Requirements:

.2 Design, fabricate and erect a pressure equalized wall panel system to meet the following requirements.

.1 Rain Penetration: prevent rain penetration through wall system. Design system based on “Rain Screen Principle” per the National Research Council. Incorporate means of draining to the exterior.

.2 Wind load: Design wall system to resist wind loads, positive and negative, expected in this geographical region (OBC climatic data, 100 years probability) without causing rattling, vibration or excessive deflection of panels, overstressing of fasteners, clips and other detrimental effects on system.

.3 Structural and thermal movement: Accommodate movement of supporting structural framing and movement caused by thermal expansion and contraction of system component parts without causing bowing, buckling, delamination, oil canning, failure of joint seals, excessive stress on fasteners or any other detrimental effects.

.3 Panel flatness tolerance: Fabricate panels not exceeding the following tolerances:

.1 Rises and falls across the panel, (local bumps and depressions) will not be accepted.

.2 1.5 mm in a concave/ convex direction, measured perpendicular to the normal plane.

.4 Panel removal: System/ procedure to allow removal of individual panels within wall system.

.5 Maximum deviation from vertical and horizontal alignment of erected panels: 6 mm in 6 m.

.6 Testing: Provide wall assembly that has been tested and certified to conform to the following criteria:

.1 Structural: Provide systems that have been tested in accordance with ASTM E330 at a design pressure of 60 psf and have been certified to be without permanent deformation or failures of structural members.

1.4 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Shop Drawings:

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Indicate elevations, profiles, dimensions an thickness of panels and joint details.

.3 Indicate attachment clips, system extrusions, fastening, anchor and installation details.

.3 Samples:

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit duplicate 130 x 180 mm samples of wall system, representative of materials, finishes and colours.

.4 Production and Installation Schedule:

.1 Meeting the required schedules listed below will be required for approval of progress payments for design and fabrication.

.2 As part of base contract price, upon award of contract submit a detailed schedule with the shop drawing which outlines:

.1 submission timing of shop drawings

.2 fabrication timing from date of approved shop drawings

.3 building completion requirements for site measurements

.4 Duration of installation period

.5 dates required for installation program for work to be 100% complete by date of substantial completion

.3 Ensure the program for fabrication and installation is integrated into the General Contractor's overall project schedule.

.4 As part of base contract price, attend site meetings commencing 6 weeks prior to installation and through installation period to confirm site progress and timing of completion.

.5 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

1.5 MAINTENANCE DATA

.1 Provide maintenance data for cleaning and maintenance of aluminum finishes for incorporation into manual.

.2 Protect panel face with a plastic film adhered to panel in accordance with panel manufacturer's recommendation.

.3 Store components and materials in accordance with panel manufacturer's recommendations.

1.6 MOCK UP

.1 Submit mock-up in accordance with Section 013330- Submittal Procedures.

.2 Erect mock-up panel approximately 3m long x 2m high in location as directed by architect.

.3 Mock-up panel shall include all components of the wall system including subgirt flashing. Mock up will NOT be incorporated into work once approved.

.4 Remove mock up from site following installation and acceptance of panel system.

1.7 DURANAR PANEL FINISH WARRANTY

.1 Provide a manufacturer's written warranty: Furnish panel manufacturer's written warranty covering failure of factory-applied exterior finish on composite metal panels within the warranty period; warrant finish per ASTM D 4214 for chalk not in excess of 8 NBS units and fade not in excess of 5 NBS units. Warranty period for finish: 10 years after the date of Substantial Completion.

1.8 QUALITY ASSURANCE

.1 Installation crews engaged or provided by the approved supplier shall have proven experience specifically trained and qualified in this work (written proof of minimum of five (5) years employment or service with the panel manufacturer or similar manufacturer. Individuals are to be either employees of the manufacturer and/or workers approved by the manufacturer.

.2 Provide one (1) thoroughly experienced. reliable, qualified and competent foreman in charge of the work to be on site at all times when work is taking place. Individual to be designated in charge from start of activities on site until final deficiencies are complete. Foreman may only be changed by written approval *or request* of the Consultant or owner.

.3 Panel fabricator/supplier is to have adequate plant and skilled tradesmen and is known to have manufactured and installed panel systems for a minimum of five (5) years in the Province of Ontario

1.9 MATERIAL AND WORKMANSHIP WARRANTY

.1 Warranty against defects or deficiencies shall be for a period of one year from date of substantial completion.

1.10 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material [in appropriate on-site] bins for recycling.

.3 Divert unused metal materials from landfill to metal recycling facility approved by Consultant.

.4 Divert unused paint and joint sealer material from landfill to official hazardous material collections site approved by Consultant.

.5 Do not dispose of unused paint and joint sealer materials into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

Part 2 Products

2.1 MATERIALS

.1 Aluminum Composite Material (ACP)

.1 Pre-formed aluminum composite panels in locations as indicated on drawings.

.2 Composition: Two sheets of aluminum sandwiching a core of extruded thermoplastic formed in a continuous process without the use of glues or adhesives between dissimilar materials. Bond integrity testing to adhere to ASTM D1781-76

.3 Aluminum face sheets: Aluminum alloy 3003, thickness: 0.51 mm

.4 Panel thickness: 4 mm

.5 Panel weight: 5.28 kg/sq.m.

.6 Tolerances:

.1 Panel bow: Maximum 0.8% of panel dimension (width or length).

.2 Panel Dimensions: Take site measurements before proceeding with production unless dimensions can be guaranteed by General Contractor.

.3 Panel lines, breaks and angles to be sharp and true; panel surfaces to be free from warp or buckle.

.7 Panel System: Dry joint SL-2000 with 12.5 mm wide panel joints using proprietary aluminum extrusions.

.8 Aluminum Composite to have a fire-resistant core, meeting OBC requirements for non-combustible materials.

.9 Acceptable materials and manufacturers:

.1 Alucobond Plus, Alpolic; Kanalco Ltd., Flynn Canada, Alcotex or others meeting the exact fire rated and compositional requirements of this specification and having colours and ‘wood grain look’ options to the satisfaction of the architect.

.2 Panel finishes: Duranar, three coat, coil-coated baked enamel finish containing Kynar 500 polyvinylidene fluoride resin, metallic finish as specified below.

.3 Panel Colours: Allow for 3 colours:

.1 **Aluminum Composite Panel Colour 1**: White. Exact colour to be selected by consultant from manufacturer’s full colour range, including metallic series.

.1 **Aluminum Composite Panel Colour 2**: ‘Wood Grain’ pattern in light wood tone. Exact colour to be selected by consultant from manufacturer’s full colour range.

.2 **Aluminum Composite Panel Colour 3**: Grey. Exact colour to be selected by consultant from manufacturer’s full colour range, including metallic series.

.3 Locations: Wall panels, Canopies and Roof Fascias as noted on drawings.

.4 Contractor to submit triplicate samples of colours for review by Consultant prior to order and fabrication.

.4 Panel and Wall Accessories

.1 Provide proprietary aluminum extrusions to manufacturer's standard profiles for a complete installation.

.2 Provide aluminum integrated roof parapet cap flashing where indicated on drawings.

.3 Fasteners: as recommended by panel manufacturer, concealed and non-corrosive.

.4 Extrusions and extrusion clips for attaching panels to the sub-structure: Purpose made aluminum.

.5 Extrusions shall be full length around panel perimeter for panel reinforcement and alignment. Intermittent clips are unacceptable.

.6 Joint filler strip: Same material and color as panels. Use of caulking at joints is not acceptable.

.7 Plastic shims, shall be used as thermal separator between extrusions and sub-girts.

.8 Sub-girts: To be manufactured from G-90 galvanized steel and shall be designed to accommodate expansion and contraction, dynamic movements and design load requirements.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 PREPARATION

.1 Protect metal surfaces in contact with concrete, masonry mortar, plaster or other cementitious surface with isolation coating.

3.3 INSTALLATION

.1 Wall Panel System:

.1 Before proceeding, examine work of other sections upon which this section depends.

.2 Sub-girts: Prior to installation of insulation air vapour barrier under Section 072710- Air Barriers erect subgirts fastened to masonry wall in accordance with system manufacture's installation instructions. Ensure that all penetrations through air/ vapor barrier are sealed.

.3 After installation of insulation/ air vapour barrier under Section 072710 – Air Barriers and Section 072113 – Board Insulation, erect panels and joint filler strip in accordance with manufacturer's details to meet specified design criteria and performance.

.4 Finished work shall be securely anchored, free of distortion, free of surface imperfections and uniform in colour.

.5 Use concealed fastenings only.

.6 Install panels plumb, true, level and in alignment to established lines and elevations.

3.4 CONTROL/EXPANSION JOINTS

.1 Construct control and expansion joints where required or as indicated.

.2 Use cover sheets, of brake formed profile, of same material and finish as adjacent material.

.3 Use mechanical fasteners to secure sheet materials.

.4 Assemble and secure wall system to structural frame so stresses on sealants are within manufacturers' recommended limits.

3.5 FIELD QUALITY CONTROL

.1 Have manufacturer of products supplied under this Section review Work involved in handling, installation/application, protection and cleaning of its product[s], and submit written reports in acceptable format to verify compliance of Work with Contract.

.2 Manufacturer's field services: Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

.3 Manufacturer to schedule site visits to review Work at stages listed:

.1 After delivery and storage of products, and when preparatory Work on which Work of this Section depends is complete, but before installation begins.

.2 Three times during progress of Work: at start up, at 25% and 70% complete.

.3 Upon completion of Work, after cleaning is carried out.

.4 Obtain reports within three days of review and submit.

3.6 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Wash down exposed interior and exterior surfaces using solution of mild domestic detergent in warm water, applied with soft clean wiping cloths. Wipe interior surfaces clean as part of final clean-up.

.3 Remove excess sealant with recommended solvent.

.4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

.5 Remove protective plastic film from panels.

.6 Repair and touch-up with colour matching high grade enamel minor surface damage.

.7 Replace damaged panels and components which cannot be satisfactorily repaired.

END OF SECTION

SUMMARY OF WORK
Roof Installation

PART 1 GENERAL

1.1 GENERAL CONDITIONS

1.1.1 Conform to all sections in this document and to the requirements of the Canadian Roofing Contractors Association Roofing Manual Specifications as referred to herein.

1.1.2 Abide by all Federal, Provincial, Municipal and Local Laws or Codes, rules and regulations that in any way affect Work including all amendments up to the Project date. No plea of misunderstanding will be considered on account of ignorance thereof. Notify the Consultant immediately in writing of any provisions in Drawings, Specifications or Contract, which are contrary to or inconsistent with any law, rule or regulation.

1.1.3 Where documents differ, the most stringent interpretation will apply.

1.2 TYPE OF FACILITY

1.2.1 This Contract will be carried out on the premises of a new school/building.

1.2.2 Exercise appropriate care and keep construction noise and disruption to an absolute minimum and to the satisfaction of the Owner.

1.2.3 Take special precautions where alterations are required above and in all areas occupied by staff, or pedestrians.

1.3 NEW ROOF ASSEMBLIES:

.1 Supply and install the new roofing system comprised of the following (from the top down):

Roofs: All Roof Areas

(a) Floodcoat of asphalt & pea gravel
(b) 4-Plies of Type IV fiberglass felt in Type II Asphalt
(c) 1-Ply of No. 15 organic felt in Type II Asphalt
(d) 12.7mm (½") High density fiberboard in Type II Asphalt
(e) 2% Tapered insulation in Type II asphalt
(f) 1 Layer 76mm (3.0") polyisocyanurate insulation in Type II asphalt
(g) 1 Layer 76mm (3.0") polyisocyanurate insulation in Type II asphalt
(h) 2-Ply of No. 15 organic felt in Type II Asphalt
(i) Concrete deck (primed)/ Metal deck with 13mm sheathing secured (Refer to roof plan for loactions)
(j) All membrane flashings are to be 2-ply modified bituminous membranes, 1-ply modified bituminous membrane (base sheet) mopped in place with Type III asphalt and 1-ply granulated modified bituminous membrane (cap sheet) torched in place.

.2 Conform to Section 07 51 13 – Built-Up Asphalt Roofing

1.4 ADDITIONAL REQUIREMENTS

.1 Supply and install the new roofing components in accordance with the Contract Documents.

.2 Utilize a single source supplier of membrane and related primary materials.

.3 Provide the membrane manufacturer's warranty as specified. (2-year OIRCA & 10-year material)

.4 Dispose of all debris/waste in approved containers and transfer to an approved municipal and/or provincial disposal site(s).

.5 At locations of metal deck, refer to roof plan and drawings, secure 13mm sheathing with 8 fasteners per 1219 mm x 2438 mm (4'x8') board.

END OF SECTION 07 51 10

07 51 12 -Roofing Rough Carpentry

PART 1 GENERAL

1.1 GENERAL CONDITIONS

1.1.1 All conditions of the Contract and Divisions 00 and 01 apply to this section and to the requirements of the Canadian Roofing Contractors Association Roofing Manual Specifications as referred to herein.

1.1.2 Abide by all Federal, Provincial, Municipal and Local Laws or Codes, rules and regulations that in any way affect the work, including all amendments up to the project date.

1.1.3 All standards, regulations and specifications listed herein are the latest edition.

1.2 CO-ORDINATION

1.2.1 Co-ordinate work of this Section with work

.1 Section 07 51 10 Roofing Summary of Work

.2 Section 07 51 13 Built-Up Asphalt Roofing.

.3 Section 07 62 00 Sheet Metal Flashing and Trim.

.4 Section 07 92 00 Joint Sealants.

1.3 STANDARDS

1.3.1 ASTM INTERNATIONAL

.1 ASTM A123/A123M-[09], Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

.2 ASTM A307, Carbon Steel Bolts & Studs.

.3 ASTM A653/A653M-[09a], Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanealled) by Hot-Dip Process.

.4 ASTM D1761-[06], Standard Test Methods for Mechanical Fasteners in Wood.

.5 ASTM D5456-[10], Standard Specification for Evaluation of Structural Composite Lumber Products.

1.3.2 CANADIAN GENERAL STANDARDS BOARD (CGSB)

.1 CAN/CGSB-11.3-[M87], Hardboard.

.2 CAN/CGSB-51.32-[M77], Sheathing, Membrane, Breather Type.

.3 CAN/CGSB-51.34-[M86], Vapour Barrier, Polyethylene Sheet for Use in Building Construction and amendment.

.4 CAN/CGSB-71.26-[M88], Adhesive for Field-Gluing Plywood to Lumber Framing for Floor Systems.

1.3.3 CSA INTERNATIONAL

.1 CAN/CSA-A123.2-[03(R2008)], Asphalt Coated Roofing Sheets.

.2 CAN/CSA-A247-[M86(R1996)], Insulating Fibreboard.

.3 CSA B111-[1974(R2003)], Wire Nails, Spikes and Staples.

.4 CSA O112 Series-[M1977(R2006)], CSA Standards for Wood Adhesives.

.5 CSA O121-[08], Douglas Fir Plywood.

.6 CAN/CSA O122-[06], Structural Glued-Laminated Timber.

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.7 CSA O141-[05(R2009)], Softwood Lumber.

.8 CSA O151-[09], Canadian Softwood Plywood.

.9 CSA O153-[M1980(R2008)], Poplar Plywood.

.10 CSA O325-[07], Construction Sheathing.

.11 CSA O437 Series-[93(R2006)], Standards on OSB and Waferboard.

1.3.4 FOREST STEWARDSHIP COUNCIL (FSC)

.1 FSC-STD-01-001-[2004], FSC Principle and Criteria for Forest Stewardship.

.2 FSC-STD-20-002-[2004], Structure and Content of Forest Stewardship Standards V2-1.

.3 FSC Accredited Certified Bodies.

1.3.5 NATIONAL LUMBER GRADES AUTHORITY (NLGA)

.1 Standard Grading Rules for Canadian Lumber [2007].

1.3.6 UNDERWRITERS' LABORATORIES OF CANADA (ULC)

.1 CAN/ULC-S706-[09], Standard for Wood Fibre Insulating Boards for Buildings.

1.4 QUALITY ASSURANCE

1.4.1 Lumber by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

1.4.2 Plywood, particleboard, OSB and wood based composite panels in accordance with CSA and ANSI standards.

PART 2 PRODUCTS

2.1 COMPATIBILITY

2.1.1 Compatibility between materials is an essential requirement of the Contract.

2.2 WOOD

2.2.1 BLOCKING AND ROUGH FRAMING

.1 Grade No. 2, Northern Softwood in accordance with “Standard Grading Rules for Canadian Lumber” as issued by National Lumber Grades Authority (N.L.G.A.).

.2 Spruce, #1Softwood, conforming to CSA 0151.

.3 Wood Cants: 89mm x 89mm (3.5” x 3.5”, 2x4 nominal).

.4 Wood Blocking: 38mm x 38mm (1.5” x 1.5”, 2x2 nominal), 38mm x 89mm (1.5” x 3.5”, 2x4 nominal), 38mm x 140mm (1.5” x 5.5”, 2x6 nominal) 38 x 184mm (1.5” x 7.25”, 2x8 nominal), 38mm x 254mm (1.5” x 9.25”, 2x10 nominal)), 38mm x 286mm (1.5” x 11.25” (2x12 nominal).

2.2.2 PLYWOOD SHEATHING

.1 Exterior, Spruce #1, conforming to CSA 0151 or O121, exterior grade, G1S. Thickness of 13mm (1/2”) and/or 19mm (3/4”) as noted on the drawings.

2.3 FASTENERS

2.3.1 NAILS

.1 Ardox spiral, to CSA Standard B111, length to give 25mm (1") minimum penetration into the materials being fastened.

2.3.2 SCREWS

.1 Fasteners for wood: Galvanized steel wood screws with countersunk heads of size and length to

provide a minimum 38mm (1.5") penetration into the underlying member.

.2 Fasteners for steel substrates: Flat head, self-tapping steel screw with galvanized finish as supplied by Fastening House, or Approved Alternate. Length: to suit. Penetrate through the member a minimum of 19mm (3/4").

.3 Fasteners for masonry and concrete substrates: Tapcon fasteners with "Climaseal" corrosion resistant finish, as manufactured by Buildex/Red Head, or Approved Alternate. Screw to be of sufficient length to penetrate into the substrate a minimum of 38mm (1.5").

.4 Bolts, Washers and Nuts: to ASTM A307. Size as indicated on the Drawings. Hot dipped galvanized or an approved equivalent corrosion resistant finish.

PART 3 EXECUTION

3.1 GENERAL

3.1.1 All carpentry work is to comply with the best practices of trade and by skilled carpenters.

3.1.2 Provide carpentry alterations and comply with best trade practices. Anchor all wood blocking securely to the existing surfaces and to each other.

3.1.3 Make adjustments to the specified procedures caused by weather and site conditions only with the Owner's approval.

3.1.4 Maintain all equipment in good working order to ensure the control of roofing operations and the protection of the Work. Equipment and laying techniques are to meet the approval of the Consultant.

3.2 EXAMINATION

3.2.1 Ensure that existing wood blocking to be incorporated with the work is in good condition and is permanently and properly secured to the existing surfaces.

3.2.2 Inform the Consultant of any unacceptable conditions immediately upon discovery.

3.2.3 Proceed with installation only after the unacceptable conditions have been remedied.

3.2.4 Replace all damaged material and reseal masonry anchors as required to conform to the design intent herein described.

3.2.5 Remove all sharp edges that would otherwise damage materials that come in contact.

3.3 INSTALLATION

3.3.1 Cut, align, plumb, and secure the wood to conform to the full intent of the details. Shim the new wood assembly where required in order to obtain true to line levels.

3.3.2 Construct continuous members from pieces of the longest practical length. Treat all saw cuts with wood preservative.

3.3.3 Countersink bolts where necessary to provide clearance for other work.

3.3.4 Install spanning members with "crown-edge" up.

3.3.5 Install cant strips and blocking as indicated on the drawings, secured permanently to the structure trimmed and levelled to accommodate chamfers and slopes. Install to accommodate insulation, roofing and flashing materials.

3.3.6 Install continuous plywood sheathing, wood blockings, cants, studs, nailers and continuous shims where required and detailed on the Drawings and Details. Shims are to be of sufficient height to ensure a minimum two (2%) percent positive slope on all parapet, perimeter and dividing walls.

3.3.7 Install the roof sheathing in accordance with the requirements of the NBC (National Building Code).

3.3.8 Install furring and blocking as required to space-out and support facings, fascia, soffit, siding, and

other work as required.

3.3.9 Install furring to support siding applied vertically where sheathing is not suitable for direct nailing.

3.3.10 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.

3.3.11 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

3.3.12 Use nailing disks for soft sheathing as recommended by sheathing manufacturer.

3.3.13 Fabricate sleepers, expansion joints, perimeters and walls as detailed. Maintain a minimum height of 305mm (12") above the finished roof surface for sleepers and curbs and where permitted at walls.

3.3.14 Securely the anchor wood blocking, cant strips, nailers and shims in place at 305mm (12") on centre in a staggered pattern. Fasten studs to the top and bottom plates with two screw fasteners. Fasten wood blocking, wood cant strips, nailers and shims to existing substrate with appropriate screw fasteners.

3.3.15 Fasten the plywood along the supported edges at a minimum of 152mm (6") on centre. Fasten to the framing members within the field of the plywood panel at a maximum of 406mm (16") on centre. Fasten the plywood to the framing and the existing substrate with the appropriate fasteners.

3.3.16 Re-fasten any loose existing wood blocking, cants, shims and plywood with screw fasteners where permitted to remain as part of the finished work and to the satisfaction of the Consultant.

3.3.17 Coordinate work to keep cutting and remedial work to a minimum. Fasteners are to be of size and spacing required to assure secure anchorage. Fastener spacing of the wood blocking to the substrate and to each other is not to exceed 305mm (12") o.c. unless otherwise accepted in writing by the Consultant.

3.3.18 Construct wood blocking as per details. Build-up all perimeter details to accommodate the height of the new roof assembly where required. Install wood blocking so that the new wood blocking extends a minimum of 76.2mm(3") above the finished roof surface. Install sloped wood blocking along the top of the perimeter sloping inward towards the roof. Build-up all unit curbs a minimum of 304.8mm(12") above the finished roof level to accommodate the height of the new roof assembly.

3.3.19 Offset blocking layers 304.8mm(12") and weave corners.

3.3.20 Assemble blocking using two staggered rows of nailing. Space nails in any row a maximum of 609.6mm(24") on centre. Within 2440mm(8') of outside corners, reduce maximum spacing to 304.8mm(12") on centre.

3.3.21 Install asphalt protection board along the perimeters/curbs/walls, from the top of the existing deck to the top edge of the wood blocking along the perimeters/curbs/walls. The asphalt protection board is to be secured 152.4mm(6") on centre horizontally with fasteners spaced no more than 304.8mm(12") on centre vertically.

3.4 MECHANICAL CURBS (UNLESS OTHERWISE PROVIDED)

3.4.1 All fans, HVAC, vents, skylight curbs etc. are to be box framed to a minimum height of 305mm (12") above the finished roof surface.

3.4.2 This includes all roof top openings except drains, electrical conduits, soil stacks, hot stacks and vent stacks.

3.4.3 38mm (1-1/2") thick lumber is to be used or as detailed. Widths as may be required to achieve design intent.

3.4.4 Disconnecting, extending, and reconnecting electrical services to fans, HVAC units etc. Is to be completed by a Mechanical Contractor.

3.4.5 Extending ductwork and vent pipes to new elevations, as required, is to be performed as part of this

Contract.

3.5 GAS LINE SUPPORTS

3.5.1 Install new adjustable supports at each pipe elbow, threaded joint, and where the pipe changes in direction, as well as approximately every 6’ as per the current CSA B149.1 guidelines, Table 6.2 for the distance of the gas line/conduit tray.

3.6 PROTECTION

3.6.1 Protect the installed products and components from damage during construction.

3.6.2 Repair damage to adjacent materials caused by rough carpentry installation.

3.7 CLEANING

3.7.1 Remove all surplus materials and debris resulting from the foregoing work daily as the Work proceeds and upon completion.

END OF SECTION 07 51 12

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07 51 13 – Built-Up Asphalt Roofing

PART 1 GENERAL

1.1 GENERAL CONDITIONS

1.1.1 All conditions of Contract and Divisions 0 and 1 apply to this section and to requirements of Canadian Roofing Contractors Association Roofing Manual Specifications as referred to herein.

1.1.2 Abide by all Federal, Provincial, Municipal and Local Laws or Codes, rules and regulations that in any way affect work including all amendments up to project date.

1.2 SECTION INCLUDES

1.2.1 Roofs: All Roofs

Built-up asphalt roofing, pea gravel aggregate broadcast into hot asphalt top pour, 4-ply fibreglass felt, and 1-ply no. 15 organic felt mopped in place with asphalt, cant strips, fibreboard mopped in place, tapered insulation mopped in place, 1st layer of polyisocyanurate insulation mopped in place, 2nd layer of polyisocyanurate insulation mopped in place, and 2-ply no. 15 organic felt vapour retarder mopped in place to the concrete deck or over gypsum sheathing on metal deck. Membrane flashings to be 2-plies modified bituminous membranes, 1-ply modified bituminous membrane (base sheet) and 1-ply granulated modified bituminous membrane (cap sheet) torched in place.

1.3 CO-ORDINATION

1.3.1 Co-ordinate work of this Section with work of:

.1 Section 07 51 10 Roofing Summary of Work

.2 Section 07 51 12 Roofing Rough Carpentry.

.3 Section 07 62 00 Sheet Metal Flashing and Trim.

.4 Section 07 92 00 Joint Sealants.

1.4 STANDARDS

1.4.1 CAN/ULC S702: Standard for Thermal Insulation Mineral Fibre for Buildings.

1.4.2 CAN/CSA – A123.4 (R2008): Asphalt for Constructing Built-up Roof Coverings and Waterproofing Systems.

1.4.3 CAN/CSA O80 SERIES-08 – Wood Preservation.

1.4.4 CAN/CGSB 19.13-M87: Single Compound, One-Component, Elastomeric, Chemical Curing.

1.4.5 CGSB 37-GP-56M Amend: Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing.

1.4.6 CGSB 37-GP-64M: Mat Reinforcing, Fibrous Glass, for Membrane Waterproofing Systems and Built-up Roofing.

1.4.7 CGSB 37-GP-9MA: Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing.

1.4.8 ASTM C165-12: Standard Test Method for Measuring Compressive Properties of Thermal Insulations.

1.4.9 ASTM D6164/D6164M-11: Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.

1.4.10 ASTM A653/A653-10: Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.

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1.4.11 ASTM E84-12: Standard Test Method for Surface Burning Characteristics of Building Material

1.4.12 UL 790: Standard Test Methods for Fire Tests of Roof Coverings.

1.4.13 UL 1256: Fire Test of Roof Deck Constructions.

1.5 SYSTEM DESCRIPTION

1.5.1 Roofs: All Roofs

2 Built-up asphalt roofing, pea gravel aggregate broadcast into hot asphalt top pour, 4-ply fibreglass felt, and 1-ply no. 15 organic felt mopped in place with asphalt, cant strips, fibreboard mopped in place, tapered insulation mopped in place, 1st layer of polyisocyanurate insulation mopped in place, 2nd layer of polyisocyanurate insulation mopped in place, and 2-ply no. 15 organic felt vapour retarder mopped in place to the concrete deck or over gypsum sheathing on metal deck . Membrane flashings to be 2-plies modified bituminous membranes, 1-ply modified bituminous membrane (base sheet) and 1-ply granulated modified bituminous membrane (cap sheet) torched in place.

2.1 WARRANTIES

2.1.1 The Contractor will furnish the Owner and the Consultant with a standard 2-year Canadian Roofing Contractors Association labour warranty and the material manufacturer's 10-year standard warranty.

2.1.2 The Contractor will inspect the roofing project with the Consultant immediately after its completion and will correct any workmanship defects within a reasonable time period (30 days) at the Contractor's expense. Failure to correct the deficiencies and/or provide the required written warranty may cause final payments to be withheld until the situation is rectified.

2.1.3 Failure to provide full documentation will prevent issuance of the certificate of substantial completion and delay the release of the final payment and holdback.

2.1.4 The Owner must notify the Contractor and the Consultant in writing a minimum of thirty days before installation of any equipment or procedures that may damage or alter the roofing system. Failure to notify may void the warranty.

2.1.5 It is the responsibility of the Contractor to notify the membrane manufacturer before the Work begins to arrange on-site inspections by the manufacturer's printed procedures in order to obtain the manufacturer's warranty.

2.2 QUALIFICATIONS

2.2.1 The Contracting company must be an operating roofing company in business for a minimum of 5 years. The Contracting company must be a member in good standing of the CRCA (Canadian Roofing Contractors Association) and local provincial association.

2.2.2 All workers shall be thoroughly experienced in the particular class of Work in which they are employed. The Consultant reserves the right to reject any worker who, in his/her opinion, does not have the skills necessary to properly complete any job they are so assigned.

2.2.3 The Contractor must be acceptable to the materials manufacturer in order to provide the required warranties.

2.2.4 These requirements are required for any and all Sub Contractors.

2.2.5 Provided a competent supervisor to supervise all work.

2.2.6 Ensure that the quality of the work conforms to the best standard trade practices.

2.2.7 Ensure that torching operators continually carry identity verification together with verification of the membrane manufacturer's torching training certification.

2.3 QUALITY CONTROL

2.3.1 Forman

.1 Once the project has started, the roofing foreman cannot be replaced without the written permission of the Consultant.

2.3.2 Housekeeping

.1 The Contractor shall be responsible for maintaining all work areas in a neat and orderly manner. All ground areas shall be clean, neat and orderly at the end of each day's work. All materials and equipment (including kettle) stored on the ground must be placed on plywood to prevent damage to paved areas. If ballast materials must be placed on a grass surface, it must be placed on a protective covering sufficiently large enough to ensure that no ballast remains on the grass. Any and all landscaping damaged or destroyed shall be restored to its original condition by a landscape Contractor paid for by the Contractor.

.2 All roof top areas shall be clean, and materials properly stored at the end of each day's Work.

.3 If the Contractor does not comply with the requirements to keep the premises clean or does not take steps to correct any damage that may have occurred, a written notice will be issued to the Contractor. If immediate, satisfactory steps are not taken to correct the situation, it shall be the prerogative of the Owner to rectify the situation and charge the Contractor accordingly

2.3.3 Protection

.1 Existing roof areas and roof top equipment shall be completely protected throughout the course of this project. Protect roofing system in hoisting area by means of plywood sheets extending a minimum of ten feet beyond the Working area.

.2 Do not transport any materials across new roofing without first installing adequate plywood protection. Failure to adequately protect the roof may result in the rejection of that roof area.

2.3.4 Surface Condition

.1 The Contractor will ensure that all substrates are clean, dry, sound, smooth and free of dirt, debris, moisture, and other contamination before any materials are applied.

2.3.5 Replacement

.1 Any isolated areas that must be torn off and replaced will be built up to the height of the existing roof prior to the installation of the new roofing membrane system.

2.3.6 Damaged Materials

.1 If in the opinion of the Inspector, any materials, either in place or not yet applied, are deemed to have been damaged by moisture, traffic, or any other cause, the Contractor will repair and/or replace the damaged materials to the approval of the Inspector, and at no cost to the Owner.

2.3.7 Weather Conditions

.1 No materials are to be applied when the outside temperature is below 5 degrees Celsius unless written approval is obtained from the manufacturer's representative. No materials are to be applied when precipitation is imminent. No materials will be applied to damp, wet, of contaminated surfaces. No roofing is to be carried out during periods of high winds.

2.3.8 Phased Roofing

.1 All installed insulation must be covered with the specified membranes and membrane flashings the same day. **Phased roofing will not be accepted.**

2.3.9 Night Seals

.1 At the end of each working day, the incomplete installation shall be sealed along all edges to prevent water from entering the roofing system and structure. This temporary night seal must be removed before proceeding with the adjoining area.

2.3.10 Inspection

.1 Before leaving the roof at the end of a working day, inspect the project to ensure that all materials and equipment are covered and secured, no fire hazards are present, no drains are plugged, all openings are properly protected, and all night-seals are completed. Remove the ladder from the building. Secure the kettle area and ensure that the kettle temperature has been reduced to a safe temperature.

2.3.11 Materials & Equipment

.1 All surplus materials and equipment shall be removed from the site when they are no longer required to complete the remaining Work.

2.3.12 Good Roofing Practices

.1 Responsibility – The Contractor shall be responsible for all supervision and execution of the Work as defined in the Construction Documents. The Contractor shall be solely responsible for construction safety and compliance with all legislation, practices, rules and regulations.

.2 Standards – Unless otherwise noted in the specifications, Contractors will adhere to the principles, practices, and guidelines of the Canadian Roofing Contractors Association, and the Ontario Industrial Roofing Contractors Association.

.3 Manufacturers – When possible and practical, use materials supplied from a single manufacturer. All materials, equipment, accessories, etc. are to be applied and/or installed strictly in accordance with the manufacturer's written instructions. No deviations will be permitted without written approval from the manufacturer of that material, equipment, accessory, etc.

.4 Acceptance – The Contractor must verify that all materials can be installed to accommodate the building design, pertinent codes and regulations, and the manufacturer's current recommendations.

2.3.13 Review & Quality Assurance of the Work

.1 Conform to the Owner/Contractor Agreement.

(a) Co-operate with the Owner and their representative(s) to afford all facilities necessary to permit full inspection of the work and testing of materials prior to, during their use and during the warranty period. Act immediately on instructions given by the Consultant.

(b) If the Contractor covers or permits to be covered the Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

(c) The Consultant will order part of the Work to be examined if the Work is suspected to be not in accordance with the Contract Documents. If, upon examination such work is found in accordance with the Contract Documents, correct such Work and pay the cost of the examination and correction.

.2 Undertaking and periodic inspections by the Owner, their agent, Consultant or Inspector is not to be construed as supervision of actual construction, nor make him responsible for providing a safe place for performance of work by contractors of contractor's employees or those of suppliers or sub-contractors or for access, visits, use, work, travel or occupancy by any person.

.3 Pre-Start Meeting – This meeting is deemed to be a site visit and shall be held before the start of

the project. The Contractor, the foreman for this project, and the Consultant will review the specifications, drawings and details. The site will be examined, and the condition of the grounds and the building will be noted. The Contractor will be responsible for any damage to the facilities resulting from the execution of this project.

.4 Notification – The Contractor shall provide the Consultant with forty-eight (48) hours written notice before commencing Work on this project. At the completion of any patching, flashing repair, or cleaning, and prior to any resurfacing and restoration work, the Contractor shall provide the Consultant with forty-eight (48) hours written notice to inspect the area before work proceeds. After the start date of this project, it shall be the responsibility of the Contractor to notify the Consultant before 8:00 a.m. each and every day, if no roofing personnel will be on site that day; for any reason, weather, labour, materials, strikes, etc., or any other delays. Failure to notify the Consultant will result in an invoice issued to the Contractor in the amount of three hundred and fifty dollars per occurrence. Payment of this invoice must be received by the Inspection Company before the holdback for this project will be released. Further, the Contractor shall send a written notification to the Consultant before 12:00 noon the same day, confirming that their employees will not be on site that day, and that the Consultant was notified before 8:00 a.m. This will serve as a permanent record and proof of notification.

.5 Core Samples – When directed by the Consultant, the Contractor shall cut not more than four(4) cores of approximately 200 square inches each from every newly constructed built-up roof system, and shall restore all such areas to sound and watertight condition. These procedures will be done at the Contractor's cost.

.6 Inspection – The Owner authorizes Tr-Tech Pinnacle Group Inc. to periodically visit the site in order to assist in ascertaining the extent to which the materials and procedures conform to the requirements of these specifications and to the published instructions of the material manufacturer.

.7 Leaks – If a roof leak occurs during the project and the inspector visits the site, the Contractor is required to reimburse the inspection company three hundred and fifty dollar per visit.

.8 Acceptance – The acceptability of the completed roofing Work will be based on its conformance to the written specifications and addenda. The Owner and/or his representative are not obligated to accept non-conforming work and such non-conforming work may be rejected. The rejected Work shall be promptly replaced or corrected in a manner and by methods approved by the Owner's representative. The Consultant will instruct the Contractor's foreman and Work crew on the proper methods of installation of the roofing system and will follow up on a regular basis to inspect the Work being done. Any deficiencies or deviations from the specified Work will be noted and reported to the Owner along with recommended corrective actions necessary. Acceptance of any Work in no way relieves the Contractor of his/her warranty obligations.

.9 Noncompliance – Non-compliance with the terms of this specification and ensuing contract can result in either the cancellation of the contractor or complete replacement of the defective areas at the Contractor's expense. In the event of cancellation, the Owner will not be obligated to compensate the Contractor for any work undertaken. Furthermore, all damages caused by water infiltration resulting from the failure of the Contractor to secure each day's Work in a watertight manner, will be corrected at the Contractor's expense. Included as damages will be all labour costs incurred by the Owner as a result of such water infiltration.

.10 Final Inspections – Final inspections are noted as site visits. Additional visits to re-inspect the project because of defective or incomplete work, or for any other reason may result in additional visits charged to the Contractor.

.11 Responsibility – The presence and activities of the Consultant shall in no way relieve the Contractor and/or Sub Contractor(s) of his/her contractual responsibilities. The Consultant <u>will not</u> act as a supervisor of any work force present on the site.

.12 Safety – Safety is the absolute responsibility of the Contractor. The Consultant is not responsible for, nor has control of safety procedures required for the Work as set forth by legislation, the facility, or accepted construction practices. However, if in the opinion of the Consultant, unsafe conditions, practices and procedures are present, the project may be shut down by order of the Consultant or the Owner until such conditions are corrected.

.13 Engineering Responsibility – Tri-Tech Pinnacle Group Inc. does not, nor do its representatives, practice engineering or architecture. We make no judgments on, and hereby disclaim any responsibility for the soundness of any roof deck or structural component of buildings upon which Work is carried out and recommend that the Owner obtain written certification from a structural engineer that the structure will support the proposed weight of any Work undertaken, including, but not limited to Replacement, Repair, Retrofit, Restoration, or Ballasted Roofing Systems or Equipment installations.

2.3.14 Procedures

.1 Notify the Consultant in advance of the requirements for tests, in order that attendance arrangements can be made.

.2 Submit sampled and/or materials required for testing, as specifically requested in the specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in the Work.

.3 Provide labour and facilities to obtain and handle sample material on site. Provide sufficient space to store and cure test samples.

2.3.15 Defective Work

.1 Conform to the Owner/Contractor Agreement

(a) Remove defective Work, whether the result of poor workmanship, use defective products or damage and whether incorporated in the Work or not, which has been rejected by the Consultant as failing to conform to the Contract Documents. Replace or re-execute in accordance with the Contract Documents.

(b) Make good other Contractor's work damaged by such removals or replacements promptly.

(c) If in the opinion of the Consultant it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, the Owner will deduct from the Contract Price the difference in value between Work performed and that called for by the Contract Documents, amount of which will be determined by the Consultant.

2.3.16 Quality of Work

.1 Execute the Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

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

.3 Do not employ anyone unskilled in their required duties. The Consultant reserves the right to require dismissal from the site, workers deemed incompetent or careless.

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

2.3.17 Coordination

.1 Ensure the co-operation of workers in laying out the Work. Maintain efficient and continuous supervision.

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

2.3.18 Concealment

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

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

2.3.19 Remedial Work

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

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

2.4 PRE-START MEETING

2.4.1 A pre-start meeting is to be scheduled one week prior to any work commencing. The roofing contractor, the consultant, the on-site contact and/or owner's representative should bepresent.

2.4.2 The following items will be discussed at the pre-start meeting:

.1 methods and procedures relating to the roof assembly installation

.2 on-site procedures

.3 on-site material storage

.4 the construction schedule

2.5 DELIVERY, STORAGE & HANDLING

GENERAL

2.5.1 Handle and store products in a manner to prevent damage, deterioration and soiling and in accordance with the manufacturer's instructions when applicable.

2.5.2 Store products subject to damage from weather and/or theft in lockable weatherproof enclosures.

2.5.3 All roofing membranes must be stored on end. Granular surfaces membranes will be stored selvage side up. Protect edges of roll goods.

2.5.4 Store cementitious products clear of earth or concrete floors, and away from walls.

2.5.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

2.5.6 Store sheet materials and lumber on flat, solid supports and keep clear of ground and/or roof surface. Slope to shed moisture.

2.5.7 Store and mix paints in a heated and ventilated room. Remove oily rags and other combustible debris from the site daily. Take every precaution necessary to prevent spontaneous combustion.

2.5.8 Remove and replace wet and otherwise damaged products at your own expense and to the satisfaction of the Consultant.

2.5.9 Touch-up damaged factory finished surfaces to the Consultant's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

2.5.10 Locate all materials not required to be stored in weatherproof sheds on site in a manner to cause the

least interference with work activities.

2.5.11 Confine work and operations of employees to those defined by the Contract Documents. Do not unreasonably encumber the premises with products.

2.5.12 Do not load or permit to load any part of the Work with weight or force that will endanger the Work. The contractor is fully responsible to ensure the structural loading of the roof is not excessive. Should doubt exist as to the structural capacity of the existing roofing structure, the Contractor will be held responsible for acquiring the opinion and direction from a Professional Structural Engineer, licensed to practice within the province of work at no additional cost to the Owner.

2.5.13 All materials shall be safely stored and protected against weather, vandalism, and theft. All materials will be adequately tarped with waterproof breathable coverings and secured with rope. Provide additional tarps to protect all materials from weather and be responsible at all times for the protection of the materials and the securement of the tarps.

2.5.14 No roofing materials are to be used as ballast to secure protection coverings. Any materials used in this manner will be marked with paint and rejected by the Consultant. These materials must be immediately removed from the job site. Any of these materials found incorporated into the applied roofing system will result in that portion of the Work being rejected.

2.5.15 Store all solvent based materials in well ventilated areas away from excessive heat or open flames.

PRODUCT STORAGE AND HANDLING REQUIREMNTS FOR HAZARDOUS MATERIALS

2.5.16 PROPANE CYLINDERS/GAS CYLINDERS

.1 Follow the supplier's instructions and comply with the Provincial and/or National Health and Safety Guidelines for Low-Slope Roofing when handling and storing gas cylinders.

.2 Transport gas cylinders in an upright position, properly secured. Store gas cylinders with valve closed and safety cap in place inside a locked storage area, at least 7.6m(25') from the kettle or tanker.

.3 Check the pressure regulator before using any gas cylinder and adjust it as required.

.4 Check hoses and couplings for cracks and cuts and replace them as required before using the cylinder.

PRODUCT STORAGE AND HANDLING REQUIREMENTS FOR TOXIC MATERIALS

2.5.17 Store volatile waste in covered metal containers and remove from the premises at the end of each working day.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Roof Membrane (Fibreglass Felts): inorganic, non-woven fibreglass mat, asphalt saturated, Type IV glass felts, meeting or exceeding the requirements of CSA A123.17 and ASTM D2178

2.1.2 Roof Membrane (Organic Felts): high-strength organic felt, asphalt saturated, perforated felt, meeting or exceeding the requirements of CSA A123.3 Type 1 and ASTM D226 Type I

2.1.3 Flashing Membrane (Modified Bituminous – Cap Sheet): Modified bituminous membranes, granulated top and thermo-fusible bottom surfaces, 250gm/sq.m., non-woven polyester reinforced, meeting or exceeding the requirements of CGSB 37.56-M and ASTM D6164 Type II

2.1.4 Flashing Membrane (Modified Bituminous – Base Sheet): Modified bituminous membranes, sanded top and bottom surface, 180gm/sq.m., polyester reinforced, meeting or exceeding the requirements of CGSB-37.56-M and ASTM 6164 for Type I

2.1.5 Asphalt Primer: Conforming to CGSB 37-GP-9Ma

2.1.6 Insulation (Base Layers): 76mm + 76mm (3.0" + 3.0") polyisocyanurate insulation (4'x4' boards). Type: closed cell polyisocyanurate foam roof board insulation with inorganic facers, meeting the requirements of CAN/ULC S704, Type 2 Class 3 materials.

2.1.7 Insulation (Tapered – Top Layer): Fully tapered asphalt impregnated fibreboard to provide a slope of 2.0%. The tapered insulation/layout is to be four-way slope to the drains with no crickets linking the drains. Crickets are to be used at all openings and/or mechanical curbs. Flat areas around the drains are not to exceed 50ft2. Meeting and exceeding the requirements of CAN/CSA-A247-M86 and CAN/ULC-S706.

Acceptable Products: Asphalt Impregnated Fibreboard by Posi-Slope Enterprises Inc.

2.1.8 Insulation Sump: Polyisocyanurate, pre-manufactured, one piece drain sump. Meeting the requirements of CAN/ULC S770. Drain sumps to be 8'x8'

Acceptable Products: Gemini Drain Sets by Atlas Roofing Corporation or Drain Sumps by Posi-Slope Enterprises Inc.

2.1.9 Cover Board: 12.7mm (0.5") high density fibreboard insulation (4'x4') boards, factory coated on one side, meeting or exceeding the requirements of CAN ULC-S706-09 Type II, Class 1

2.1.10 Vapour Retarder: High-strength organic felt, asphalt saturated, perforated felt, meeting or exceeding the requirements of CSA A123.3 Type 1 and ASTM D226 Type I

2.1.11 Asphalt: Type II conforming to CSA Std. A123.4M

Type III conforming to CSA Std. A123.4M

2.1.12 Pea Gravel: Clean, water washed, free from organic matter and fines. 9mm(3/8") aggregate.

2.1.13 Stripping Adhesive: One-part rubberized elastomer

2.1.14 Gypsum Board: 13mm(1/2") thick, 4'x8' boards, fastened in place as per manufacturer

2.2 ACCESSORIES

2.2.1 Wood Blocking, Plywood Sheathing: Construction grade; free from warping and visible decay; pressure-treated spruce, to CAN/CSA O80 SERIES-08.

2.2.2 Wood Fasteners: hot-dipped galvanized steel fasteners conforming to ASTM A153

2.2.3 Cant Strip: asphalt impregnated fibreboard cant strip.

2.2.4 Metal Flashing: 26 gauge pre-painted galvanized; Series 8000 baked enamel finish; colour to match existing, to ASTM A653/A653M-10. 24 gauge metal for all cleats and hook strips. Colour to be confirmed by the Owner.

2.2.5 Pitch Pan: Pre-manufactured type; 16 oz. copper, fully soldered, minimum 152.4 mm (6") high above finished roof level, complete with copper caps and sealant.

2.2.6 Pitch Pan Sealant: M-1 Structural sealant (pitch pan sealant) and 1-part pourable sealer (pitch pan pourable sealer) by ChemLink or Joint & Termination Sealant #9600 (pitch pan sealant) and Semi-Selfleveling Sealer #4500 (pitch pan pourable sealer) by Lucas

2.2.7 Self-Adhering Membrane (Perimeter Parapet): Self-adhering, self-sealing, composite membrane consisting of a high softening point with SBS rubberized asphalt compound.

2.2.8 Self-Adhering Membrane Adhesive (Perimeter Parapet): Rubber based adhesive for self-adhering membranes.

2.2.9 Sealant: single component; moisture cure; polyurethane sealant conforming to CAN/CGSB19.13M87.

2.2.10 Fasteners: 25mm square or round head, ring shanked galvanized or non-ferrous type, length as required to suit application.

2.2.11 Drains: Boxed Copper Retro Drain with Flange, with Dome, with Seal, with Stainless Steel Ballast Guards by Platinum Technologies Inc.

2.2.12 Control Flow Mechanism: by Platinum Technologies Inc.

2.2.13 Gooseneck Flashing: 30" Stainless Steel gooseneck 1.9" I.D. and spun aluminum base by Platinum Technologies Inc.

2.2.14 Tall Cones: all sizes (1.5" to 12"): by Platinum Technologies Inc.

2.2.15 Vent Stack: insulated aluminum vent stack with factory applied polyurethane foam insulation and vent stack cap by Platinum Technologies Inc.

2.2.16 Termination Bar: 10' Alum Term Bar – Item NO. – Term-10 (#90354) by Platinum Technologies Inc.

2.2.17 Gas Line Supports: SmartBlox as supplied by Platinum Technologies Inc.

2.2.18 Foam Gasket: EMSEAL MST Multi-Use Sealant Tape or EMSEAL UST Sealant Tape

Note: The Contractor must supply all primers, mastics, and membranes from a single source Manufacturer. No alternates will be accepted without written approval from the Consultant

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 Supply and install perimeter safety warning as prescribed by the Provincial Occupational Health and Safety Code and all local codes before starting any other work.

3.1.2 It is the contractor's responsibility to obtain all required permits for this project and must carry this cost in his bid price.

3.1.3 The ground areas around the building are to be protected as much as possible. All disposal boxes must be placed on planks. The interior areas of the building, where the roofing contractor has access, are to be protected.

3.1.4 It is the responsibility of the roofing contractor to contact the Owner to mark the exact location of buried utilities.

3.1.5 Inspect the deck and report any deficiencies to the Owner's Representative. Do not apply any new roofing over deficiencies, other than temporary waterproofing, until all deficiencies have been corrected.

3.1.6 Phasing of the roof assembly is not acceptable. Therefore, the entire roof assembly from the vapour retarder to the flood coat and aggregate are to be installed on a daily basis.

3.1.7 All adjacent roof areas being used for storage/setup and travelled on, are to be fully protected with polystyrene and plywood. Roofing contractor is responsible for all costs relating to overhead protection, scaffolding, protection of adjacent roofs and any required permits.

3.2 ASPHALT PREPARATION

3.2.1 Prepare asphalt according to Manufacturer's instructions. If heating temperatures are not supplied on the containers or Bills of lading, for the asphalt on site, heat to no more than the temperatures listed below.

Mechanical Application	Mop Application
Type II 221 ^{0}C (+/- 15 ^{0}C) 450 ^{0}F (+/- 25 ^{0}F)	Type II 210 ^{0}C (+/- 15 ^{0}C) 410 ^{0}F (+/- 25 ^{0}F)
Type III 239 ^{0}C (+/- 15 ^{0}C) 462 ^{0}F (+/- 25 ^{0}F)	Type III 225 ^{0}C (+/- 15 ^{0}C) 437 ^{0}F (+/- 25 ^{0}F)

3.2.2 Maintain asphalt in tanker or kettle below its Final Blowing Temperature (FBT) of 260^{0}C (500^{0}F) as indicated on Bill of Lading or container. In cold weather insulate delivery pipes and transport bitumen in insulated carriers on the roof.

3.2.3 Bitumen shall not be heated to Flash Point or FBT for more than four (4) hours.

3.2.4 Apply asphalt at temperatures noted in the above table.

3.2.5 Ensure an accurate thermometer independent of the kettle thermometer or heat gun is used to monitor the asphalt temperature. Consultant may request a daily temperature Log.

3.2.6 Asphalt Quantities:

1. Insulation or cover board mopping: 1.0 kg/m2 (20 lbs. / 100 ft2)
2. Glass Ply Sheet interplay mopping: 1.2 kg/m2 (25 lbs. / 100 ft2)
3. Base Ply interplay mopping: 1.0 kg/m2 (20 lbs. / 100 ft2)
4. Glaze Coat: 0.49-0.73 kg/m2 (10-15 lbs. / 100 ft2)
5. Flood Coat (Top Pour): 2.9 kg/m2 (60 lbs. / 100 ft2)

3.3 VAPOUR RETARDER

3.3.1 Install 2-plies of No. 15 organic felt membrane fully hot mopped in place using Type II asphalt at a rate of 20-25lbs. per 100 sq.ft., over the concrete deck or sheathing board over metal deck.

3.3.2 Do not stand on the newly embedded felt to unroll the membrane. Do not walk on the membrane until the asphalt has set up. **Gang rolling of felts is not allowed.**

3.3.3 Ensure the felts lie flat, with no wrinkles, fishmouths, or blisters, and are well bonded. All surfaces of the membrane must be completely coated with asphalt. No areas of dry felt in contact with dry felt will be accepted.

3.3.4 No felts are to be left uncoated at days end for any reason.

3.4 INSULATION & COVER BOARD

3.4.1 Ensure the vapour retarder is clean, dry, continuous, and ready for insulation application.

3.4.2 Install first layer of insulation fully mopped in place in Type II asphalt at a rate of 20-25lbs. per 100sq.ft., over the vapour retarder. Ensure all insulation boards butted tight with no gaps between boards. Insulation is to be placed with all joints staggered a minimum of 609.6mm (2') per row, per layer.

3.4.3 Install second layer of insulation fully mopped in place in Type II asphalt at a rate of 20-25lbs. per 100sq.ft., over the first layer of insulation. Ensure all insulation boards butted tight with no gaps between boards. Insulation is to be placed with all joints staggered a minimum of 609.6mm (2') per row, per layer.

3.4.4 Install 2.0% tapered insulation fully mopped in place in Type II asphalt at a rate of 20-25lbs. per 100sq.ft., following the tapered insulation manufacturer's drawings.

3.4.5 No damaged or wet insulation will be accepted. All rejected materials will be marked and must be stored on site. They are not to be removed until the project is completed.

3.4.6 Install sloped prefabricated insulation 2438.4mm x 2438.4mm (8'x8') around all roof drains. Adjust the insulation thickness (top layer) to accommodate the sumps.

3.4.7 Install one layer 12.7mm(0.5") high density fibreboard cover board, in a full mopping of Type II asphalt, at a rate of not less than 20lbs. per 100 sq.ft. over the tapered insulation and carried over the drain sumps. Butt boards tightly together. Stagger all joints. Ensure that the joints of the tapered layer and the cover board are not directly over one another.

3.4.8 Do not apply more insulation & cover board than can be covered with membranes the same workday.

3.5 CANT STRIPS

3.5.1 Embed the cant strip into a full mopping of Type II asphalt at all horizontal to vertical transitions in the roof. Cant strip is to be continuous and butted tight.

3.5.2 No damaged or wet cant strip will be accepted. All rejected materials will be marked and must be stored on site. They are not to be removed until the project is completed.

3.6 MEMBRANE APPLICATION

3.6.1 Over the insulation, apply 5 plies (1-ply No. 15 organic felt membrane and 4-ply Type IV fibreglass felts) of membranes fully hot mopped in place using Type II asphalt.

3.6.2 Apply 1-ply of No. 15 organic felt membrane fully hot mopped in place using Type II asphalt at a rate of 20-25lbs. per 100 sq.ft., over the newly installed cover board.

3.6.3 Over the 1-ply, apply 4 plies of Type IV fibreglass felts fully hot mopped in place using Type II asphalt at a rate of 20 – 25 lbs. per 100 sq.ft. pre ply. Do not mop more than 3.048m(10') in front of the roll. Ensure a minimum 12.7mm (0.5") bleed-out of asphalt occurs along the side and end laps of each ply. All plies will be terminated at the top of the cant strip. The mini mop asphalt spreader is not to be used when installing fibreglass felts. A hand mop is to be used.

3.6.4 Do not stand on the newly embedded felt to unroll the membrane. Do not walk on the membrane until the asphalt has set up. **Gang rolling of felts is not allowed.**

3.6.5 **Phased roofing will not be accepted.** If one, or two, or three plies are applied for whatever reason, the contractor must remove these plies and apply a new 4 ply system on top at no additional cost to the owner.

3.6.6 All end laps in the field of the roof are to be staggered.

3.6.7 Ensure the felts lie flat, with no wrinkles, fishmouths, or blisters, and are will bonded. All surfaces of the membrane must be completely coated with asphalt. No areas of dry felt in contact with dry felt will be accepted.

3.6.8 No felts are to be left uncoated at days end for any reason.

3.7 GRAVEL

3.7.1 Apply a 60lb. per 100 square foot flood coat of Type II asphalt. While the asphalt is still hot, embed the new aggregate at a rate of 500 lbs. per 100 square feet.

3.7.2 Sweep loose gravel back 20' from all corners on the roof. Pour another floodcoat of Type II asphalt and embed another layer of new, washed aggregate into the hot asphalt.

3.7.3 Once the aggregate has been applied, no asphalt is to be visible.

3.8 NIGHT SEAL

3.8.1 Roofer is responsible to have all roofs closed-in and in a watertight condition at the end of each production day.

3.8.2 It is the Foreman's responsibility to thoroughly check this detail at the end of each day before leaving

the roof.

3.9 MEMBRANE FLASHINGS

3.9.1 Provide membrane flashings in accordance with membrane manufacturer's written installation guidelines. All flashing membranes are to be installed in 1-meter widths.

3.9.2 Install flashings to ensure the roof is watertight at the end of each working day.

3.9.3 Contractor is responsible to disconnect and reconnect any electrical conduit, cabling, and/or gas lines which are affecting the roof installation.

3.9.4 Membrane flashings will be comprised of 1 ply granulated modified bituminous cap sheet torched in place and 1 ply modified bituminous base sheet in Type III asphalt.

3.9.5 Flashing membranes are to be terminated 304.8mm (12") above the top of the cant strips at all locations.

3.9.6 Perimeter (Outside Perimeter):

.1 Raise the existing perimeter to accommodate the height of the new roof assembly, where required.

.2 Apply one coat of quick dry primer on all surfaces to receive modified bituminous membranes at a rate of 150 sq.ft. per gallon. Ensure that all surfaces are clean and dry before primer application.

.3 After the application of the 5 ply field membranes, apply 1-ply modified bituminous base sheet membrane flashings fully hot mopped in place using Type III asphalt, extending on the roof surface a minimum of 101.6mm(4") and extending over the top of the detail and down the outside face fully covering the wood blocking. The membrane shall be nailed every 457.2mm (18") on centre.

.4 Apply 1-ply granulated modified bituminous cap sheet membrane flashings torched in place extending a minimum of 101.6mm(4") beyond the modified bituminous membrane base sheet membrane flashings onto the roof surface and extending to the top of the perimeter. Ensure that the laps of the granulated modified bituminous cap sheet membrane flashings do not coincide with the laps of the modified bituminous base sheet membrane flashings.

.5 Continuously seal the top edge of the granulated cap sheet with elastomeric sealant. All seams and laps of the granulated cap sheet membrane are to be hot air welded.

.6 Fully cover the membrane flashings with new pre-painted metal flashings.

3.9.7 Equipment Curb Flashings:

.1 Build-up all unit curbs a minimum of 305mm (12") above the finished roof surface to accommodate the height of the new roof assembly where required.

.2 Temporarily disconnect each HVAC/fan unit, completely lift the unit off the curb and set it on the roof while flashing the curb. The curb is to be set on plywood to protection the roof membrane. Once the curb has been flashed, the unit is to be lifted off the roof and set back on the curb. Then once the unit has been reinstalled and reconnected it is to be tested to ensure it is working properly. The unit work must be performed only by qualified HVAC contractors. The roofing contractor is responsible for these costs in his bid price.

.3 Apply one coat of quick dry primer on all surfaces to receive modified bituminous membranes at a rate of 150 sq.ft. per gallon. Ensure that all surfaces are clean and dry before primer application.

.4 After the application of the field membranes, apply 1-ply modified bituminous base sheet membrane flashing fully hot mopped in place using Type III asphalt, extending on the roof surface

a minimum of 101.6mm (4") and extending over top of the curb.

.5 Apply 1-ply granulated modified bituminous cap sheet membrane flashing torched in place, extending a minimum of 101.6mm (4") beyond the modified bituminous base sheet membrane flashing onto the roof surface and extending over top of the curb.

.6 The granulated modified bituminous cap sheet membrane flashing is to be nailed every 152.4mm (6") on centre at the top of the curb.

.7 Fully cover the membrane flashings with new pre-painted metal flashings.

.8 Install new foam gasket over top of the metal flashings prior to reinstalling mechanical equipment/skylights. Ensure foam gasket is continuous, creating a permanent seal between the mechanical equipment/skylights and metal flashings.

3.9.8 Vent/Plumbing Stack:

.1 The stack jack flange is to be primed before installation. Paint all existing vent stacks using double "D" aluminum paint.

.2 All existing plumbing vent pipes are to be extended to suit, so that the inside portion of the cap is within the plumbing vent pipe. Stacks to be a minimum of 304.8mm (12") above the finished roof surface. All stacks are to be pre-insulated as listed in the Materials section. Mechanically fasten cap with 2 self-tapping stainless-steel screws.

.3 Secure a metal cone down to the concrete deck. The cone must extend up past the finished roof level a minimum of 50.8mm (2"). Install the roofing vapour retarder so that it extends above the insulation surface 50.8mm (2"). The insulation should butt up against the metal cone.

.4 Over the new field membranes, embed the flange of the stack in elastomeric sealant.

.5 Install modified bituminous base sheet membrane flashings and granulated modified bituminous cap sheet membrane flashings in Type III asphalt over the flange. The first ply shall be applied starting 38.1mm (1.5") away from the upright and extend a minimum of 101.6mm (4") beyond the flange. The second ply shall be applied tight to the upright and extend a minimum of 203.2mm (8") beyond the flange.

.6 Elastomeric sealant and granules are to be applied where the modified bituminous cap sheet membrane flashings meet the stack along the base.

.7 Install insulating sleeve. Mechanically fasten cap with 2 self-tapping stainless-steel metal screws.

3.9.9 Furnace Stack:

.1 Secure a metal cone down to the concrete deck. The cone must extend up past the finished roof level a minimum of 50.8mm (2"). Install the roofing vapour retarder so that it extends above the insulation surface 50.8mm (2"). The insulation should butt up against the metal cone.

.2 Over the new field membranes, embed the flange of the stack in elastomeric sealant.

.3 Install modified bituminous base sheet membrane flashings and granulated modified bituminous cap sheet membrane flashings in Type III asphalt over the flange. The first ply shall be applied starting 38.1mm (1.5") away from the upright and extend a minimum of 101.6mm (4") beyond the flange. The second ply shall be applied tight to the upright and extend a minimum of 203.2mm (8") beyond the flange.

.4 Replace any damaged rain collars and re-caulk all collars.

3.9.10 Pitch Pans:

.1 All pitch pans will be replaced. Pitch pans must be a minimum of 152.4mm (6") high (above the finished roof surface) with a 101.6mm (4") primed roof flange. The sides of the pan will be a

minimum of 50.8mm (2") from the projection. **Where possible use copper gooseneck instead of pitch pan.**

.2 Secure a metal cone down to the metal deck. The cone must extend up past the finished roof level a minimum of 50.8mm (2"). Install the roofing vapour retarder so that it extends above the insulation surface 50.8mm (2"). The insulation should butt up against the metal cone.

.3 Over the new field membranes, embed the flange of the stack in elastomeric sealant.

.4 Install modified bituminous base sheet membrane flashings and granulated modified bituminous cap sheet membrane flashings in Type III asphalt over the flange. The first ply shall be applied starting 38.1mm (1.5") away from the upright and extend a minimum of 101.6mm (4") beyond the flange. The second ply shall be applied tight to the upright and extend a minimum of 203.2mm (8") beyond the flange.

.5 Ensure the penetration and the inside walls of the new pitch pans are clean and free from any dirt or debris before applying sealant.

.6 Apply pitch pan sealant around the inside walls and base of the pitch pan. Apply pitch pan sealant around the roof projection.

.7 Fill all pitch pans using pourable sealant.

.8 Install new pitch pans as required at mechanical units and at other roof penetrations/projections, no conduits, satellite cables, or gas lines are to be carried through the curb flashings. The roofing contractor is responsible for the disconnection and reconnection, where required.

3.9.11 Roof Drains:

.1 Sump area around the drains 12.7mm (0.5") deep and centered equally over the drain in all directions. 8'x8' drain sumps are to be installed.

.2 Over the new field membranes, install new drain in a full bed of elastomeric sealant. Check the drainpipes on the underside of the deck to ensure the installation of the proper length of down-pipe. Ensure that the pipe does not impede the flow of water. Plug the drains temporarily while working around them.

.3 Apply 1 coat of primer to the flange.

.4 Install 1-ply modified bituminous base sheet membrane flashings extending a minimum of 457.2mm (18") from the centre of the drain into hot asphalt. Install 1-ply modified bituminous cap sheet membrane flashing extending a minimum of 152.4mm (6") beyond the first ply into hot asphalt.

.5 Apply 1 ply of modified bituminous base sheet membrane in hot asphalt that extends a minimum of 25.4mm (1" beyond the edge of the drain sump shoulder in each direction.

.6 Apply asphalt with a dipper and apply gravel into hot asphalt. If the plumbing connection, on the underside of the metal deck has been made **REMOVE THE PLUG.** Do not leave plugged overnight.

.7 The new metal strainer and control flow mechanism are to be installed immediately following the installation of the flashing membranes. Therefore, if the roof has 10 drain and only two drains have been flashed (that particular day), those two drains are to have the metal strainer, control flow mechanism installed at the end of that workday.

3.9.12 Scupper Drains:

1. Install new fully soldered copper scupper drain. The new scupper drains are to have a 152.4mm x 152.4mm (6"x6") tail piece to accept new 24-gauge pre-painted metal, open faced downpipes. Downpipes are to kick out from the wall a minimum of 304.8mm (12") and have a patio paver on polystyrene insulation installed at the base. New downpipes are to be 152.4mm x 152.4mm

(6"x6"). Scupper flanges are to be a minimum of 152.4mm (6") wide and extend onto the field of the roof and perimeter as per detail.

2. Construct wood blocking to allow for the new scupper to site approximately ¼" to ½" lower than the finished roof level and to allow the opening to be flashed in with modified bituminous membranes.
3. Apply one coat of quick dry primer on all surfaces to receive asphalt and membranes at a rate of 150 sq.ft. per gallon. Ensure that all surfaces are clean and dry before primer application.
4. The field membranes are to be extended directly into the scupper opening fully covering the wood blocking.
5. The new scupper drain is to be primed to accept asphalt and membranes. New scupper is to be set into a full bed of mastic.
6. Install 1-ply modified bituminous base sheet membrane flashing mopped in place over the flange, using Type III asphalt. The base sheet flashings are to extend a minimum of 152.4mm (6") beyond the flange of the scupper onto the field of the roof in all directions and be carried into the scupper. The granulated modified bituminous cap sheet field membranes are to be carried into the scupper over the modified bituminous base sheet flashings. All laps and seams in the modified bituminous cap sheet flashings are to be hot-air welded.
7. New metal flashings are to be installed fully covering the membrane flashings and picture framing the scupper along the outside perimeter of the roof.

3.9.13 Sleepers:

1. Build-up all sleepers a minimum of 305mm (12") above the finished roof level to accommodate the height if the new roof assembly where required. Wood blocking and cant strip to be pressure treated. Ensure positive drainage between sleepers, under the mechanical equipment.
2. If required, temporarily disconnect each HVAC/fan unit, completely lift the unit off the curb and set it on the roof while flashing the sleepers. The unit is to be set on plywood, protecting the roof membrane. Once the sleepers have been flashed, the unit is to be lifted off the roof and set back on the curb. Then once the unit has been reinstalled and reconnected it is to be tested to ensure it is working properly. The unit work must be performed only by qualified HVAC contractors. The roofing contractor is responsible for these costs in his bid price.
3. Apply one coat of quick dry primer on all surfaces to receive modified bituminous membranes at a rate of 150 sq.ft. per gallon. Ensure that all surfaces are clean and dry before primer application.
4. After the application of the field membranes, apply 1-ply modified bituminous base sheet membrane flashing fully mopped in place using Type III asphalt, extending on the roof surface a minimum of 101.6mm (4") and extending up and over the sleeper.
5. Apply 1-ply granulated modified bituminous cap sheet membrane flashings torched in place using Type III asphalt, extending a minimum of 101.6mm (4") beyond the 1st ply modified bituminous base sheet membrane flashings onto the roof surface and over top of the sleepers. Cap sheet membrane flashing sides laps to be staggered 101.6mm (4") from the modified bituminous base sheet membrane flashings side laps.
6. The granulated cap sheet membrane flashings are to be extended a minimum of 203.2mm (8") beyond the toe of the cant strip onto the field of the roof, on both side of the sleepers.
7. Fully cover the membrane flashings with new pre-painted metal flashings.

3.9.14 Doghouse Curb:

1. Build-up the doghouse curb to accommodate the height of the projections. Install gypsum board under the curb, leaving 6.35mm(1/4") gap between any conduit and pipes in the dog house.

2. Temporarily disconnect the equipment entering the doghouse, as required and as possible to complete the doghouse. Once the doghouse has been constructed/flashed, reconnect the equipment. Then once the equipment has been reinstalled and reconnected it is to be tested to ensure it is working properly. The unit work must be performed only by qualified contractors.
3. The field membranes are to be terminated at the top of the cant strip.
4. After the application of the field membranes, apply 1-ply modified bituminous base ply flashing membrane, mopped in place with Type III asphalt. Flashing membrane is to extend over top of the curb and down onto the field of the roof a minimum of 76.2mm(3") beyond the toe of the cant strip.
5. After the application of the modified bituminous base sheet flashing, apply 1-ply modified bituminous cap sheet flashing membrane adhered in Type III asphalt, extending a minimum of 76.2mm(3") beyond the modified bituminous base sheet flashing membranes onto the field of the roof and overtop of the curb. Ensure the laps of the 2nd ply do not coincide with the laps of the 1st ply.
6. The cap sheet flashing membrane is to be nailed every 152.4mm(6") on centre at the top of the curb.
7. Fill the doghouse with fire-resistant batt insulation. The insulation is to be kept approximately 76.2mm(3") from the top of the curb.
8. Apply M1 structural sealant around the inside walls, over the insulation and along the top, where the membrane flashings have been terminated. Apply M1 sealant on the pipes and conduit within the curb.
9. Install new pre-painted metal flashings fully covering the membrane flashing. The metal flashing is to have a minimum of 25.4mm(1") upstand to allow for the securement of the dog house.

3.9.15 Metal Siding:

1. Flashing membranes at inside walls, are to be terminated 304.8mm (12") above the top of the cant strip. Cut the existing metal siding to accommodate the height of the new membrane flashings and metal flashings to be installed. Install 6.35mm (1/4") asphalt recovery board over exposed substrate behind metal siding.
2. Where the membrane flashings and/or peel & stick membrane (existing) is found behind the detail, it is to be peeled up and protected during the new membrane flashing installation. Once the new membrane flashings have been installed, the existing membrane flashings are to be shingled over the new membrane flashings. Cut the existing membrane flashings and/or peel & membrane (existing) approximately 152.4mm (6") below the eave of the slope
3. Apply one coat of quick dry primer on all surfaces to receive asphalt and membranes at a rate of 150 sq.ft. per gallon. Ensure that all surfaces are clean and dry before primer application.
4. After the application of the 5-ply field membranes, apply 1 ply modified bituminous membrane base sheet flashings fully hot mopped in place with Type III asphalt, extending down onto the roof surface a minimum of 101.6mm (4") and extending up the wall.
5. Apply 1 ply of 180 g./sq.m. granulated modified bituminous cap sheet in Type III asphalt extending a minimum of 101.6mm (4") beyond the modified bituminous base sheet flashing membrane onto the roof surface. Cap sheet flashing membrane to be installed in 1-meter widths with 76.2mm (3") side laps.
6. A termination bar is to be installed through the flashing membranes, approximately 12.7mm (0.5") below the top of the granulated cap sheet flashing membranes. It is to be secured 152.4mm (6") on center.
7. Continuously seal the top edge of the granulated cap sheet with elastomeric sealant.

8. All seams and laps in the granulated cap sheet are to be hot-air welded.
9. Install new metal drip closure, to be tucked behind the existing metal siding and mechanically fastened in place, as per details. Fully cover the membrane flashings with new 26-gauge metal flashing. Metal flashings are to be tucked in behind the existing siding and secured in place.

3.11 GAS LINES

3.11.1 Wire brush all gas lines to remove surface rust.

3.11.2 Apply 2 coats of yellow rust inhibiting paint.

3.12 GAS LINE & CONDUIT SUPPORTS

3.12.1 Install new adjustable supports at each pipe elbow, threaded joint, and where the pipe changes in direction, as well as approximately every 6' as per the current CSA B149.1 guidelines, Table 6.2 for the distance of the gas line/conduit tray.

Pipe O.D. Diameter in Inches (mm)	Maximum Spacing for Pipe Supports Feet (Metres)
0.5" (12.7mm) or less	Horizontal 6 feet (2 metres)
0.75-1.0" (19 -25.4mm)	Horizontal 8 feet (2.5 metres)
3-4" (75-102mm)	Horizontal 15 feet (5 metres)
5-8" (127-204mm)	Horizontal 20 feet (6 metres)
10" or larger	Horizontal 25 feet (8 metres)
All pipe Sizes- Vertical	Every floor but not more than 125% of horizontal spacings.
Tubing- all sizes	Vertical & Horizontal 6 feet (2 metres)
Supports to be placed at all pipe unions, changes in directions (both sides) and at changes in elevation.	

3.13 SCUPPERS/CONDENSATE PIPES/ROOF ACCESS/MECHANICAL UNIT

3.13.1 Install new concrete patio pavers on 25.4mm (1") extruded polystyrene insulation. The extruded polystyrene insulation is to be cut 50.8mm (2") smaller (all the way around) than the concrete patio pavers. Therefore, if the concrete paver is 609.6mm x 609.6mm (24"x24") the extruded polystyrene insulation should be 508mm x 508mm (20"x20").

3.13.2 Install four concrete patio pavers on 25.4mm (1") extruded polystyrene insulation, in a square pattern at roof access points.

3.14 FINISH

3.14.1 Perform a daily clean up to collect all wrappings, empty containers, and any other debris from the project site.

3.14.2 Upon completion, all debris is to be disposed of in a legally acceptable manner.

3.14.3 Prior to the final inspection, the Contractor is to perform a pre-inspection to review all work and to verify that all flashings have been completed as well as the application of all caulking.

END OF SECTION 07 51 13

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07 62 00 - Sheet Metal Flashing & Trim

PART 1 GENERAL

1.1 GENERAL CONDITIONS

1.1.1 All conditions of the Contract and Divisions 0 and 1 apply to this section and to the requirements of the Canadian Roofing Contractors Association Roofing Manual Specifications as referred to herein.

1.1.2 Abide by all Federal, Provincial, Municipal and Local Laws or Codes, rules and regulations that in any way affect the work including all amendments up to the project date.

1.2 CO-ORDINATION

1.2.1 Co-ordinate the work of this Section with the work of:

.1 Section 07 51 10 Roofing Summary of Work

.2 Section 07 51 12 Roofing Rough Carpentry

.3 Section 07 51 13 Built-Up Asphalt Roofing

.4 Section 07 92 00 Joint Sealants

1.3 STANDARDS

1.3.1 THE ALUMINUM ASSOCIATION INC. (AAI)

.1 AAI-Aluminum Sheet Metal Work in Building Construction-[2002].

.2 AAI DAF45-[03], Designation System for Aluminum Finishes.

1.3.2 AMERICAN SOCIETY FOR TESTING AND MATERIALS INTERNATIONAL (ASTM)

.1 ASTM A167-[99(2004)], Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

.2 ASTM A240/A240M-[07e1], Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.

.3 ASTM A606-[04], Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance.

.4 ASTM A653/A653M-[07], Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.

.5 ASTM A792/A792M-[06a], Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by Hot-Dip Process.

.6 ASTM B32-[04], Standard Specification for Solder Metal.

.7 ASTM B370-[03], Standard Specification for Copper Sheet and Strip for Building Construction.

.8 ASTM D523-[89(1999)], Standard Test Method for Specular Gloss.

.9 ASTM D822-[01(2006)], Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.

1.3.3 CANADIAN ROOFING CONTRACTORS ASSOCIATION (CRCA)

.1 Roofing Specifications Manual, latest edition.

1.3.4 CANADIAN GENERAL STANDARDS BOARD (CGSB)

.1 CAN/CGSB-37-GP-9M, Asphalt Primer.

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.2 CAN/CGSB-51.32-[M77], Sheathing, Membrane, Breather Type.

.3 CAN/CGSB-93.1-[M85], Sheet Aluminum Alloy, Prefinished, Residential.

.4 CAN/CGSB 93.3-M, Sheet, Steel, Galvanized Pre-finished Residential.

1.3.5 CANADIAN STANDARDS ASSOCIATION (CSA INTERNATIONAL)

.1 CSA A123.3-[05], Asphalt Saturated Organic Roofing Felt.

.2 AAMA/WDMA/CSA 101/I.S.2/A440-[2008], Standard/Specification for Windows, Doors, and Unit Skylights.

.3 CSA A123.22, Self-Adhering Polymer Modified Eave Protection

.4 CSA B111-[1974(R2003)], Wire Nails, Spikes and Staples.

1.3.6 GREEN SEAL ENVIRONMENTAL STANDARDS

.1 Standard GS-03-[93], Anti-Corrosive Paints.

.2 Standard GS-11-[97], Architectural Paints.

.3 Standard GS-36-[00], Commercial Adhesives.

1.3.7 HEALTH CANADA/WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

.1 Safety Data Sheets (SDS).

1.4 APPROVAL

1.4.1 Do not install any metal work until the membrane flashings have been inspected and accepted by the Owner's Representative. The colour is to be determined by the Owner.

1.4.2 In all cases and prior to the fabrication of the finished product, supply and install a sample for approval by the Owner's representative.

1.5 SCHEDULE

1.5.1 Schedule the work so that the membrane flashings are not left exposed for more than 30 days.

1.6 WARRANTY

1.6.1 Guarantee the metal flashing in conjunction with the membrane roofing for TWO (2) year. Submit on the same form as for the membrane roofing, CRCA Warranty.

1.7 QUALITY CONTROL

1.7.1 Quality control for Work of this Section is to be performed by the Consultant under the work of and as specified in Section 01 10 10 General Requirements.

1.7.2 Work of this Section is to be carried out by a specialist having a minimum of five (5) years of related experience.

1.7.3 Work is to be performed in accordance with the practices and details of SMACNA Architectural Manual – 6th Edition (Sheet Metal and Air Conditioning Contractors National Association Inc.), unless otherwise required in the Contract Documents.

2 PRODUCTS

2.1 COMPATIBILITY

2.1.1 Compatibility between roofing materials is an essential requirement of the Contract.

2.2 METAL COUNTERFLASHINGS

2.2.1 PREFINISHED STEEL METAL:

.1 Pre-painted galvanized steel, 0.46.35mm (26 ga.) core nominal thickness, Series 8000 with a baked enamel finish to ASTM A653.

.2 The finish is to be Dofasco Perspectra Series, Valspar WeatherX factory baked finish, or an approved alternate.

.3 The colour is to be approved by the Owner.

2.2.2 GALVANIZED STEEL:

.1 Galvanized sheet steel, Z275 (G90) zinc coating. Thickness as specified or shown on the Drawings.

2.2.3 HOOK, STARTER, LOCK STRIP / CLEAT:

.1 Fabricated from pre-finished steel, 0.56.35mm (24 ga.) core nominal thickness, Z275 (G90) zinc coating to ASTM A653. Width minimally 102mm (4”). Colour to match prefinished sheet metal where exposed. Starter strips are to be continuous.

2.2.4 COPPER:

.1 Copper to be 0.8mm (16 oz.) cold rolled to ASTM B370.

2.2.5 SOLDER & FLUX:

.1 Solder to be lead-free.

.2 Flux is a rosin, cut hydrochloric acid or commercial preparation suitable for materials to be soldered.

2.2.6 WEDGES:

.1 Rolled Plumber sheet lead.

2.2.7 ISOLATION COATING:

.1 Asphalt based back paint for application to sheet metal in contact with masonry. Use asphalt primer to ASTM D41.

2.2.8 PITCH PAN:

.1 Size as specified in the Summary of Work or as shown in the Detail. One piece pre-fabricated aluminium of fabricated from 26 ga. pre-painted steel or 16 oz. Copper.

2.2.9 PITCH PAN FILLER:

.1 One (1) or two (2) part elastomer such as ChemLink M-1 Sealant, Sopramastic SP-2 or approved alternate.

2.2.10 TOUCH-UP PAINT:

.1 As recommended by the prefinished sheet metal Manufacturer.

2.2.11 FASTENERS:

.1 Nails: Hot dipped galvanized steel flat head roofing nails of length and thickness to suit the application.

.2 Where exposed, use Hex Head screws with 12.7mm (1/2") dome and neoprene washers as supplied by Weather Guard, or equal.

.3 Fasteners for masonry and concrete: Tapcon fasteners with “Climaseal” corrosion resistant finish,

or an approved equivalent, of sufficient length to provide a minimum 38mm (1.5") penetration into the substrate.

.4 Expansion Fasteners: A tamper-proof nail drive anchor which has a body formed from Zamac alloy. Zamac Nail-in.

3 EXECUTION

3.1 GENERAL

3.1.1 Apply in accordance with the Drawings, Specifications and the requirements of the jurisdictional authorities and the Canadian Roofing Contractors Association's Roofing Manual.

3.1.2 Regard the Manufacturer's printed recommendations and Specifications as a minimum requirement for materials, methods and quality of Work not otherwise specified herein.

3.1.3 Make adjustments to the specified procedures caused by weather and site conditions only with the Owner's approval.

3.1.4 Maintain all the equipment in good working order to ensure control of roofing operations and protection of the Work. Equipment and laying techniques are to meet the approval of the Consultant.

3.2 FABRICATION

3.2.1 Shop fabricate the flashings and trims in accordance with the applicable requirements of SMACNA Architectural Manual and in accordance with the Contract Documents. Form sheet metal on a bending brake. Shaping, trimming and seaming on a bench.

3.2.2 Form sections square, true, and accurate to size, free from distortion, oil canning and other defects detrimental to the appearance and performance, and to the dimensions as indicated/required.

3.2.3 Fabricate the cap flashings, starter strips, and base counter flashings less than 304.8mm (12") in height in 2440mm (96") maximum lengths. Form the counter flashings between 304.8mm and 609.6.35mm (12" and 24") in height in 1219.2mm (48") maximum lengths.

3.2.4 Provide a counter flashing and an intermediate vertical flashing where the cap flashing is greater than 610 m (24") above the top of the roofing membrane. Form the vertical flashings in 1220 mm (48") maximum lengths.

3.2.5 Provide an "S-Lock" joint at all end joints and at all horizontal joints between the cap flashing and the vertical flashing and between the vertical flashing and the base counter flashing.

3.2.6 Hem all exposed edges at least 12.7mm (1/2") for appearance and stiffness.

3.2.7 Provide a horizontal stiffening "V" or "X" break on all face metal exceeding 228.6mm (9") in girth. Centre the V or X break in mid-span of the panel. Cross break the metal face flashing on all parapet flashings exceeding 457.2mm (18") in girth.

3.2.8 Mitre and form the standing seams at all corners. Make allowances for movement at the joints.

3.2.9 Apply an isolation coating to the metal surfaces to be embedded in concrete or mortar joints.

3.3 PITCH PAN FABRICATION / INSTALLATION

3.3.1 All boxes shall be minimum 254 mm (10.0") high above finished roof surface, with 125 mm (5.0") roof flange as approved by the Consultant. Make all seams continuous and soldered. Tapered rain collars to be included

3.3.2 Install new pitch pans where required and as shown on Drawings.

3.3.3 Apply asphalt primer on the underside of flange. Embed flange in a layer of mastic on to the built-up / modified roof membrane.

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3.3.4 BUR: Apply a minimum of two plies of No.15 asphalt perforated felts over the flange followed by one ply of glass fibre felts. The first ply is to extend a minimum of 150 mm (6") beyond the outside of the flange. Each additional ply shall extend a further 100 mm (4") beyond the underlying flashing ply.

3.3.5 Modified Bitumen: Flash in with one ply base sheet membrane to manufacturer's recommendations.

3.3.6 Fill the bottom two-thirds (2/3) of the pitch pan with polyurethane foam . Apply polyurethane pitch pocket sealant on the exposed interior face and fill the top third of the pitch pan with the pourable sealer. The pourable sealer is to extend 13 mm (1/2") above the pitch pan at the centre and cove it to shed water.

3.3.7 Once the sealant has cured, apply the specified storm collar and clamp to existing protrusion to provide complete protection over the pitch pan. Apply sealant if required.

3.4 SCUPPER FABRICATION AND INSTALLATION – IF REQUIRED

3.4.1 Fabricate scuppers from copper. Fabricate scuppers to suit a 102 mm (4") diameter down spout and in general accordance with CRCA standard flashing detail FL 9. Solder all joints in the scupper. Ensure flange is continuous by filling in outside corners.

3.4.2 Fabricate deck flange to provide a 152 mm (6") wide apron. Ensure flange is continuous by filling in outside corners. Apply isolation coating on deck flange. Provide a gravel stop soldered in place across scupper opening.

3.4.3 Provide copper or stainless steel strainers for outlet.

3.4.4 Install new scuppers at existing and/or new scupper locations, where applicable. Set pre-primed flange in a full bed of rubberized mastic for BUR and Modified bitumen membranes.

3.4.5 Install scuppers in general accordance with CRCA standard flashing detail FL. 9 or to Detail.

3.5 COPPER SLEEVE FABRICATION AND INSTALLATION- IF REQUIRED

3.5.1 Fabricate sleeve flashing for existing penetrations from copper.

3.5.2 Provide a two piece or split sleeve with a minimum height of 305 mm (12").

3.5.3 Fabricate deck flange to provide a 152 mm (6") wide apron. Ensure flange is continuous by filling in outside corners.

3.5.4 Fabricate sleeve and flange with flat lock joints suitable for field soldering.

3.5.5 Apply isolation coating on surface of penetration.

3.5.6 Install copper sleeve flashing around penetrations.

3.5.7 Close and solder all joints and seams. Clean copper on joint surfaces to receive solder with steel wool. Flux and fill joints with molten solder.

3.5.8 Wipe and wash clean all traces of acid from the flux immediately after the joints are made.

3.5.9 Install split storm collar in strict accordance with Manufacturer's recommendations. Apply silicone sealant, as specified in Section 07 92 00 - Joint Sealants, at joint between storm collar and gas line penetration.

3.5.10 Install rain collar with sealant bead.

3.6 SHEET METAL UNDERLAYMENT INSTALLATION- IF REQUIRED

3.6.1 Install self-adhesive bituminous membrane as per the Detail Drawings, according to Manufacturer's instructions.

3.6.2 Provide membrane underlayment beneath sheet metal flashings at all locations, except where membrane flashings are present.

3.6.3 Ensure all surface areas are free from frost, dust, grease, oil, loose or spalled material.

3.6.4 Apply primer as per Manufacturer's printed instructions. Allow the primer to dry and install underlayment membrane on the same day as priming.

3.6.5 Proceed only when weather is favourable. Should installation be undertaken at temperature below 4°C (40°F), consult Manufacturer regarding special procedures.

3.6.6 Maintain the recommended minimum side lap and end lap as per the Manufacturer's printed instructions.

3.6.7 Roll the membrane underlayment immediately after placement to ensure continuous adhesion. The roller to be of the type and size recommended by the Manufacturer.

3.6.8 Ensure the continuity of the membrane underlayment is maintained at all penetrations and terminations. Apply membrane sealant as required to fill inaccessible gaps following the Manufacturer's instructions.

3.6.9 Do not cover the membrane underlayment until it is reviewed and approved by the *Consultant*.

3.7 TERMINATION BAR INSTALLATION

3.7.1 Provide continuous termination bar along top of membrane flashings where indicated on Drawings and at locations and where membrane flashings terminate at the base of a wall and no other means of mechanical securement is specified or indicated.

3.7.2 Install the termination bar 3 mm (⅛") below the top edge of the base flashing membrane and mechanically secure to the masonry wall using 38 mm (1½") 'Tapcon fasteners, or Zamac Nail-ins at 152 mm (6") o.c.

3.7.3 Seal the top of the termination bar with rubberized mastic or polyurethane based sealant.

3.8 METAL DRIP EDGE FLASHING INSTALLATION- IF REQUIRED

3.8.1 Install new pre-finished aluminum metal drip edge along eaves at area of work.

3.8.2 Metal is to extend onto perimeter wood substrate 52 mm (2") minimum. Fasten metal to wood substrate with roofing nails installed every 152 mm (6") on-centre, along edge. Nails are to be set in 25 mm (1") and parallel from edge of metal.

3.8.3 Metal drip flashings to be fabricated up to 3048 mm (10') lengths and overlapped at joints 76.2mm (3") minimum. Apply sealant within joints prior to securement.

3.9 SHEET METAL INSTALLATION

3.9.1 Install the cap flashings, counter flashings, starter strips, and other miscellaneous sheet metal Work in accordance with the Contract Documents.

3.9.2 Provide a continuous starter (hook) strip where detailed or required to present a true, non-waving, leading edge. Fasten the starter strip to the substrate at a minimum of 304.8mm (12") on centre in a "Z" pattern using roofing nails of at least 25.4mm (1") length.

3.9.3 Ensure the parapet cap flashings are installed with a minimum positive slope of 2% toward the roof area. The slope is to be provided by the installation of continuous wood shims, plywood or wood blockings as detailed in accordance with Section 00 61 00 – Rough Carpentry.

3.9.4 Install cross-broken flat stock metal to entire parapet wall over 304.8mm (12") in height.

3.9.5 Caulk all horizontal joints less than 1:100 slope (1%).

3.9.6 Join all sheet metal with evenly spaced flat lock seams 25.4mm (1") wide to allow for thermal movement.

3.9.7 Counter flash bituminous flashing membranes at roof joints, walls, perimeters, parapets and curbs. Flash

joints in metal flashings using S-locks and standing seams forming tight fit over hook strips. Construct internal and external mitres.

3.9.8 End joints where adjacent lengths of metal flashing meet to be made using an "S-lock" joint. This is to be executed by inserting the end of one length in a 25.4mm (1") deep "S" lock formed in the end of the adjacent length. The concealed portion of the "S" lock is to extend 25.4mm (1") outwards and is to be nailed to the substrate. Face nailing of joints will not be permitted.

3.9.9 Insert the top edge of the sheet metal flashing under the cap flashings to form weather tight junctions.

3.9.10 Turn the top edge of the flashings into recessed reglets or mortar joints a minimum of 25.4mm (1"). Fasten the sheet metal flashing into the reglet joint at a maximum spacing of 457.2mm (18") or more often if required.

3.9.11 Ensure all fasteners are located a minimum of 304.8mm (12″) above the surface of the roofing membrane, unless otherwise detailed.

3.9.12 Where detailed or required, saw cut existing/new reglets into the masonry surfaces to receive metal flashings. The reglet is to be a minimum 19.05mm wide x 13 mm deep (3/4" x 1/2").

3.9.13 Lock seam corners. Do not use pop rivets.

3.9.14 Install the sheet metal with concealed fasteners. Exposed fastening is permitted only upon the Consultant's approval.

3.9.15 Use lead plugs or an approved expansion shield and screw in place with rubber washers where metal is installed over concrete or masonry.

3.9.16 Do not secure metal work to cant strips.

3.9.17 Install sheet metal in a uniform manner, level, true to line, free of warp or distortions.

3.9.18 Install metal flashings under cap flashings and behind other claddings a minimum of 38mm (1.5") to form a weather tight junction.

3.9.19 All outside perimeter cap flashings are to completely cover all fascia, or otherwise extend a minimum of 76.2mm (3") below deck or wood blocking level.

3.9.20 Properly cover the area to be protected with the metal flashings lightly touching the gravel pour and firmly secured to prevent movement or stripping by the wind.

3.9.21 No irregular or badly fitted metal work will be accepted. Provide metal strips, cleats, as required.

3.9.22 Install self-adhering modified bituminous membrane over all exposed masonry, concrete or wood to be flashed with metal. Secure in place.

3.9.23 At walls or junctions, re-cut the reglet joint, wedge the flashings with lead wedge at 304.8mm (12") o.c. Turn top edge of flashing into reglet or mortar joint a minimum of 25.4mm (1").

3.10 SEALANTS

3.10.1 Apply sealant at the junction between the sheet metal counterflashing and the reglet joint in accordance with Section 07 92 00 – Joint Sealants.

3.11 CLEANING

3.11.1 Remove completely from surfaces and crevices the flux residue, other deposits, stains and protections and wash the visible metal left unpainted

END OF SECTION 07 62 00

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Part 1 General

1.1 REFERENCES

.1 Underwriters Laboratories of Canada (ULC)

.1 CAN/ULC-S101, 1989.

.2 CAN/ULC-S102, 1988.

1.2 TEST REPORTS

.1 Submit product data including certified copies of test reports verifying fireproofing applied to substrate as constructed on project will meet or exceed requirements of Specification.

.2 Submit test results in accordance with CAN/ULC-S101 for fire endurance and CAN/ULC-S102 for surface burning characteristics.

.3 For assemblies not tested and rated, submit proposals based on related designs using accepted fireproofing design criteria.

1.3 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit duplicate 300 x 300 mm size sample of exposed fireproofing for approval of texture and colour.

1.4 PROTECTION

.1 At outdoor temperatures less than 5EC, ensure that a 5EC air and substrate temperature is maintained during and for 24 hours after application. Ensure that natural ventilation to properly dry the fireproofing during and subsequent to its application is provided. In enclosed areas lacking openings for natural ventilation, ensure that interior air is circulated and exhausted to the outside.

.2 Provide temporary enclosures to prevent spray from contaminating air beyond application area.

.3 Protect adjacent surfaces and equipment from damage by overspray, fall-out, and dusting of fireproofing materials.

Part 2 Products

2.1 MATERIALS

.1 **Sprayed fireproofing**: ULC certified cementitious or fireproofing qualified for use in ULC Designs to provide 1 hour fire resistance rating to **all floor supporting structural steel members**. Contractor to state ULC Design compliance in data submissions in accordance with Section 01 33 00 – Submittals.

.1 Acceptable Material: "W.R. GRACE", Type MK-6.

.2 Acceptable Material: "CAFCO/ISOLATEK INTERNATIONAL" Type 300.

.3 Acceptable Material: AD Fire Protection systems, AD Type 5.

.2 Curing compound: type recommended by fireproofing manufacturer, qualified for use in ULC Designs specified.

.3 Primer: As required by ULC design where applicable, or as recommended by AD Fire Protection Systems.

.4 **Intumescent Paint Fireproofing** to be applied to all exposed columns, beams and members part of the floor supporting system, or as indicated. Intumescent fireproofing system to provide a fire resistance rating of 1 hour in accordance with ULC listed on drawings.

.1 All faces of exposed structural steel columns indicated to receive fireproofing to be painted prior to the installation of abutting walls and bulkheads.

.2 Interior Intumescent Fireproofing to be A/D Firefilm as manufactured by A/D Fire Protection Systems Inc., listed by Underwriters Laboratories and bearing ULC label on container, Carboline or approved equal.

.1 Provide decorative finish as approved by A/D Fire Protection Systems Inc.

.2 Primer: As recommended by AD Fire Protection Systems.

.3 Exterior Intumescent Fireproofing to be Thermo Lag E100-S as manufactured by Carboline, A/D Fire Protection Systems Inc., listed by Underwriters Laboratories and bearing ULC label on container, or approved equal.

.1 Provide exterior rated topcoat Carbomastic 94TL by A/D Fire Protection Systems Inc.

.2 Primer: Carboguard 893 SG by AD Fire Protection Systems.

.3 Locations: Exterior Columns supporting a rated floor assembly. Refer to drawings.

Part 3 Execution

3.1 PREPARATION

.1 Discuss fireproofing methods and final product with principal building inspector prior to application to ensure that finished installation will be acceptable. Record in writing all materials and methods to be employed to achieve final approval of installation.

.2 Contractor to prepare a mock-up of the fireproofing on site. Architect and GC to review to determine if level of finish is acceptable.

.3 Substrate shall be free of material, which would impair bond.

.4 Verify that painted substrate [s] are compatible and have suitable bonding characteristics to receive fireproofing.

.5 Remove incompatible materials.

.6 Ensure that items required to penetrate fireproofing are placed before installation of fireproofing.

.7 Ensure that ducts, piping, equipment, or other items which would interfere with application of fireproofing are not positioned until fireproofing work is completed.

3.2 APPLICATION

.1 Apply bonding adhesive or primer to substrate if recommended by manufacturer.

.2 Apply fireproofing to correspond with tested assemblies, or acceptable calculation procedures to provide following fire resistance ratings.

.3 Apply fireproofing over substrate, building up to required thickness to cover substrate with monolithic blanket of uniform density and texture.

3.3 INSPECTION AND SITE TESTS

.1 Inspection and testing of fireproofing will be carried out by a third party agency designated by Consultant.

.2 Cost of testing will be paid from Cash Allowance specified in Section 011100 – Summary of Work, section 1.29.

.3 Arrange for final inspection of the work of this section by municipal building inspector.

3.4 PATCHING

.1 Patch damage to fireproofing caused by testing or by other trades before fireproofing is concealed, or if exposed, before final inspection.

3.5 LOCATIONS- SPRAYED FIREPROOFING

.1 Fireproofing is required on all structural steel supporting floor loads. Refer to structural drawings.

END OF SECTION

Part 1 General

1.1 RELATED WORK

.1 Fire stopping and smoke seals within mechanical assemblies (i.e. inside ducts, dampers) and electrical assemblies (i.e. inside cable trays) are specified in Division 26 and 33 respectively.

1.2 REFERENCES

.1 Underwriters Laboratories of Canada (ULC)

.1 ULC-S115-[1995], Fire Tests of Firestop Systems.

1.3 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit duplicate 300 x 300 mm samples showing actual firestop material proposed for project.

1.4 PRODUCT DATA

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit manufacturer's product data for materials and prefabricated devices, providing descriptions are sufficient for identification at job site. Include manufacturer's printed instructions for installation.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

1.6 SYSTEM DESCRIPTION

.1 Firestopping Materials: CAN4-S115M ASTM E814 to achieve a fire protection rating as noted on Drawings.

.2 It is the intent of this Section that in conjunction with Divisions 26 and 33 a competent, single source be responsible for the firestopping and smoke seals of the entire project.

1.7 QUALITY ASSURANCE

.1 Manufacturer: Company specializing in manufacturing products of this Section with minimum five years documented experience.

.2 Applicator: Approved, licensed and supervised by the manufacturer of firestopping materials. Company with minimum five years documented experience.

.3 Product: Manufactured under ULC Follow-up Program. Each container or package shall bear ULC label.

1.8 REGULATORY REQUIREMENTS

.1 Conform to applicable code for fire protection ratings.

.2 Provide certificate of compliance for authority having jurisdiction indicating approval.

1.9 DELIVERY, STORAGE AND HANDLING

.1 Deliver and store materials in a dry, protected area, off ground in original, undamaged, sealed containers with manufacturer's labels and seas intact.

1.10 PROJECT AND SITE CONDITIONS

.1 Application temperature and ventilation as per Manufacturer's instructions.

1.11 SEQUENCING AND SCHEDULING

.1 Sequence work to permit installation of firestopping and smoke seal materials to be installed after adjacent work is complete and before closure of spaces.

Part 2 Products

2.1 MATERIALS

.1 A/D Firebarrier Firestop Systems, by A/D Fire Protection Systems Inc., 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.

.2 Mineral Wood Backing Insulation: ULC labeled, preformed non-combustible material (A/D Firebarrier Mineral Wool) by A/D Fire Protection Systems Inc.

.3 Retainers: Clips to support mineral wool.

.4 Firestopping Sealant: ULC labeled, single component silicone bases, A/D Silicone Firebarrier Sealant by A/D Fire Protection Systems Inc.

.5 Firestopping Seal: ULC labeled, single component water-base seal, A/D Firebarrier Seal by A/D Fire Protection Systems Inc.

.6 Firestopping Foam: ULC labeled, two components silicone foam, A/D Firebarrier RTV Foam by A/D Fire Protection Systems Inc.

.7 Firestopping Mortar: ULC labeled, non-combustible fibre reinforced, foamed cement mortar, A/D Firebarrier Mortar by A/D Fire Protection Systems Inc.

.8 Damming Material: In accordance with tested assembly being installed as applicable and as acceptable to authorities having jurisdiction.

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.

.5 Verify that openings are ready to receive the Work of this Section.

.6 Confirm compatibility of surfaces to receive firestopping and smoke seal materials.

.7 Beginning of installation means acceptance of existing surfaces and substrate.

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.

.6 Apply in sufficient thickness to achieve rating to uniform density and texture.

.7 Protect installed material until cured or set.

3.3 INSPECTION

.1 Notify Consultant when ready for inspection and prior to concealing or enclosing firestopping materials and service penetration assemblies.

3.4 SCHEDULE

.1 Firestop and smoke seal at:

.1 Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.

.2 Top of fire-resistance rated masonry and gypsum board partitions.

.3 Intersection of fire-resistance rated masonry and gypsum board partitions.

.4 Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls.

.5 Penetrations through fire-resistance rated floor slabs, ceilings and roofs.

.6 Openings and sleeves installed for future use through fire separations.

.7 Around Mechanical and Electrical assemblies penetrating fire separations.

.8 Refer to Drawings for horizontal and vertical fire stop locations and for typical firestopping detail at cavity wall, for top of wall fire separation assembly and for fire separation locations.

3.5 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

07 92 00 - Joint Sealants

PART 2 GENERAL

2.1 GENERAL CONDITIONS

2.1.1 All conditions of the Contract and Divisions 0 and 1 apply to this Section and to the requirements of the Canadian Roofing Contractors Association Roofing Manual Specifications as referred to herein.

2.1.2 Abide by all Federal, Provincial, Municipal and Local Laws or Codes, rules and regulations that in any way affect the Work including all amendments up to the Project date.

2.2 CO-ORDINATION

2.2.1 Co-ordinate work of this Section with work of:

.1 Section 07 51 10 Roofing Summary of Work

.2 Section 07 51 12 Roofing Rough Carpentry.

.3 Section 07 51 13 Built-Up Asphalt Roofing.

.4 Section 07 62 00 Sheet Metal Flashing and Trim.

2.3 REFERENCE STANDARDS

2.3.1 Sealant work, materials, products and accessories shall be in accordance with the most current applicable industry standards including but not limited to:

2.3.2 AMERICAN SOCIETY FOR TESTING AND MATERIALS INTERNATIONAL, (ASTM)

.1 ASTM C919:-Use of Sealants in Acoustical Applications.

.2 ASTM C920; Elastomeric Joint Sealants, Type S, grade NS.

.3 ASTM C1311; Solvent Release Sealants

2.3.3 DEPARTMENT OF JUSTICE CANADA (JUS)

.1 Canadian Environmental Protection Act, 1999 (CEPA).

2.3.4 GENERAL SERVICES ADMINISTRATION (GSA) - FEDERAL SPECIFICATIONS (FS)

.1 TT-S-00227E; Sealing Compound Elastomeric Type- Multi-Component, Class A, Type 2.

.2 TT-S-00230C; Sealing Compound elastomeric Type- Single component, Class A, Type 2.

2.3.5 HEALTH CANADA/WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

.1 Safety Data Sheets (SDS).

2.3.6 TRANSPORT CANADA (TC)

.1 Transportation of Dangerous Goods Act, 1992 (TDGA).

2.4 CLIMATE CONDITIONS

2.4.1 ENVIRONMENTAL LIMITATIONS

.1 Do not proceed with the installation of joint sealants under the following conditions:

(a) When ambient and substrate temperature conditions are outside the limits permitted by the joint sealant manufacturer.

(b) When joint substrates are wet.

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.2 Joint-Width Conditions:

(a) Do not proceed with the installation of joint sealants where the joint widths are less than those allowed by the joint sealant manufacturer for the applications indicated.

.3 Joint-Substrate Conditions:

(a) Do not proceed with the installation of joint sealants until contaminants capable of interfering with adhesion are removed from the joint substrates.

2.5 ENVIRONMENTAL REQUIREMENTS

2.5.1 Comply with the requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Safety Data Sheets (SDS) acceptable to Labour Canada.

2.5.2 Conform to the manufacturer's recommended temperatures, relative humidity, and substrate moisture content for the application and curing of sealants including special conditions governing use.

2.6 WARRANTY

2.6.1 Provide all applicable material and labour Warranties offered by the material Manufacturer for a minimum of two (2) years.

2.6.2 Defective joint sealant installation covered under Warranty is to include but not be limited to:

.1 joint leakage, hardening, craze cracking, crumbling, melting, bubbling, shrinkage, runs, sags, change of colour, loss of adhesion, loss of cohesion and staining of adjoining or adjacent material surfaces.

2.6.3 Carry out all replacement and repair Work during the Warranty period as directed by the Consultant and at no additional cost to the Owner.

2.7 QUALITY CONTROL

2.7.1 Quality control for Work of this Section is to be performed by the Consultant under the Work of and as specified in Section 01 10 10 General Requirements.

PART 3 PRODUCTS

3.1 COMPATIBILITY

3.1.1 All materials in a sealant system are to be compatible with each other and with the substrate.

3.1.2 Colour or colours of the sealants are to be selected are to match existing substrate and are to be approved by the Consultant.

3.2 SEALANT MATERIALS

3.2.1 Exterior Metal To Wood, Masonry, Stone Or Porous Surfaces:

.1 One-part elastomeric, non-sag urethane based sealant. Accepted products:

(a) “Dymonic” as manufactured by Tremco

(b) “Sikaflex 1-A” as manufactured by Sika Canada

(c) “Vulkem 931” by Mameco as manufactured by Tremco

(d) “SK-1 Structural Sealant” as supplied by Chemlink.

3.2.2 Exterior And Interior Metal To Metal And Metal To Glass Joints:

.1 One-part Silicone based sealant. Accepted Products:

(a) “Spectrum 2” as manufactured by Tremco

(b) "Contractors SCS 1000 Sealant" as manufactured by GE Silicones Canada

(c) "DC 999-A Silicone Building & Glazing Sealant" as manufactured by DowCorning Canada.

3.3 JOINT BACKING

3.3.1 Extruded polyethylene, urethane, neoprene or vinyl foam recommended by sealant Manufacturer. Extruded closed-cell foam, Shore "A" Hardness 20, Tensile Strength of 140-200 Kpa.

3.3.2 Circular shape with a diameter 25% greater than the joint width before installation.

3.4 VOID FILLER

3.4.1 Glass fibre or Rockwool insulation with a nominal density of 14 kg/m^3 (2.86 lbs. / cu. ft.) Sized for 25% compression.

3.5 BOND BREAKER TAPE

3.5.1 Pressure sensitive plastic tape which will not bond to sealants. Supplied or recommended by the sealant Manufacturer.

3.6 PRIMER

3.6.1 As recommended by the sealant Manufacturer to assure adhesion of the compound and to prevent staining of the substrate.

3.7 CLEANING AGENTS

3.7.1 Joint cleaning compounds as recommended by the sealant Manufacturer. Xylol (Xylene), Methyl Ethyl Ketone (MEK) or non-corrosive type compatible with joint forming materials.

PART 4 EXECUTION

4.1 EXAMINATION

4.1.1 Inspect existing conditions, and substrates upon which Work of this Section is dependent. Report to the *Consultant* in writing any defects or discrepancies. Commencement of Work implies acceptance of existing conditions and assuming full responsibility for the finished condition of the Work.

4.1.2 Verify, before commencing Work, that the joint size, depth and substrate will not adversely affect execution, performance or quality of completed Work; and that the joints can be sealed in an acceptable condition by means of preparation specified in this Section. Verify site conditions together with sealant Manufacturer's representative.

4.1.3 Defective Work resulting from application to unsatisfactory joint conditions will be considered the responsibility of those performing the Work of this Section.

4.2 GENERAL

4.2.1 Apply in accordance with the Drawings, Specifications and requirements of the jurisdictional authorities and the Canadian Roofing Contractors Association's Roofing Manual.

4.2.2 Regard the Manufacturer's printed recommendations and Specifications as a minimum requirement for materials, methods and quality of Work not otherwise specified herein.

4.2.3 Make adjustments to the specified procedures caused by weather and site conditions only with the Consultants approval.

4.2.4 Conform to the Details.

4.2.5 Examine joints before caulking to ensure that the configuration, surface and widths are suitable for the sealant and service, and that the execution of caulking and performance of sealants will not be adversely affected.

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4.2.6 Verify, before commencing the Work, that the joint size, depth and substrate will not adversely affect the execution, performance or quality of the completed Work; and that joints can be sealed in an acceptable condition by means of the preparation specified in this Section. Verify the site conditions together with the sealant Manufacturer's representative.

4.2.7 Defective Work resulting from the application to unsatisfactory joint conditions will be rejected.

4.3 REMOVAL & PREPARATION

4.3.1 Remove the existing sealant and backing material and all deleterious material from the joint. Use the method of surface preparation suitable for substrate that does not damage adjacent surfaces, as recommended by the sealant Manufacturer.

4.3.2 Rake out joints, cracks and crevices to receive sealant to a depth measuring half (1/2) the joint width.

4.3.3 Brush, scrub, scrape or grind the inner face surfaces to remove loose mortar, dust, oil, grease, oxidation, mill scale, and other materials which will affect the adhesion and integrity of the sealant.

4.3.4 Wipe down metal surfaces with clean cellulose sponges or rags soaked in solvent compatible with the sealant, and dry with clean cloths. Ensure solvents do not damage painted surfaces.

4.3.5 Ensure that surfaces have not been coated with release agents, coating or other treatments, or that, if present, they are entirely removed.

4.3.6 Examine joint sizes and correct to achieve width to depth ratio of 1:2 with joint size no less than 12.7mm (1/2”) width and 25.4mm (1”) depth.

4.3.7 Install joint filler to achieve correct depth, if required.

4.3.8 Where necessary to prevent staining, mask adjacent surfaces prior to priming and sealant application.

4.3.9 Apply bond breaker tape where required to sealant Manufacturer’s printed instructions.

4.4 JOINT DEPTH

4.4.1 Provide the following Depth To Width Ratios:

.1 Masonry:

(a) 6.35mm (1/4") deep, up to 12.7mm (1/2") wide

(b) 9.53.16mm (3/8") deep, up to 19.05mm (3/4") wide

(c) 12.7mm (1/2") deep, up to 25.4mm (1") wide

(d) 19.05mm (3/4") deep, up to 50.8mm (2") wide.

.2 Non Porous Materials:

(a) Joint depth and width to be not be less than 6.35mm (1/4").

(b) Maintain a minimum of a 2:1 width to depth ratio or what is listed above in 3.3.1.1 and 3.3.1.2, whichever is more stringent.

4.5 PRIMING

4.5.1 Prime the inner face surfaces of joints as necessary for the substrate, in accordance with the sealant Manufacturer's Specification, to provide full adhesion and to prevent staining of the face surface at the joint.

4.5.2 Prime surfaces prior to installing the joint backing rod.

4.6 JOINT FILLING AND BACKING

4.6.1 Install joint backing where required to maintain the joint depth.

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4.6.2 Pack joints tightly with sealant in accordance with the Manufacturer's Specifications using pressure guns. Fill joints completely to the required depths with sealant compound. Use sufficient pressure to fill all voids and joints. Sealant is to bond to both sides of the joint.

4.6.3 Apply bond breaker tape, prior to applying sealant, where joints are of insufficient size to install backer rod or at 90° junctions or where recommended by the sealant Manufacturer or *Consultant.* Ensure bond surface area meets the minimum required size recommended by the sealant Manufacturer.

4.6.4 Mask, with masking tape, all surfaces adjacent to joints which are likely to become coated with sealant during sealant application.

4.6.5 Apply sealant using gun dispenser with proper size nozzle for joint to be sealed to leave a weather tight, airtight installation.

4.6.6 Fill joints completely to required depths with sealant compound. Use sufficient pressure to fill all voids and joints solid. Sealant shall bond to both sides of the joints but not to backing material. ***Superficial pointing with skin bead is not acceptable***.

4.6.7 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets or embedded impurities. Neatly tool surface to create a slightly concave joint.

4.6.8 Slope sealant surface at top of surface reglet flashings to create positive water shed.

4.6.9 Finish joints smooth, free of wrinkles, ridges, air pockets and imbedded foreign materials. Tool joints to a slight concave surface using a soap/water mixture.

4.6.10 Cure sealants in accordance with the sealant Manufacturer's instructions.

4.6.11 Do not cover up sealants until proper curing has taken place.

4.6.12 Do not allow sealants to cover or spot surfaces outside of joints. Use masking tape on all surfaces adjacent to joints which may become coated with sealant during the caulking process.

4.7 CLEAN UP

4.7.1 Remove from surfaces of other work sealant smears, droppings and masking tape immediately after caulking. Use recommended cleaners as required.

4.7.2 Clean surfaces soiled by Work of this Section. Do not use chemicals, scrapers, or other tools in cleaning which will damage surfaces. Make good other Work.

4.7.3 Clean up and remove from the job site on a daily basis, all rubbish and surplus materials resulting from this Work.

4.7.4 Joint sealants shall be protected from physical damage and the elements until such time as the sealant will not be affected by same.

END OF SECTION 07 92 00

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Part 1 General

1.1 SECTION INCLUDES

.1 Materials, preparation and application for caulking and sealants.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 07 62 00 – Sheet Metal Flashing and Trim.

.3 Section 08 11 14 – Steel Doors and Frames.

.4 Section 04 21 13 - Masonry.

.5 Section 07 46 13 – Preformed Metal Siding.

1.3 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)

.1 ASTM C919-[02], Standard Practice for Use of Sealants in Acoustical Applications.

.2 Canadian General Standards Board (CGSB)

.1 CGSB 19-GP-5M-[1984], Sealing Compound, One Component, Acrylic Base, Solvent Curing (Issue of 1976 reaffirmed, incorporating Amendment No. 1).

.2 CAN/CGSB-19.13-[M87], Sealing Compound, One-component, Elastomeric, Chemical Curing.

.3 CGSB 19-GP-14M-[1984], Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing (Reaffirmation of April 1976).

.4 CAN/CGSB-19.17-[M90], One-Component Acrylic Emulsion Base Sealing Compound.

.5 CAN/CGSB-19.24-[M90], Multi-component, Chemical Curing Sealing Compound.

.3 Department of Justice Canada (Jus)

.1 Canadian Environmental Protection Act, 1999 (CEPA).

.4 General Services Administration (GSA) - Federal Specifications (FS)

.1 FS-SS-S-200-[E(2)1993], Sealants, Joint, Two-Component, Jet-Blast-Resistant, Cold Applied, for Portland Cement Concrete Pavement.

.5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.6 Transport Canada (TC)

.1 Transportation of Dangerous Goods Act, 1992 (TDGA).

1.4 SUBMITTALS

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

.2 Manufacturer's product to describe.

.1 Caulking compound.

.2 Primers.

.3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.

.3 Submit manufacturer's instructions in accordance with Section 01 33 00 - Submittal Procedures.

.1 Instructions to include installation instructions for each product used.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal of paper, plastic, polystyrene, corrugated cardboard, or packaging material [in appropriate on-site bins] for recycling.

.3 Place materials defined as hazardous or toxic in designated containers.

.4 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.

.5 Unused [sealant] material must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.

.6 Divert unused joint sealing material from landfill to official hazardous material collections site approved by Consultant.

.7 Empty plastic joint sealer containers are not recyclable. Do not dispose of empty containers with plastic materials destined for recycling.

.8 Fold up metal banding, flatten, and place in designated area for recycling.

1.7 PROJECT CONDITIONS

.1 Environmental Limitations:

.1 Do not proceed with installation of joint sealants under following conditions:

.1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C.

.2 When joint substrates are wet.

.2 Joint-Width Conditions:

.1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

.3 Joint-Substrate Conditions:

.1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.8 ENVIRONMENTAL REQUIREMENTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Labour Canada.

.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

1.9 WARRANTY

.1 Submit a warranty that caulking work will not leak, crack, crumble, melt, shrink, run, lose adhesion or stain adjacent surfaces, in accordance the General Conditions of the Contract, but for two (2) years total. Contractor shall supply all labour, materials, tools and equipment to repair and/or replace any work judged to be defective by the Consultant and sealant manufacturer at no additional cost to the owner for a period of 2 years from the date of Substantial Completion.

.2 Submit a manufacturer’s warranty against defects in materials and workmanship covering the components of the sealant for a period of ten (10) years. The manufacturer shall supply a non-pro-rated warranty covering labour, materials, tools and equipment to repair and/or replace any materials defects at no additional cost, for a period of 10 years

Part 2 Products

2.1 SEALANT MATERIALS

.1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.

.2 When low toxicity caulks are not possible, confine usage to areas which off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off gas time.

.3 Where sealants are qualified with primers use only these primers.

2.2 SEALANT MATERIAL DESIGNATIONS

.1 Primers: type recommended by sealant manufacturer.

.2 Joint Fillers:

.1 General: compatible with primers and sealants, outsized 30 to 50%.

.2 Polyethylene, urethane, neoprene or vinyl: extruded closed cell foam, Shore A hardness 20, tensile strength 140 to 200 kPa.

.3 Neoprene or butyl rubber: round solid rod, Shore A hardness 70.

.4 Polyvinyl chloride or neoprene: extruded tubing with 6 mm minimum thick walls.

.5 Bond breaker: pressure sensitive plastic tape which will not bond to sealants.

.6 Sealant Type A: One component, chemical curing, conforming to CAN2-19.13-M82, Class C-2-25-B-N; multi-component, chemical curing, conforming to CAN2-19.24-M80, Type 2, Class B.

.7 Sealant Type B: Multi-component, chemical curing mildew resistant conforming to CGSB 19-GP-22M.

.8 Sealant type C: Multi-component, acrylic emulsion base, conforming to CGSB 19-GP-17M.

.9 Sealant type D: One component, polyurethane base, chemical curing, conforming to CAN2-19.13-M82, Class C-1-25-B-N; or multi-component, chemical curing, conforming to CAN2-19.24-M80, type 1.

.10 For exterior aluminum to masonry, aluminum to wood and aluminum to metal joints: high performance, single component modified elastomeric joint sealant conforming to CAN2-19.24-M80. Acceptable Materials: Sonolastic Ultr***a*** by Degussa.

.11 For interior aluminum to masonry, aluminum to wood and aluminum to metal joints: high performance, single component low odour sealant conforming to CAN/CGSB-19.13-M87. Acceptable materials: Spectrem 2 by Tremco.

.3 Color of Sealants: to be selected by Consultant. Allow for a total of two (2) colours for Type A, two colours for Type B, two colours for Type C and one colour for Type D. Locations as directed on site by Consultant.

.4 Joint cleaner: xylol, methylethyl-ketone or non-corrosive type recommended by sealant manufacturer and compatible with joint forming materials.

.5 Vent tubing: 6 mm inside diameter extruded polyvinyl chloride tubing.

2.3 JOINT CLEANER

.1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.

.2 Primer: as recommended by manufacturer.

Part 3 Execution

3.1 PROTECTION

.1 Protect installed Work of other trades from staining or contamination.

3.2 SURFACE PREPARATION

.1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure joint surfaces are dry and frost free.

.5 Prepare surfaces in accordance with manufacturer's directions.

3.3 PRIMING

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 BACKUP MATERIAL

.1 Apply bond breaker tape where required to manufacturer's instructions.

.2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.5 MIXING

.1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.6 APPLICATION

.1 New Work:

.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 joint cleaner.

.4 Prepare concrete, masonry, glazed and vitreous surfaces to sealant manufacturer's instructions.

.5 Examine joint sizes and correct to achieve depth ratio 1/2 of joint width with minimum width and depth of 6 mm, maximum width 25 mm.

.6 Install joint filler to achieve correct joint depth.

.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 to sealant manufacturer's instructions immediately prior to caulking.

.2 Sealant.

.1 Apply sealant in accordance with manufacturer's written instructions.

.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.

.3 Apply sealant in continuous beads.

.4 Apply sealant using gun with proper size nozzle.

.5 Use sufficient pressure to fill voids and joints solid.

.6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.

.7 Tool exposed surfaces before skinning begins to give slightly concave shape.

.8 Remove excess compound promptly as work progresses and upon completion.

.9 Apply sealant to joints between window or door frames to adjacent building components around perimeter of every external window or door opening, to control joints in masonry walls and where indicated. 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 to 1500 mm o.c. vertically. Position tube to drain to exterior.

.10 Apply sealant to close gaps at all junctures of all interior walls meeting exposed ceilings. Provide required foam backer rods to ensure integrity of sealant bead when applied to juncture. Tool finish smooth to receive paint finish.

.11 Use sealants specified in the following locations:

.1 Type A: Joints between windows or door frames and adjacent building components; control and expansion joints and all other locations where sealing is required, except in locations designated for Type B, C and D. Ensure that sealant chosen (from the several specified under "MATERIALS") for each location is recommended by manufacturer for use on surfaces encountered.

.2 Type B: Joints between splash backs and walls.

.3 Type C: Joints between interior metal door frames and partitions.

.4 Type D: Joints in horizontal surfaces between concrete slabs.

.3 Curing.

.1 Cure sealants in accordance with sealant manufacturer's instructions.

.2 Do not cover up sealants until proper curing has taken place.

.4 Cleanup.

.1 Clean adjacent surfaces immediately and leave Work neat and clean.

.2 Remove excess and droppings, using recommended cleaners as work progresses.

.3 Remove masking tape after initial set of sealant.

3.7 WORK INCLUDED

.1 Work shall include but not limited to the following areas:

.1 exterior and interior hollow metal frames and screens; both sides;

.2 exposed control and expansion joints in masonry walls, masonry corners, joints in front of steel lintels bearing on exterior brick jambs;

.3 joints at all washroom vanities, hair dryers, hand dryers, electrical panels, access doors and adjacent surfaces. (Use sanitary caulking.)

.4 joints between masonry and concrete surfaces.

.5 joints between gypsum board and masonry, or other materials.

.6 joints between louvres and other surfaces.

.7 exterior siding, prefinished metal fascia, flashing and trim.

.8 penetrations through roofs, floors and walls other than firestopping

.9 at all other locations on drawings, except as noted below.

.2 Sealing of joints to the underside of exposed precast slab to be by precast installer.

.3 Sealing of all joints at top of walls meeting exposed flat or sloped precast ceilings to be included in this section.

3.8 REQUIRED INSPECTION

.1 Contractor to engage exterior sealant manufacturer's representative to review in order to provide manufacturer's warranty. Manufacturer's representative shall review substrate conditions as prepared on site and prior to the application of the sealant. If requested, manufacturer to supply a written copy of this warranty.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 07 92 10 - Joint Sealing: Caulking of joints between frames and other building components.

.3 Section 08 71 10 - Door Hardware - General: Supply of finish hardware, including weatherstripping and mounting heights.

.4 Section 09 91 23 - Interior Painting.

.5 Section 09 91 13 - Exterior Painting.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM International)

.1 ASTM A653/A653M-[01a], Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM B29-[92(1997)], Specification for Refined Lead.

.3 ASTM B749-[97], Specification for Lead and Lead Alloy Strip, Sheet and Plate Products.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.181-[99], Ready-Mixed Organic Zinc-Rich Coating.

.2 CGSB 41-GP-19Ma-[84], Rigid Vinyl Extrusions for Windows and Doors.

.3 Canadian Standards Association (CSA International)

.1 G40.20/G40.21-[98], General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.2 CSA W59-[M1989(R2001)], Welded Steel Construction (Metal Arc Welding) (Metric Version).

.4 Canadian Steel Door Manufacturers' Association, (CSDMA).

.1 CSDMA, Specifications for Commercial Steel Doors and Frames, [1990].

.2 CSDMA, Recommended Selection and Usage Guide for Commercial Steel Doors, [1990].

.5 National Fire Protection Association (NFPA)

.1 NFPA 80-[99], Standard for Fire Doors and Fire Windows.

.2 NFPA 252-[99], Standard Methods of Fire Tests of Door Assemblies.

.6 Underwriters' Laboratories of Canada (ULC)

.1 CAN4-S104-[80(R1985)], Fire Tests of Door Assemblies.

.2 CAN4-S105-[85(R1992)], Fire Door Frames Meeting the Performance Required by CAN4-S104.

.7 CAN/ULC-S701-[01], Thermal Insulation, Polystyrene, Boards and Pipe Covering.

.8 CAN/ULC-S702-[97], Thermal Insulation, Mineral Fibre, for Buildings.

.9 CAN/ULC-S704-[01], Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.

1.3 DESIGN REQUIREMENTS

.1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35°C to 35°C.

.2 Maximum deflection for exterior steel entrance screens under wind load of 1.2 kPa not to exceed 1/175th of span.

1.4 WORK INCLUDED

.1 A single manufacturer shall fabricate products included within the scope of this Section.

.2 Manufacturer shall be a member in good standing of the Canadian Steel Door Manufacturers Association (CSDMA).

.3 Supply only of steel frame products including frames, transom frames, sidelight and window assemblies with provision for glazed, paneled or louvered openings, fire labeled and non-labeled, as scheduled or detailed by the Consultant.

.4 Supply only of flush steel doors with provision for glazed, paneled or louvered openings, insulated and un-insulated, fire labeled, with or without temperature rise ratings and non-labeled, as scheduled or detailed by the Consultant.

.5 Supply only of steel panels, similar in construction to steel doors, with flush or abetted bottoms for steel frames, transom frames, sidelight and window assemblies, fire labeled and non-labeled, as scheduled or detailed by the Consultant.

1.5 RELATED WORK

.1 Building-in of frame product into unit masonry, previously placed concrete, structural or steel or wood stud walls.

.2 Supply and installation of wood, plastic or composite core doors.

.3 Supply and installation of builders' hardware except as specified for acoustic assemblies.

.4 Drilling and tapping for surface mounted or non-templated builders' hardware.

.5 Caulking of joints between frame product and other building components.

.6 Supply and installation of gaskets or weather-strip.

.7 Supply and installation of louvers or vents.

.8 Supply and installation of glazing materials.

.9 Site touch-up and painting.

.10 Wiring for electronic or electric hardware.

.11 Field measurements.

.12 Fasteners for frame product in previously placed concrete, masonry or structural steel.

.13 Steel lintels, posts, columns or other load-bearing elements.

.14 Field welding.

1.6 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, or louvred, arrangement of hardware and fire rating and finishes.

.3 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and reinforcing and fire rating finishes.

.4 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

.5 Submit test and engineering data, and installation instructions.

1.7 REQUIREMENTS

.1 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104M [NFPA 252] for ratings specified or indicated.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material in appropriate on-site bins for recycling.

.3 Divert unused paint and sealant materials from landfill to official hazardous material collections site approved by Consultant.

.4 Do not dispose of unused paint and sealant materials into sewer systems, into lakes, streams, onto ground or in other locations where it will pose health or environmental hazard.

.5 Divert unused metal materials from landfill to metal recycling facility approved by Consultant.

.6 Divert unused wood materials from landfill to recycling, reuse or composting facility wherever possible.

.7 Damaged or broken glazing materials are not recyclable. These materials must not de disposed of with materials destined for recycling.

1.9 TESTING AND PERFORMANCE

.1 Door constructions covered by this specification shall be certified as meeting Level "A" (1,000,000 cycles) and Twist Test Acceptance Criteria (deflection not to exceed 6.4 mm /13.6kg force, total deflection at 136.1kg force not to exceed 63.5 mm and permanent deflection not to exceed 3.2 mm) when tested in strict conformance with ANSI-A250.4-1994. Test shall be conducted by an independent nationally recognized accredited laboratory.

.2 Fire labeled product shall be provided for those openings requiring fire protection and temperature rise ratings, as determined and scheduled by the Architect. Doors, frames, transom frames and sidelight assemblies shall be tested in strict accordance with CAN4-S106. Product shall be listed by Underwriters Laboratories of Canada under an active Factory Inspection Program and shall be constructed as detailed in Follow-Up Service procedures issued to the manufacturer.

.3 Should any door or frame specified by the Architect to be fire rated, not qualify for labeling due to design, hardware, glazing or any other reason, the Consultant shall be so advised before manufacturing commences.

.4 Core materials for exterior doors shall attain a thermal resistance rating of RSI 1.06 (R6.0) when tested in accordance with ASTM C177 or ASTM C518.

.5 Product shall be manufactured by a firm experienced in the design and production of standard and custom commercial steel door and frame assemblies, the integration of builders' or electronic hardware and glazing materials and their impact on the scope of work.

.6 Manufacturer shall be assessed and registered as meeting the requirements of Quality Systems under ISO 9001.

.7 Product quality shall meet standards set by the Canadian Steel Door Manufacturers Association.

1.10 TEST REPORTS

.1 All alternates to this specification shall be submitted to the Architect for acceptance ten (10) days prior to bid date, complete with test reports from independent, nationally recognized testing authorities, certifying that:

.1 Steel door and frame assemblies furnished under this section meet the acceptance criteria of ANSI-A250.4-1994, Level "A".

.2 Insulated door cores furnished in exterior doors under this Section meet the specified thermal resistance rating.

.2 All reports shall include name of testing authority, date of test, location of test facility, descriptions of test specimens, procedures used in testing and indicate compliance with acceptance criteria of the test.

1.11 WARRANTY

.1 All steel door and frame product shall be warranted from defects in workmanship for a period of one (1) year from date of shipment.

.2 All steel door and frame product shall be warranted against rust perforation for a period of ten (10) years when the installed and finish painted with a commercial quality paint to the manufacturers recommendations.

.3 Finish paint adhesion on all door and frame product shall be warranted for a period of ten (10) years when the product has been properly cleaned and finish painted with a commercial quality paint applied as recommended by the paint manufacturer. This warranty shall not exceed that provided by the paint manufacturer.

Part 2 Products

2.1 MATERIALS

.1 Doors shall be fabricated from tension leveled steel to ASTM A924-M97, galvanized to ASTM A653-M97, Commercial Steel (CS), Type B, coating designation ZF75, known commercially as paintable Galvanneal.

.1 Acceptable Manufacturer: Flemming

.2 Acceptable Alternate Manufacturer: Trillium Steel Doors Limited, or others meeting these exact specifications outlined in this section.

.2 Door Cores:

.3 Honeycomb:

.1 Structural small cell (25.4 mm maximum) kraft paper “honeycomb”. Weight: 36.3 kg per ream (minimum), density: 16.5 kg/m^3 (minimum), sanded to the required thickness.

.4 Polystyrene:

.1 Rigid extruded, fire retardant, closed cell board, density 16kg/m^2, thermal values: RSI 1.06 minimum, conforming to ASTM C578.

.5 Temperature Rise Rated (TRR):

.1 Solid slab core of non-combustible, inorganic composite to limit temperature rise on the “unexposed” side of door to 250°C at 30 or 60 minutes, as required by governing building code requirements and determined and scheduled by the Architect.

.6 Adhesives:

.1 Honeycomb Cores and Steel Components: Heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement or ULC approved equivalent.

.7 Interlocking Edge Seams:

.1 Resin reinforced polychloroprene (RRPC), fire resistant, high viscosity, sealant/adhesive or UL approved equivalent.

.8 Polystyrene Cores:

.1 Heat resistant, epoxy based, low viscosity, contact cement.

.9 Primer:

.1 Rust inhibitive touch-up only.

.10 Exterior Top Caps:

.1 Rigid polyvinylchloride (PVC) extrusion.

2.2 DOOR FABRICATION

.1 This section is based on doors and frames as manufactured by Fleming. Doors and frames by other manufacturers are acceptable subject to be similar to the one specified and meeting the terms of this section.

.2 Doors shall be swinging, 44.4 mm thick of the types and sizes indicated on the Architect's schedules or drawings.

.3 Exterior doors shall be lock seam, flush.

.4 Face sheets for exterior doors shall be fabricated from (16) gauge steel.

.5 Longitudinal edges of exterior doors shall be fully welded, ground smooth with no visible seams.

.6 Face sheets of interior doors shall be fabricated from 18 gauge steel, except for heavy traffic doors (noted **HT** in Door Schedule) face sheet to be 16 gauge.

.7 Longitudinal edge of heavy traffic doors (noted **HT** in Door Schedule) shall be mechanically interlocked, fully welded, ground smooth with no visible seams. Do not fill seams.

.8 Interior doors shall be stiffened, insulated and sound deadened with honeycomb core laminated under pressure to each face sheet.

.9 Stiffened, insulated and sound deadened with Fleming's propriety core where Temperature Rise Rated (TRR) fire labeled doors are specified on the Architect's schedules.

.10 Longitudinal edges of interior doors shall be mechanically interlocked, adhesive assisted with edge seams and tack-welded every 150 mm and filled flush.

.11 Door faces of all steel doors shall be fabricated without visible seams, free of scale, pitting, coil brakes, buckles and waves.

.12 Formed edges shall be true and straight with a minimum radius for the thickness of steel used.

.13 Lock and hinge edges shall be beveled 3 mm in 50 mm unless builders' hardware or door swing dictates otherwise.

.14 Top and bottom of doors shall be provided with inverted, recessed, 16 gauge steel end channels, welded to each face sheet at 150 mm on center maximum.

.15 Exterior doors shall be provided with factory installed flush PVC top caps. Fire labeled exterior doors shall be provided with factory installed flush steel top caps.

.16 Unless ineligible due to design, size, hardware or glazing specified on the Architects' or hardware Suppliers' schedules or details, fire labeled doors shall be provided for those openings requiring fire protection ratings and temperature rise ratings, as determined and scheduled by the Architect.

.17 Exterior doors and high traffic doors shall be internally reinforced with 20 gauge continuous; interlocking steel stiffeners at 150mm O.C. max, with voids between stiffeners filled and insulated with 24kg/m3 density loose batt type fiberglass material to suit fully welded design.

.18 Doors shall be factory blanked, reinforced, drilled and tapped for fully templated mortised hardware only, in accordance with the final approved schedule and templates provided by the hardware supplier.

.19 Doors shall be factory blanked and reinforced only for mortised hardware that is not fully templated.

.20 Doors shall be factory reinforced only for surface mounted hardware.

.21 Templated holes 12.7mm diameter and larger shall be factory prepared, except mounting and through bolt holes, which shall be by the contractor responsible for installation on site, at the time of application. Templated holes less than 12.7mm diameter shall be factory prepared only when required for the function of the device (for knobs, levers, cylinders, thumb or turn pieces) or when these holes over-lap function holes.

.22 Drilling and tapping for surface mounted hardware or mortised hardware that is not fully templated shall be by the contractor responsible for installation on site, at the time of application.

.23 Hinge and pivot reinforcements shall be 10 gauge steel minimum high frequency type reinforcing.

.24 Hinge reinforcements for acoustic doors and doors in excess of 2450mm rabbet height shall be 10 gauge minimum with each cutout provided with 114.3mm heavy weight (4.6mm) high frequency type.

.25 Lock, strike and flush bolt reinforcements shall be 12 gauge steel minimum.

.26 Reinforcements for concealed closers and holders shall be 12 gauge steel minimum.

.27 For surface mounted hardware, reinforcements shall be 16 gauge steel minimum.

.28 All pairs of fire labeled doors shall be provided with 12 gauge steel surface mounted flat bar astragal, shipped loose for application on site, by the contractor responsible for installation.

.29 Pairs of doors up to 2450mm x 2450mm, to 1½ hour fire rating maximum shall be provided without astragals. Lock edge seam of such doors shall be tacked-welded and ground smooth. All other fire labeled pairs shall be provided with 12 gauge steel surface mounted flat bar astragal, shipped loose for application on site, by the contractor responsible for installation.

.30 Where electrically or electronically operated hardware is specified on the Architects' schedules or details of the final approved schedule and templates provided by the hardware supplier, hardware enclosures and/or junction boxes, where indicated on the templates, shall be provided and interconnected with CSA Approved 12.7mm diameter conduit and connectors.

.31 Prepare doors to receive security door contacts – refer to electrical drawings for locations. Door contacts to be installed at 100 mm from the latch side door edge.

2.3 GLAZING

.1 Where 6mm thick glazing materials are specified on the Architects schedules or details, doors shall be provided with 20 gauge steel glazing trim and snap-in glazing stops.

.2 Where other that 6mm glazing is specified on the Architect's schedules or details, doors shall receive 20 gauge steel trim and screw fixed glazing stops. Screws shall be #6 x 32mm oval head scrulox (self-drilling) type at 300mm on center maximum.

.3 Glazing trim and stops shall be accurately fitted, butted at corners, with removable glazing stops located on the 'push' side of the door.

2.4 LOUVER

.1 Where specified on the Architect's schedules or details, non-labeled doors shall be prepared on accordance with the louver manufacturer's details.

.2 Where specified on the Architect's schedules or details, fire labeled doors shall be prepared for UL listed sight-proof fusible link louvers in accordance with the louver manufacturer's details.

.3 Louvers shall be supplied and installed by others.

2.5 FINISHING

.1 Remove weld slag and splatter from exposed surfaces.

.2 All tool marks, abrasions and surface blemishes shall be filled and sanded to present smooth uniform surfaces.

.3 On exposed surfaces where zinc coating has been removed during fabrication, doors shall receive a factory applied touch-up primer.

.4 Primer shall be fully cured prior to shipment.

2.6 PANELS

.1 Panels shall be fabricated form the same materials, construction and finished in the same manner as doors as specified in Section 2.1.

2.7 PRIMER

.1 Touch-up prime CAN/CGSB-1.181.

2.8 PAINT

.1 Field paint steel doors and frames in accordance with Section[s] [09 91 23 - Interior Painting], [09 91 13 - Exterior Painting]. Protect weatherstrips from paint. Provide final finish shall be free of scratches or other blemishes.

2.9 FRAMES FABRICATION GENERAL

.1 Steel:

.1 Frame product shall be fabricated from tension leveled steel to ASTM A924-M97, galvanized to ASTM A653-M97, Commercial Steel (CS), Type B, coating designated ZF75, known commercially as paintable Galvanneal.

.2 Primer:

.1 Rust inhibitive touch up only.

.3 Miscellaneous:

.1 Door Silencers: GJ-64, Single Stud rubber/neoprene type

.2 Thermal Breaks: Rigid polyvinylchloride (PVC) extrusion

.3 Fiberglass: Loose batt type, density: 24kg/m^3 (minimum), conforming to ASTM C665.

.4 General:

.1 All steel frame product shall be as manufactured by Fleming of the types, sizes and profiles indicated on the Architects' schedules or details.

.2 Exterior frames shall be thermally broken, Fleming *Therma-Frame* Series, fabricated from 16 gauge steel.

.3 Exterior frame product shall be supplied profile welded (PW)

.4 Interior and exterior sections of thermally broken frames shall be separated by a continuous PVC thermal break.

.1 Thermally broken sections shall not be assembled by means of screws, grommets or other fasteners and welds shall not cause thermal transfers between interior and exterior surfaces of the frame sections.

.2 Closed sections (mullions and center rails) of thermally broken frames shall be factory insulated with 24kg/m^3 loose batt type fiberglass material.

.5 Insulation of open sections (jambs, heads and sills) on exterior frame product shall be provided and installed by the contractor responsible for installation.

.6 Interior frames shall be Fleming F-Series, fabricated from 16 gauge steel.

.7 Interior frame product shall be supplied profile welded (PW)

.8 Knocked-down and knocked-down drywall frames shall not be acceptable.

.9 Jambs, heads, mullions, sills and center rails shall be straight and uniform throughout their lengths.

.10 Frame product shall be square, free of defects, wraps or buckles.

.11 Corner joints shall be profile welded (PW) (continuously welded on the inside of the profiles' faces, rabbets, returns and soffit intersections with exposed faces filled and ground to a smooth, uniform, seamless surface)"

.12 Joints at mullions, transom bars, sills or center rails shall be coped accurately, butted and tightly fitted, with faces securely welded, matching corner joint faces.

.13 All steel mullions will be fabricated from the same materials as specified for the steel frames. Steel mullions will be fabricated as a fully assembled three piece unit consisting of a front, back and full height one piece attachment clip as per Fleming F Series. The attachment clip will completely fill the stop area of the mullion on both sides and span the void between each side forming a grid channel like structure. Mullions used as hinge mullions or strike mullions between doors will be filled with grout by the general contractor either prior to or following installation of the frame. The head of the frame shall have an opening sufficient for the grout to be poured in to the mullion.

.14 Mullions shall be fabricated with continuous 20 gauge galvanneal steel internal reinforcing clips.

.15 Frame product shall be fabricated with integral door stops having a minimum height of 16mm.

.16 Glazing stops shall be formed 20 gauge steel, 16mm height channel, accurately fitted, butted at corners and fastened to frame sections with #6 x 32mm oval head scrulox (self-drilling) type screws at 300mm on center maximum.

.17 Where required due to site access, as indicated on the Architects' schedules or details, when advised by the contractor responsible for co-ordination or installation, or when shipping limitations so dictate, frame product shall be fabricated in sections for splicing in the field.

.1 Field spliced jambs, heads and sills shall be provided with 16 gauge steel splice plates securely welded into one section, extending 100mm minimum each side of splice joint.

.2 Field splices at closed sections (mullions or center rails) shall be 16 gauge steel splice angles securely welded to the abutting member. Face of splice angle shall extend 100mm minimum into closed sections when assembled.

.3 Field splice joints shall be welded, filled and ground to present a smooth uniform surface by the contractor responsible for installation after assembly.

.18 Each door opening shall be provided with two (2) temporary steel jamb spreaders welded to the base of the jambs or mullions to maintain proper alignment during shipping and handling. Spreaders shall be removed by the contractor responsible for installation prior to anchoring of frame to floor.

.19 Each door opening shall be prepared for GJ-64 or equivalent, single stud door silencers, three (3) for single door openings, two (2) for double door openings. Silencers shall be shipped loose for installation by the contractor after finish painting.

.20 Unless ineligible due to design, size, hardware or glazing specified on the Architects' or Hardware Suppliers' schedules or details, fire labeled frame product shall be provided for those openings required fire protection ratings as determined and scheduled by the Architect.

.21 Hardware Preparations:

.1 Frame product shall be blanked, reinforced, drilled and tapped for fully template mortised hardware only, in accordance with the final approved schedule and template provided by the hardware supplier.

.2 Frame product shall be factory blanked and reinforced only for mortised hardware that is not fully template.

.3 Frame product shall be reinforced only for surface mounted hardware.

.4 Drilling and tapping for surface mounted hardware or mortised hardware that is not fully template shall be by the contractor responsible for installation on site, at the time of application.

.5 Frames shall be prepared for 114.3mm standard weight hinges (minimum).

.6 Hinge and pivot reinforcements shall be 10 gauge steel minimum reinforcing, high frequency type shall be provided.

.7 Hinge reinforcements for acoustic frames and frames in excess of 2450mm rabbet height shall be 10 gauge minimum with each cutout provided with 114.3mm heavy weight (4.6mm) high frequency type.

.8 Strike reinforcements shall be 16 gauge steel minimum.

.9 Reinforcements for surface mounted hardware, concealed closers and holders and flush bolts shall be 12 gauge steel minimum.

.10 Mortised cutouts shall be protected with 22 gauge steel minimum guard boxes.

.11 Where electrically or electronically operated hardware is specified on the Architects schedules or details or the final approved schedule and templates provided by the hardware supplier, hardware enclosures and/or junction boxes, where indicated on templates, shall be provided and inter-connected with CSA Approved 12.7mm diameter conduit and connectors.

.12 Prepare frames to receive security door contacts – refer to electrical drawings for locations. Door contacts to be installed at 100 mm from the latch side door edge.

.22 Anchorage:

.1 Frame product shall be provided with anchorage appropriate to floor, wall and frame construction.

.2 Each wall anchor shall be located immediately above or below each hinge reinforcement on the hinge jamb and directly opposite on the strike jamb, except as indicated below.

.3 Frame product installed in unit masonry partitions shall be provided with 4.0mm diameter steel wire anchors, 18 gauge steel adjustable stirrup and strap or "T" type anchors as conditions dictate.

.4 Where frame product is installed prior to construction of the adjacent wall, each jamb shall be provided with 16 gauge steel floor anchors. Each anchor shall be provided with two (2) holes for mounting to the floor and shall be securely welded to the inside of the jamb.

.5 Floor anchors for thermally broken exterior frames shall be designed so as not to permit thermal transfers from exterior to interior surfaces of the frame sections.

.6 Frame product installed in drywall partitions shall be provided with 20 gauge steel snap-in or "Z" type stud type anchor.

.7 Jambs of frames in previously placed concrete, masonry or structural steel shall be punched and dimpled to accept machine bolt anchors, 6.4mm diameter, located not more than 150mm from the top and bottom of each jamb. Anchor preparations and guides shall also be located immediately above or below the intermediate hinge reinforcing and directly opposite on the strike jamb. Each preparation shall be provided with 16 gauge anchor bolt guides.

.8 Anchor bolts and expansion shell anchors for the above preparations shall be provided by the contractor responsible for installation.

.9 After sufficient tightening of the anchor bolts, the heads shall be welded do as to provide a non-removable application. Welded bolt head and dimple shall be filled and ground to present a smooth uniform surface by the contractor responsible for installation, prior to finish painting.

.10 Where indicated on the Architects' schedules or details, channel extensions shall be provided from the top of the frame assembly to the underside of the structure above. Extensions shall be fabricated from 12 gauge steel formed channel, mounting angles welded to inside of frame head and adjusting brackets. Formed channels, adjusting brackets and fasteners shall be shipped loose. Channels shall be mechanically connected to mounting angles and adjusting brackets with supplied fasteners, on site, by contractor responsible for installation.

.23 Finishing:

.1 Remove weld slag and spatter from exposed surfaces.

.2 All tool marks, abrasions and surface blemishes shall be filled and sanded to present smooth and uniform surfaces.

.3 On exposed surfaces where zinc has been removed during fabrication, frame product shall receive a factory applied touch-up primer.

.4 Primer shall be fully cured prior to shipment.

2.10 SIZES AND TOLERANCES

.1 All sizes and tolerances shall be in accordance with the Canadian Steel Door Manufacturers Association "Recommended Dimensional Standards for Commercial Steel Doors and Frames" as follows:

.1 Widths of door openings shall be measured from inside of frame jamb rabbet with a tolerance of +1.6mm, -0.8mm.

.2 Heights of door openings shall be measured from the finished floor (exclusive of floor coverings) to the head rabbet of the frame with a tolerance of ± 1.2mm.

.3 Unless builders' hardware dictates otherwise, doors shall be sized so as to fit the above openings and allow a 3mm clearance at jambs and head. A clearance of 19mm between the bottom of the door and the finished floor (exclusive of floor coverings) shall be provided. Tolerances on door sizes shall be ± 1.2mm.

.4 Manufacturing tolerances on formed frame profiles shall be ± 0.8mm for faces, door stop heights and jamb depths. Tolerances for throat openings and door rabbet shall be ± 1.6mm and ± 0.4mm respectively. Hardware cutout dimensions shall be as per template dimensions, +0.4mm, -0.

2.11 HARDWARE LOCATIONS

.1 Hardware preparations in frame product shall be as noted below and locations on doors shall be adjusted for clearances specified in 2.4.

.2 Top of upper hinge preparation for 114.3mm hinges shall be located 180mm down from head, transom mullion or panel as appropriate. The top of the bottom hinge preparation for 114.3mm hinges shall be located 310mm from finished floor as defined in 2.4.3. Intermediate hinge preparations shall be spaced equally between top and bottom cutouts. For dutch door frames, top and bottom hinge locations shall be as above, with the tops of intermediate hinges located at 930mm and 1403mm from finished floor.

.3 Strike preparations for unit, integral, cylindrical and mortise locks and roller latches shall be centered 1033mm from finished floor. Strikes for deadlocks shall be centered at 1200mm from finished floor. Strikes for panic or fire exit hardware shall be located as per device manufacturer's templates.

.4 Push and/or pulls on doors shall be centered 10701mm from finished floor.

.5 Preparations not noted above shall be as per hardware manufacturer's templates.

.6 Hardware preparation tolerances shall comply with the ANSI A115 series standards.

Part 3 Execution

3.1 SITE AND PROTECTION OF MATERIALS

.1 The contractor responsible for installation shall remove wraps or covers from door and frame product upon delivery at building site.

.2 All materials shall be thoroughly inspected upon receipt and all discrepancies, deficiencies and/or damages shall be immediately reported in writing to the supplier, All damage shall be noted on the carriers' Bill of Landing.

.3 Contractor responsible for installation shall ensure all materials are properly stored on planks or dunnage in a dry location. Product shall be stored in a vertical position, spaced with blocking to permit air circulation between them. Materials shall be covered to protect them from damage from any cause.

.4 Contractor shall notify the supplier in writing of any errors or deficiencies in the product itself before initiating any corrective work.

3.2 INSTALLATION GENERAL

.1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.

.2 Install doors and frames to CSDMA Installation Guide.

.3 Install doors and frames in accordance with the Door and Hardware Institute "Installation guide for doors and hardware".

.4 Set frame product plumb, square, aligned, without twist at correct elevation.

.5 Frame Product Installation Tolerances:

.1 Plumbness tolerance, measured through a line from the intersecting corner of vertical members and the head to the floor, shall be $\pm$ 1.6mm.

.2 Squareness tolerance, measured through a line 90^0 from one jamb at the upper corner of the product, to the opposite jamb, shall be $\pm$ 1.6mm.

.3 Alignment tolerance, measured on jambs, through a horizontal line parallel to the plane of the wall, shall be $\pm$ 1.6mm.

.4 Twist tolerance, measured at face corners of jambs, on parallel lines perpendicular to the plane of the wall, shall be $\pm$ 1.6mm.

.6 Fire labeled product shall be installed in accordance with NFPA-80.

.7 Secure anchorages and connections to adjacent construction.

.8 Brace frame product rigidly in position while building-in. Remove temporary steel shipping jamb spreaders. Install wood spreaders at mid points of frame rabbet height and at floor level to maintain frame widths. Provide vertical support at center of head for openings exceeding 1250mm in width. Remove wood spreaders after product has been built-in.

.9 Frame product in unit masonry shall be fully grouted in place.

.10 Install doors maintaining clearances outlined in Section 2.4.

.11 Install louvers and vents.

.12 Adjust operable parts for correct clearances and function.

.13 Steel surfaces shall be kept free of grout, tar or other bonding materials or sealers.

.14 Any grout or other bonding material shall be cleaned from products immediately following installation.

.15 Exposed field welds shall be finished to present a smooth uniform surface and shall be touched-up with a rust inhibitive primer.

.16 Exposed surfaces that have been scratched or otherwise marred during shipment, installation or handling shall be touched-up with a rust inhibitive primer.

.17 Finish paint in accordance with Section 099116 and 099123.

.18 Install glazing materials and door silencers.

3.3 INSPECTION

.1 In accordance with Section 01 11 00, upon assignment of an inspection agency the following inspections shall be performed:

.1 review of shop drawings for compliance with specification

.2 shop inspection during production. Should inspection notification not be given suitable to review fabrication, destructive testing of one or more doors will be undertaken either in the shop or on site at no additional cost to the owner. Doors destroyed for invasive inspection shall be replaced as part of the contract price.

.2 upon notification of initial door inspection, contractor shall notify inspector to witness installation practice and at periodic points for duration of installation period.

3.4 FINISH REPAIRS

.1 Touch up with primer finishes damaged during installation.

.2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

3.5 GLAZING

.1 Install glazing for doors and frames in accordance with Section 08 80 50 - Glazing.

END OF SECTION

Part 1 General

1.1 GENERAL NOTES

.1 Find the Door Schedule on the following pages.

.2 This schedule MUST be read in conjunction with a complete set of drawings and a complete Hardware Schedule.

.3 Refer to AD Drawings for door and frame types and details.

1.2 ABBREVIATIONS CODE

.1 The following abbreviations are used in the Door Schedule.

Code		Reference
.1	DC	Door Contact (security)
.2	FR, FRG	Fire rated glazing
.3	P	Paint
.4	HM	Hollow Metal
.5	TP	Tempered Glass
.6	45 MIN	45 minute fire rating
.7	20 MIN	20 minute fire rating
.8	HT	Heavy Traffic – see spec for welded seams, special reinforcing.
.9	B/F	Barrier-Free
.10	WD	Laminate Faced Wood Door
.11	PLAM	Plastic Laminate Finish on Wood Door
.12	ALUM.	Aluminum
.13	ANNO.	Anodized Finish
.14	CW	Curtain Wall Designation

1.3 DOOR SCHEDULE

.1 Door Schedule designation “DC” refers to “Door Contacts” used in the security system. Refer to Electrical Drawings and Division 16 Specifications for locations, zoning and description of system.

END OF SECTION

HDSB OAKVILLE #5 PS DOOR FINISH SCHEDULE

DOOR		DOOR								FRAME					REMARKS
#	ROOM	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
FIRST FLOOR															
101 A	VESTIBULE 101	2X1000	2150	-	HT	F	ALUM	ANNO	TP	CW1	ALUM	ANNO	Y	TP	COORDINATE DOOR WIDTH WITH CURTAIN WALL MANUFACTURER. CONTINUOUS HINGES. INSULATED DOOR & FRAME. B/F DOOR OPERATOR, ELECTRIC SECURITY STRIKE TO OFFICE. COORDINATE DOOR WIDTH WITH CURTAIN WALL MANUFACTURER. COORD WITH ELEC FOR VIDEO INTERCOM SYSTEM / CARD READER, CONTINUOUS HINGES
101 B	VESTIBULE 101	2X1000	2150	-	HT	F	ALUM	ANNO	TP	CW1	ALUM	ANNO	Y	TP	
101 C	VESTIBULE 101	2X1000	2150	-	HT	C	HM	P	TP	4	HM	P	-	TP	B/F DOOR OPERATOR
101 D	VESTIBULE 101	2X1000	2150	-	HT	C	HM	P	TP	4	HM	P	-	TP	
103 A	GENERAL OFFICE 103	1050	2150	-	-	C	HM	P	TP	5	HM	P	-	-	B/F DOOR OPERATOR
104 A	OFFICE 104	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
105 A	OFFICE 105	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
106 A	OFFICE 106	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
107 A	MEETING 107	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
108 A	HEALTH 108	950	2150	-	-	C	WD	PLAM	TP	1	HM	P	-	-	

HDSB OAKVILLE #5 PS DOOR FINISH SCHEDULE

DOOR		DOOR								FRAME					REMARKS
#	ROOM	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
109 A	BF W/R 109	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	B/F DOOR OPERATOR.
110 A	COPY 110	950	2150	-	-	D	HM	P	TP	1	HM	P	-	-	
110 B	COPY 110	950	2150	-	-	D	HM	P	TP	1	HM	P	-	-	
111 A	STAFF LOUNGE 111	950	2150	45 min.	-	D	HM	P	FR	1	HM	P	-	-	
112 A	SPRINKLER 112	950	2150	-	-	A	HM	P	-	1	HM	P	Y	-	INSULATED DOOR & FRAME.
112 B	SPRINKLER 112	1100 W x 2200 H DOOR OPENING IN WALL. REFER TO FLOOR PLANS. DOUBLE BULLNOSE BLOCK AT JAMBS													
113 A	ELECTRICAL ROOM 113	950	2150	45 min.	-	A	HM	P	-	1	HM	P	-	-	STANLEY CANADA CORPORTATION LOCKS IS REQUIRED PER OAKVILLE HYDRO'S "CONDITIONS OF SERVICE".
115 A	KINDERGARTEN CLASSROOM 115	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	DOOR CONTACT FOR AUDIBLE BUZZER. COORD WITH ELEC. DWGS. POWER SWITCH IN MCP. DOOR OPENS 180 DEGREES.
116 A	B/F W/R 116	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	B/F DOOR OPERATOR.
117 A	STORAGE 117	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
118 A	STORAGE 118	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	

HDSB OAKVILLE #5 PS DOOR FINISH SCHEDULE

DOOR		DOOR								FRAME					REMARKS
#	ROOM	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
119 A	B/F W/R 119	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	B/F DOOR OPERATOR.
120 A	KINDERGARTEN CLASSROOM 120	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	DOOR CONTACT FOR AUDIBLE BUZZER. COORD WITH ELEC. DWGS. POWER SWITCH IN MCP. DOOR OPENS 180 DEGREES.
121 A	KINDERGARTEN CLASSROOM 121	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	DOOR CONTACT FOR AUDIBLE BUZZER. COORD WITH ELEC. DWGS. POWER SWITCH IN MCP. DOOR OPENS 180 DEGREES.
122 A	B/F W/R 122	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	B/F DOOR OPERATOR.
123 A	STORAGE 123	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
124 A	STORAGE 124	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
125 A	B/F W/R 125	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	B/F DOOR OPERATOR.
126 A	KINDERGARTEN CLASSROOM 126	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	DOOR CONTACT FOR AUDIBLE BUZZER. COORD WITH ELEC. DWGS. POWER SWITCH IN MCP. DOOR OPENS 180 DEGREES.
114 A	WASTE & CUSTODIAL STORAGE AREA 114	1100	2150	45 min.	-	A	HM	P	-	1	HM	P	-	-	
114 B	WASTE & CUSTODIAL STORAGE AREA 114	950	2150	-	-	A	HM	P	-	1	HM	P	Y	-	INSULATED DOOR & FRAME.
114 C	WASTE & CUSTODIAL STORAGE AREA 114	1830	2135	-	-	-	HM	P	-		HM	P	Y	-	INSULATED STEEL OVERHEAD COILING DOOR

HDSB OAKVILLE #5 PS DOOR FINISH SCHEDULE

DOOR		DOOR								FRAME					REMARKS
#	ROOM	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
127A A	VESTIBULE 127A	2X1000	2150	-	HT	C	HM	P	TP	2	HM	P	-	-	B/F DOOR OPERATOR. REMOVABLE MULLION. 1 DOOR TO OPEN 180 DEGREES. SEE PLANS
127A B	VESTIBULE 127A	2X1000	2150	-	HT	F	ALUM	ANNO	TP	CW2	ALUM	ANNO	Y	TP	B/F DOOR OPERATOR. INSULATED DOOR & FRAME. COORDINATE DOOR WIDTH WITH CURTAIN WALL MANUFACTURER. CONTINUOUS HINGES. COORD. WITH ELEC FOR CARD READER. REMOVABLE MULLION.
128 A	STAIR B 128	1000	2150	45 min.	HT	B	HM	P	FR	1	HM	P	-	TP	
128 B	STAIR B 128	2X1000	2150	-	HT	F	ALUM	ANNO	TP	CW3	ALUM	ANNO	Y	TP	INSULATED DOOR & FRAME. COORDINATE DOOR WIDTH WITH CURTAIN WALL MANUFACTURER. CONTINUOUS HINGES.
129 A	KINDERGARTEN CLASSROOM 129	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	DOOR CONTACT FOR AUDIBLE BUZZER. COORD WITH ELEC. DWGS. POWER SWITCH IN MCP
129 B	KINDERGARTEN CLASSROOM 129	1000	2150	-	-	C	HM	P	TP	6	HM	P	Y	TP	INSULATED DOOR AND FRAME. PROVIDE CONTACT IN FRAME TO ACTIVATE BUZZER IN ROOM WHEN DOOR IS OPEN. POWER SWITCH IN MCP
130 A	STORAGE 130	950	2150	-	-	A	HM	P	TP	1	HM	P	-	-	
131 A	WASHROOM 131	950	2150	-	-	A	HM	P	TP	1	HM	P	-	-	
132 A	WASHROOM 132	950	2150	-	-	A	HM	P	TP	1	HM	P	-	-	
133 A	STORAGE 133	950	2150	-	-	A	HM	P	TP	1	HM	P	-	-	
134 A	KINDERGARTEN CLASSROOM 134	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	DOOR CONTACT FOR AUDIBLE BUZZER. COORD WITH ELEC. DWGS. POWER SWITCH IN MCP

HDSB OAKVILLE #5 PS DOOR FINISH SCHEDULE

DOOR		DOOR								FRAME					REMARKS
#	ROOM	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
134 B	KINDERGARTEN CLASSROOM 134	1000	2150	-	-	C	HM	P	TP	6	HM	P	Y	TP	INSULATED DOOR AND FRAME. PROVIDE CONTACT IN FRAME TO ACTIVATE BUZZER IN ROOM WHEN DOOR IS OPEN. POWER SWITCH IN MCP
135 A	VESTIBULE 135	2X1000	2150	-	HT	C	HM	P	TP	13	HM	P	-	-	B/F DOOR OPERATOR
135 B	VESTIBULE 135	2X1000	2150	-	HT	C	HM	P	TP	2	HM	P	Y	TP	B/F DOOR OPERATOR, INSULATED DOOR AND FRAME. COORD. WITH ELEC FOR CARD READER
136 A	KINDERGARTEN CLASSROOM 136	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	DOOR CONTACT FOR AUDIBLE BUZZER. COORD WITH ELEC. DWGS. POWER SWITCH IN MCP
136 B	KINDERGARTEN CLASSROOM 136	1000	2150	-	-	C	HM	P	TP	6	HM	P	Y	TP	INSULATED DOOR AND FRAME. PROVIDE CONTACT IN FRAME TO ACTIVATE BUZZER IN ROOM WHEN DOOR IS OPEN. POWER SWITCH IN MCP
137 A	STORAGE 137	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
138 A	WASHROOM 138	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
139 A	WASHROOM 139	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
140 A	STORAGE 140	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
141 A	KINDERGARTEN CLASSROOM 141	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
141 B	KINDERGARTEN CLASSROOM 141	1000	2150	-	-	C	HM	P	TP	6	HM	P	Y	TP	INSULATED DOOR AND FRAME. PROVIDE CONTACT IN FRAME TO ACTIVATE BUZZER IN ROOM WHEN DOOR IS OPEN. POWER SWITCH IN MCP

HDSB OAKVILLE #5 PS DOOR FINISH SCHEDULE

DOOR		DOOR								FRAME					REMARKS
#	ROOM	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
142 A	W/R 142	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
143 A	W/R 143	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
144 A	SENSORY 144	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
145 A	SPECIAL ED. STORAGE & RESOURCES 145	950	2150	-	-	D	HM	P	TP	1	HM	P	-	-	
146 A	PRIMARY LITERACY 146	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
146A A	MACHINE ROOM 146A	1050	2150	45 min.	-	A	HM	P	-	1	HM	P	-	-	
149 A	CORRIDOR 149	3X1200	2150	-	HT	C	HM	P	TP	7	HM	P	-	-	REFER TO FLOOR PLAN FOR DOOR SWING. ELECTROMAGNETIC HOLDER ON ALL DOORS. EM IN CLOSER FOR MIDDLE LEAF
150 A	LIFESKILLS CLASSROOM 150	1050	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	B/F DOOR OPERATOR
151 A	KITCHENETTE 151	1050	2150	45 min.	-	D	HM	P	FR	1	HM	P	-	-	ELECTROMAGNETIC HOLDER
151 B	KITCHENETTE 151	1050	2150	45 min.	-	D	HM	P	FR	1	HM	P	-	-	ELECTROMAGNETIC HOLDER
152 A	UTR 152	1000	2150	45 min.	-	A	HM	P	-	1	HM	P	-	-	B/F DOOR OPERATOR. EMERGENCY CALL ASSIST.

HDSB OAKVILLE #5 PS DOOR FINISH SCHEDULE

DOOR		DOOR								FRAME					REMARKS
#	ROOM	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
154 A	SENSORY 154	1050	2150	45 min.	-	D	HM	P	FR	1	HM	P	-	-	
155 A	LIFESKILLS CLASSROOM 155	1050	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	B/F DOOR OPERATOR
157 A	STAIR A 157	2X1000	2150	45 min.	HT	B	HM	P	FR	2	HM	P	-	-	180° SWING PER DRAWINGS
157 B	STAIR A 157	2X1000	2150	-	HT	F	ALUM	ANNO	TP	CW4	ALUM	ANNO	Y	TP	INSULATED DOOR & FRAME. COORDINATE DOOR WIDTH WITH CURTAIN WALL MANUFACTURER. CONTINUOUS HINGES. COORD WITH ELEC FOR CARD READER
158 A	ELEVATOR	ELEVATOR DOORS - REFER TO SPECIFICATIONS													
159 A	KITCHENETTE 159	950	2150	45 min.	-	D	HM	P	FR	1	HM	P	-	-	
160 A	WR 160	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
161 A	MUSIC ROOM 161	950	2150	20 min.	-	D	WD	PLAM	FR	8	HM	P	-	FR	
162A A	PRACTICE ROOM 162A	950	2150	-	-	C	HM	P	TP	1	HM	P	-	-	
162B A	PRACTICE ROOM 162B	950	2150	-	-	C	HM	P	TP	1	HM	P	-	-	
163 A	GYM STORAGE 163	2X1000	2150	-	-	A	HM	P	-	3	HM	P	-	-	

HDSB OAKVILLE #5 PS DOOR FINISH SCHEDULE

DOOR		DOOR								FRAME					REMARKS
#	ROOM	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
164 A	GYMNASIUM 164	2X1000	2150	20 min.	HT	D	HM	P	FR	9	HM	P	-	FR	REMOVABLE MULLION
164 B	GYMNASIUM 164	2X1000	2150	-	-	F	ALUM	ANNO	TP	CW5	ALUM	ANNO	Y	TP	INSULATED DOOR & FRAME. REMOVABLE MULLION. COORDINATE DOOR WIDTH WITH CURTAIN WALL MANUFACTURER. CONTINUOUS HINGES
164 C	GYMNASIUM 164	2X1000	2150	-	-	F	ALUM	ANNO	TP	CW6	ALUM	ANNO	Y	TP	INSULATED DOOR & FRAME. COORDINATE DOOR WIDTH WITH CURTAIN WALL MANUFACTURER. CONTINUOUS HINGES
164A A	GYM STORAGE 164A	1000	2150	-	-	A	HM	P	-	1	HM	P	-	-	
165 A	BOYS CHANGE RM	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
166 A	GIRLS CHANGE RM	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
167 A	INSTRUCTOR OFFICE	950	2150	-	-	C	HM	P	TP	1	HM	P	-	-	
FIRST FLOOR - CHILD CARE FACILITY															
401 A	VESTIBULE 401	2X1000	2150	-	HT	F	ALUM	ANNO	TP	CW8	ALUM	ANNO	Y	TP	B/F DOOR OPERATOR, ELECTRIC SECURITY STRIKE TO OFFICE. COORDINATE DOOR WIDTH WITH CURTAIN WALL MANUFACTURER. COORD WITH ELEC FOR VIDEO INTERCOM SYSTEM / CARD READER, CONTINUOUS HINGES
401 B	VESTIBULE 401	2X1000	2150	-	HT	C	HM	P	TP	11	HM	P	-	-	B/F DOOR OPERATOR, REMOVABLE MULLION. COORD WITH ELEC FOR CARD READER
401 C	VESTIBULE 401	2X1000	2150	-	HT	C	HM	P	TP	3	HM	P	-	-	B/F DOOR OPERATOR, REMOVABLE MULLION. COORD. WITH ELEC FOR CARD READER

HDSB OAKVILLE #5 PS DOOR FINISH SCHEDULE

DOOR		DOOR								FRAME					REMARKS
#	ROOM	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
402 A	OFFICE 402	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
405 A	INFANT 405	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
403 A	W/R 403	950	2150	-	-	G	WD	PLAM	-	12	HM	P	-	TP	100mm UNDERCUT DOOR, DUTCH DOOR
403A A	STORAGE 403A	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
404 A	SLEEPING ROOM 404	1100 W x 2200 H DOOR OPENING IN WALL. REFER TO ELEVATION. DOUBLE BULLNOSE BLOCK AT JAMBS													
406 A	TODDLER 406	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
407 A	B/F W/R 407	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	B/F DOOR OPERATOR, ELECTRONIC LOCKING MECHANISM
408 A	W/R 408	950	2150	-	-	H	WD	PLAM	-	1	HM	P	-	-	100mm UNDERCUT DOOR, HALF DOOR
409 A	W/R 409	950	2150	-	-	H	WD	PLAM	-	1	HM	P	-	-	100mm UNDERCUT DOOR, HALF DOOR
410 A	COT STORAGE 410	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
410 B	COT STORAGE 410	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	

HDSB OAKVILLE #5 PS DOOR FINISH SCHEDULE

DOOR		DOOR								FRAME					REMARKS
#	ROOM	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
411 A	TODDLER 411	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
412 A	PRE SCHOOL 412	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
413 A	WASHROOM 413	950	2150	-	-	H	WD	PLAM	-	1	HM	P	-	-	100mm UNDERCUT DOOR, HALF DOOR
414 A	WASHROOM 414	950	2150	-	-	H	WD	PLAM	-	1	HM	P	-	-	100mm UNDERCUT DOOR, HALF DOOR
415 A	COT STORAGE 415	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
415 B	COT STORAGE 415	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
416 A	PRE SCHOOL 416	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
417 A	STAFF 422	950	2150	-	-	D	HM	P	TP	1	HM	P	-	-	
418 A	LAUNDRY 420	950	2150	-	-	D	HM	P	TP	1	HM	P	-	-	
419 A	KITCHEN 419	950	2150	-	-	D	HM	P	TP	1	HM	P	-	-	
421 A	UTILITY 423	950	2150	45 min.	-	A	HM	P	-	1	HM	P	-	-	

HDSB OAKVILLE #5 PS DOOR FINISH SCHEDULE

DOOR		DOOR								FRAME					REMARKS
#	ROOM	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
422 A	VESTIBULE 422	2X1000	2150	-	HT	C	HM	P	TP	10	HM	P	Y	TP	B/F DOOR OPERATOR, INSULATED DOOR AND FRAME. COORD. WITH ELEC FOR CARD READER
422 B	VESTIBULE 422	2X1000	2150	-	HT	C	HM	P	TP	2	HM	P	-	TP	B/F DOOR OPERATOR
423 A	STAIR C 423	2X1000	2150	45 min.	HT	B	HM	P	FR	2	HM	P	-	-	DOOR TO HAVE LOCKSET ON BOTH SIDES. NO PANIC HARDWARE AS THIS DOOR IS NOT AN EXIT FROM CORRIDOR 420.
423 B	STAIR C 423	2X1000	2150	-	HT	F	ALUM	ANNO	TP	CW7	ALUM	ANNO	Y	TP	INSULATED DOOR & FRAME. COORDINATE DOOR WIDTH WITH CURTAIN WALL MANUFACTURER. CONTINUOUS HINGES.

HDSB OAKVILLE #5 PS DOOR FINISH SCHEDULE

DOOR		DOOR								FRAME					REMARKS
#	ROOM	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
SECOND FLOOR															
201 A	STAIR A 201	2X1000	2150	45 min.	HT	B	HM	P	FR	2	HM	P	-	-	ELECTROMAGNETIC HOLDER
202 A	ELEVATOR	ELEVATOR DOORS - REFER TO SPECIFICATIONS													
204 A	SEMINAR ROOM 204	950	2150	-	-	D	WD	PLAM	-	15	HM	P	-	-	
205 A	HUB 205	1000	2150	-	-	A	HM	P	-	1	HM	P	-	-	
206 A	ACAD STORAGE & STAFF RESOURCE 206	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
207 A	LAPTOP STORAGE 207	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
210A A	SEMINAR ROOM 210A	950	2150	-	-	D	WD	PLAM	-	14	HM	P	-	-	
211 A	RESOURCE ROOM 211	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
211 B	RESOURCE ROOM 211	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
212 A	SPECIAL EDUCATION CLASSROOM 212	1050	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	

HDSB OAKVILLE #5 PS DOOR FINISH SCHEDULE

DOOR		DOOR								FRAME					REMARKS
#	ROOM	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
213 A	CLASSROOM 213	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
214 A	CLASSROOM 214	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
214 B	CLASSROOM 214	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
215 A	CLASSROOM 215	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
216 A	CLASSROOM 216	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
216 B	CLASSROOM 216	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
217 A	CLASSROOM 217	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
218 A	CLASSROOM 218	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
220 A	STAIR B 220	2X1000	2150	45 min.	HT	B	HM	P	FR	2	HM	P	-	-	ELECTROMAGNETIC HOLDER, 180° SWING PER DRAWINGS
221 A	RESOURCE ROOM 221	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
222 A	CLASSROOM 222	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	

HDSB OAKVILLE #5 PS DOOR FINISH SCHEDULE

DOOR		DOOR								FRAME					REMARKS
#	ROOM	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
223 A	CLASSROOM 223	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
223 B	CLASSROOM 223	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
224 A	CLASSROOM 224	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
225 A	CLASSROOM 225	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
225 B	CLASSROOM 225	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
226 A	CLASSROOM 226	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
227 A	CLASSROOM 227	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
229 A	QUIET ROOM 229	950	2337	-	-	J	ALUM	ANNO	TP	CW17	ALUM	ANNO	-	TP	
231 A	QUIET ROOM 231	950	2337	-	-	J	ALUM	ANNO	TP	CW17	ALUM	ANNO	-	TP	
232 A	B/F W/R 232	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	B/F DOOR OPERATOR
235 A	W/R 235	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	

HDSB OAKVILLE #5 PS DOOR FINISH SCHEDULE

DOOR		DOOR								FRAME					REMARKS
#	ROOM	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
236 A	CUSTODIAL 236	1000	2150	-	-	A	HM	P	-	1	HM	P	-	-	
237 A	MECHANICAL 237	1100	2150	45 min.	-	A	HM	P	-	1	HM	P	-	-	
237 B	MECHANICAL 237	1100	2150	45 min.	-	A	HM	P	-	1	HM	P	-	-	
240 A	QUIET ROOM 240	950	2337	-	-	J	ALUM	ANNO	TP	CW27	ALUM	ANNO	-	TP	
241 A	W/R 24	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
242 A	W/R 242	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
243 A	B/F W/R 243	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	B/F DOOR OPERATOR
245 A	QUIET ROOM 245	950	2337	-	-	J	ALUM	ANNO	TP	CW18	ALUM	ANNO	-	TP	
246 A	W/R 246	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
247 A	W/R 247	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
248 A	QUIET ROOM 248	950	2337	-	-	J	ALUM	ANNO	TP	CW18	ALUM	ANNO	-	TP	

HDSB OAKVILLE #5 PS DOOR FINISH SCHEDULE

DOOR		DOOR								FRAME					REMARKS
#	ROOM	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
250 A	STAIR B 250	2X1000	2150	45 min.	HT	B	HM	P	FR	2	HM	P	-	-	ELECTROMAGNETIC HOLDER, 180° SWING PER DRAWINGS
251 A	CLASSROOM 251	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
252 A	CLASSROOM 252	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
252 B	CLASSROOM 252	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
253 A	CLASSROOM 253	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
254 A	CLASSROOM 254	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
254 B	CLASSROOM 254	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
255 A	CLASSROOM 255	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
256 A	CLASSROOM 256	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
256 B	CLASSROOM 256	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	

THIRD FLOOR

HDSB OAKVILLE #5 PS DOOR FINISH SCHEDULE

DOOR		DOOR								FRAME					REMARKS
#	ROOM	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
301 A	STAIR A 301	2X1000	2150	45 min.	HT	B	HM	P	FR	2	HM	P	-	-	ELECTROMAGNETIC HOLDER, 180° SWING PER DRAWINGS
301 B	STAIR A 301	1000	2150	-	-	A	HM	P	-	1	HM	P	Y	-	INSULATED DOOR FRAME. DOOR SILL AT 500mm. REFER TO ARCH. DETAILS.
305 A	LIBRARY MEZZANINE/SEMINAR 305	950	2150	45 min.	-	B	HM	P	FR	CW20	ALUM	ANNO	-	TP	RATED HOLLOW METAL DOOR IN ALUM. CURTAIN WALL. CURTAIN WALL PROTECTED WITH WINDOW SPRINKLERS
302 A	ELEVATOR	ELEVATOR DOORS - REFER TO SPECIFICATIONS													
307A A	SEMINAR ROOM 307A	950	2150	-	-	D	WD	PLAM	-	14	HM	P	-	-	
308 A	RESOURCE 308	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
308 B	RESOURCE 308	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
309 A	CLASSROOM 309	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
310 A	CLASSROOM 310	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
310 B	CLASSROOM 310	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
311 A	CLASSROOM 311	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	

HDSB OAKVILLE #5 PS DOOR FINISH SCHEDULE

DOOR		DOOR								FRAME					REMARKS
#	ROOM	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
312 A	APPLICATIONS 312	1050	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
312A A	DUST EXTRACTOR 312	1000	2150	-	-	A	HM	P	-	1	HM	P	-	-	
312 B	APPLICATIONS 312	1050	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
313 A	ART 313	1050	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
313A A	ART STOR. 313	1050	2150	-	-	D	HM	P	-	1	HM	P	-	-	
314 A	RESOURCE ROOM 314	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
316 A	STAIR B 316	2X1000	2150	45 min.	HT	B	HM	P	FR	2	HM	P	-	-	ELECTROMAGNETIC HOLDER, 180° SWING PER DRAWINGS
317 A	SCIENCE 317	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
317 B	SCIENCE 317	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
318 A	CLASSROOM 318	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
319 A	CLASSROOM 319	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	

HDSB OAKVILLE #5 PS DOOR FINISH SCHEDULE

DOOR		DOOR								FRAME					REMARKS
#	ROOM	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
319 B	CLASSROOM 319	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
320 A	CLASSROOM 320	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
321 A	CLASSROOM 321	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
321 B	CLASSROOM 321	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
322 A	CLASSROOM 322	950	2150	-	-	D	WD	PLAM	TP	1	HM	P	-	-	
323 A	B/F W/R 323	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	B/F DOOR OPERATOR
326 A	WASHROOM 326	950	2150	-	-	A	HM	P	-	1	HM	P	-	-	
327 A	CUSTODIAL 327	1000	2150	-	-	A	HM	P	-	1	HM	P	-	-	
329 A	QUIET ROOM 329	950	2337	-	-	J	ALUM	ANNO	TP	CW17	ALUM	ANNO	-	TP	
331 A	QUIET ROOM 331	950	2337	-	-	J	ALUM	ANNO	TP	CW17	ALUM	ANNO	-	TP	
332 A	ELECTRICAL 332	1000	2150	-	-	A	HM	P	-	1	HM	P	-	-	

HDSB OAKVILLE #5 PS DOOR FINISH SCHEDULE

DOOR		DOOR								FRAME					REMARKS
#	ROOM	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
END OF SCHEDULE															

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 Submittal Procedures.

.2 Section 08 44 13 Glazed Aluminum Curtain Wall.

.3 Section 08 80 50 Glazing.

1.2 REFERENCES

.1 American Architectural Manufacturers Association (AAMA):
- .1 AAMA 2605-05, Voluntary Specification for High Performance Coatings on Architectural Extrusions and Panels.
- .2 AAMA CW-10-04, Care and Handling of Architectural Aluminum from Shop to Site.

.2 American National Standards Institute (ANSI):
- .1 ANSI, H35.1M-2009, Alloy and Temper Designation Systems for Aluminum (Metric).

.3 American Society for Testing and Materials (ASTM):
- .1 ASTM A167-99(2009), Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
- .2 ASTM B221M-08, Specification for Aluminum-Alloy Extruded Bars, Rods, Wires, Shapes and Tubes.
- .3 ASTM F738M-02(2008), Specification for Stainless Steel Metric Bolts, Screws, and Studs.

.4 Canadian General Standards Board (CGSB):
- .1 CAN/CGSB-1.108-M89, Bituminous Solvent Type Paint.

.5 Canadian Standards Association (CSA):
- .1 CSA W59-M-03(R2008), Welded Steel Construction (Metal Arc Welding).

1.3 DESIGN REQUIREMENTS

.1 Design aluminum doors in accordance with following Climatic Design Data for Oakville contained in the Ontario Building Code:
- .1 Design temperature: January 1%, July 2 1/2% .
- .2 Hourly wind pressures: 1 in 50 year occurrence.

.2 Design aluminum doors to accommodate following without producing detrimental effect:
- .1 Cyclic 40 degrees C daily thermal swing of components.
- .2 Cyclic, dynamic loading and release of loads such as wind loads.
- .3 13 mm vertical deflection in supporting structure and movement of supporting structure due to live, dead load, and creep or deflections, seismic load, sway displacement and similar items.

.3 Prevent deflection and permanent or progressive glazing displacement. Restrict horizontal and vertical deflection to less than L/175 (under uniformly distributed positive design wind load), and 10 mm maximum regardless of span.

1.4 SUBMITTALS

.1 Shop drawings:
- .1 Submit shop drawings in accordance with the Section 01 33 00 indicating:
  - .1 Plans, sections, details, type of extrusions, profiles, anchorage, glazing details, and finishes.
  - .2 Section and hardware reinforcement.

.2 Samples:
- .1 Submit sampled in accordance with the Section 01 33 00 of the following:
  - .1 One complete corner detail of door frame, glazing, and finish for each door type.
  - .2 Each door hardware item for the Consultant's approval.

.3 Reports:
- .1 Submit substantiating engineering data, and independent test results of pre-tested, existing doors to substantiate compliance with the design criteria.
- .2 Submit documentation to substantiate ten years of experience in aluminum door manufacture and installation.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Handle aluminum work in accordance with AAMA CW-10.

.2 Protect aluminum surfaces with strippable coating. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather. Do not remove before final cleaning of building.

Part 2 Products

2.1 ACCEPTABLE MANUFACTURER(S) AND SYSTEM(S)

.1 Aluminum doors:
- .1 Interior:
  - .1 '400A Series' by Alumicor Limited.
  - .2 '350 Swing Doors' by Kawneer Company Canada Limited.
  - .3 Or approved alternative.
- .2 Exterior:
  - .1 '400A Insuldoor' by Alumicor Limited.
  - .2 '360 Insulclad Doors' by Kawneer Company Canada Limited.

.3 Or approved alternative.

2.2 MATERIALS

.1 General:
- .1 All materials under Work of this Section, including but not limited to, sealants and coatings are to have low VOC content limits.
- .2 Wherever possible, metals used in work of this Section are to contain recycled content.

.2 Aluminum extrusions and channels: ASTM B211 and ANSI H35.1 AA6063 alloy, T6 temper.

.3 Reinforcements and anchors: ASTM A167, Type 304 to AISI No. 2B finish. Size as shown.

.4 Glass and glazing materials: As specified in Section 08 80 50.

.5 Frame sealant: Type as recommended by the aluminum work manufacturer.

.6 Screws, bolts and other fasteners: ASTM F738M; Stainless Steel Type 304.

.7 Isolation coating: CAN/CGSB-1.108-M; Bitumastic coating, acid and alkali resistant material.

.8 Foam insulation: One component polyurethane foam for installation within closures and fillers; Enerfoam by Dow Chemical Canada Inc.

.9 Weatherstripping: Durable, non-absorbing material resistant to deterioration by aging and weathering.

.10 Door hardware: Supplied by Section 08 71 00, preparation and installation by this Section.

2.3 FABRICATION

.1 Fabricate sections true to detail, free from defects impairing appearance, strength and durability. Fabricate extrusions with sharp, well defined corners.

.2 Fabricate, fit, and secure framing joints and corners accurately, with flush surfaces, and hairline joints. Apply frame sealant at joints for weatherproof seams.

.3 Conceal anchors, reinforcement and attachments from view. Fabricate reinforcement in accordance with design requirements.

.4 Do not expose manufacturer's identification labels on aluminum assemblies.

.5 Fabricate doors and frames complete with internal reinforcements, cut-outs, and recesses to accommodate finish hardware. Reinforce cut-outs to assure adequate strength.

.6 Double weatherstrip doors. Install weatherstripping in specially extruded ports and secure to prevent shrinkage or movement.

.7 Fabricate doors of welded construction.

.8 Glazing stop: Square, snap-on type, designed for neoprene glazing system.

2.4 FINISH

.1 Extrusion finish: Clear anodized to AAMA 611 per Aluminum Association Designation System for Aluminum Finishes AA-M12C22A41.

Part 3 Execution

3.1 INSTALLATION

.1 Install aluminum doors in accordance with reviewed shop drawings, and manufacturer's written instructions.

.2 Install Work of this Section securely, in correct location, level, square, plumb, at proper elevations, free of warp or twist.

.3 Apply isolation coating at 0.8 mm dry film thickness to prevent corrosive or electrolytic action between dissimilar materials such as aluminum to concrete, masonry, galvanized steel and similar conditions.

.4 Fill voids between aluminum framing and adjacent construction with foam insulation.

.5 Install aluminum door manufacturer's standard weatherstripping at door frame perimeter. Install weatherstripping throughout entire length and width of doors at jambs and heads.

.6 Install doors and hardware to manufacturers' written instructions. Clean and adjust hardware for correct performance.

.7 Adjust operable parts for correct function.

.8 Remove damaged or unacceptable Products and assemblies from Site and replace to Consultant's acceptance.

.9 Install glass presence markers, in two cross stripes extending from diagonal corners. Maintain markers until final clean-up.

3.2 CLEANING

.1 Maintain aluminum doors, inside and outside, in clean condition throughout construction period.

.2 Remove labels, protective material, and glass presence markers from prefinished surfaces.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

1. Section 08 71 10 – Door Hardware
2. Section 10 11 25 – Manufactured Specialties Item 2.1.14

1.2 REQUIRMENTS OF REGULATORY AGENCIES

1. Fabricate and install all doors to the following standards. AWMAC Quality Standards for Architectural Woodwork, latest edition
2. CAN/CSA-0132.2 Series-90, Wood Flush Doors
3. CAN4-S104-M80, fire tests of door assemblies
4. CAN4-S105-M85, Fire Door Frames
5. NFPA-80, Fire doors and Windows, latest edition.

1.3 SAMPLES

1. Submit samples in accordance with Section 01 33 00
2. Submit one 12” x 12” corner sample of each type of door
3. Show door construction, core, glazing details and faces.

1.4 SHOP DRAWINGS

1. Submit shop drawings in accordance with Section 01300 Submittals.

1.5 GUARANTEE

1. All doors shall be fully guaranteed for a period of three (3) years against manufacturing defects, core ghosting and warping, delamination of veneer, after Substantial Completion.

Part 2 General

2.1 MATERIALS

1. Acceptable door manufacturers:
   - .1 Algoma
   - .2 Cambridge
   - .3 Dormond
   - .4 Lambton
   - .5 Marshfield

2. Doors shall be of the sizes, thickness and type as shown on the drawings.

3. Solid core doors shall be constructed with urea-formaldehyde free particle board to ANSI A208.1, lD2. For Fire rated doors provide core in accordance with fire test requirements..

4. Doors shall be provided with vision panels as called for on the Door Schedules and supplied complete with wood glazing stops for 20 minute rated doors and ULC approved metal glazing stops for 45 minute or 60 minute rated doors.

5. Doors shall be complete with labels indicating approved fire resistance rated as required.

6. Undercut or rebate bottom rails as required.

7. Crossband – 3 ply hardwood plywood not less than 1/8" thick before sanding

8. Vertical and horizontal edges, stops and beads for glass and grilles to match face veneer. Edges shall be minimum 1 ½" wide by thickness of door.

9. Stiles and rails to be low density softwood staved type minimum 1 ½" wide with ¾" thick hardwood edge banding. Moisture content shall not exceed 8%.

10. Glazing beads to be flush type front edge recessed 1/8" at bottom. Mitre cut and fil all corners to form tight flush joints.

11. Face veneer shall be plastic laminate from Nevamar Plastic Laminate ARP surface distributed by McFaddens. Approved alternates by Wisonart, Formica or Arborite. Allow for maximum of 2 colours from full range, including solids and wood grains as chosen by Consultant.

12. Colours to later selection by Consultant as specified in Plastic Laminates.

2.2 FABRICATION

1. Door cores unframed, solid laminated wood stave core construction, comprising narrow pieces of kiln dried wood, grain running vertically and end joints well staggered, solid, (no voids) and electronically glue bonded. Floating core construction will not be accepted. Sand door cores boths sides prior to application of faces.

2. If particle board core or fire rated cores used, frame with 1 1/8" minimum wood stiles and 2 ¾" minimum wood rails; edge stiles with birch ¾" wide minimum, full length piece. Glue tiles and rails to core and apply face veneer and machine flush with door edges.

3. Seal tope and bottom edges with two coats urethane finish or lacquer applied to door manufacturer's plant.

4. Attach ULC labels to fire doors and frames as required

5. Preparation of doors shall include provision for extra hinges, heavy weight butts and mortised or cylinder locksets as required of hardware tender documents.

6. Preparation of doors and frames shall make appropriate provision for sound seals as indicated on Door Schedule.

7. Prepare glazing stops to receive insulated, sealed glazing as required on Door Schedule.

Part 3 Execution

3.1 FITTING AND HANGING DOORS

1. Doors shall be delivered to site, protected in transit from any damage from weather or handlying and similarly stored in a protected area until hung in place.

2. Doors shall be hung by skilled carpenters.

3. Any planning of edges required for proper installation shall be sanded smooth prior to final installation.

4. Neatly and accurately fit required finishing hardware. Refer to section 08 71 10 - Finishing Hardware.

5. The completed installation required all doors to fit accurately in their frames, swing easily without binding and close slugly without movement when latch is engaged.

3.2 HARDWARE INSTALLATION

.1 Receive hardware from Section 08 71 10.

.2 Installation of the hardware is the responsibility of the General Contactor.

.3 Adjust for correct function.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 78 00 Closeout Submittals.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM International)

.1 ASTM A653/A653M-09a, Standard Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process.

.2 Canadian Standards Association (CSA)

.1 CSA C22.1-09, Canadian Electrical Code, Part 1, Safety Standards for Electrical Installations.

.2 CAN/CSA-G40.20/G40.21-M-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steels.

.3 CAN/CSA G164-M92 (R2003), Hot Dip Galvanized of Irregulary Shaped Articles.

.4 CSA S136-M-07, North American Specification for the Design of Cold Formed Steel Structural Members.

1.3 DESIGN REQUIREMENTS

.1 Provide insulated manually and electrically operated overhead coiling doors where indicated.

.2 Calculate properties of steel sections and allowable stresses used in determination of structural performance in accordance CSA S136-M.

.3 Design for means of fully reversing downward descent of door, if door comes down on an obstruction. Door to cycle closed until obstruction is removed.

.4 Design electrical components for doors in accordance with CSA C22.1 and the Ontario Hydro Electric Safety Code.

1.4 SUBMITTALS

.1 Product data:

.1 Submit duplicate copies of manufacturer’s Product data in accordance with Section 01 22 00 indicating:

.1 Performance criteria, compliance with appropriate reference standard(s), characteristics, limitations, and trouble-shooting protocol.

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

.2 Shop Drawings:

.1 Submit shop drawings in accordance with Section 01 33 00 indicating:

.1 Elevations, sections, details, materials, operating components, dimensions, gauges, finishes, arrangement of hardware, require clearances, and relationship to adjacent construction.

.2 Complete electrical wiring diagrams including electrical schematics and sequence of operation.

.3 Complete engineering design data confirming that Products meet design criteria specified.

1.5 QUALITY ASSURANCE

.1 Perform Work of this Section by a company that has a minimum of five years proven experience in the installation of overhead coiling doors of a similar size and nature and that is approved by manufacturer. Submit to Consultant, applicator's current certificate of approval by the material manufacturer as proof of compliance.

1.6 EXTENDED WARRANTY

.1 Submit a warranty for Work of this Section in accordance with General Conditions, except that warranty period is extended to 3 years.

.1 Warranty against failure to meet design criteria and specified requirements

.2 Coverage: Complete replacement including affected adjacent Work.

Part 2 Products

2.1 ACCEPTABLE PRODUCTS AND MANUFACTURERS

.1 Door (Type 1 – manually operated):

.1 'Atlas Doors Model T33PS' by Clopay Building Products Company Inc. or approved alternative.

.2 For use at Receiving. Door to be sized at approximately 1800 mm wide x 2134 mm high.

2.2 MATERIALS

.1 Steel angles, shapes, plates, and similar items: CAN/GSA-G40.20/G40.21-M, Grade 350W.

.2 Galvanized steel sheet: commercial quality to ASTEM A653/A653M with Z275 zinc coating. Minimum sheet thickness to be as recommended by door manufacturer to suit intended application.

.3 Insulation: Polyurethane foam-injected insulation as required to meet desired thermal value.

.4 Weather stripping:

.1 Sills: bulb type full width extruded neoprene weatherstrip.

.2 Jambs and head: extruded aluminum and arctic grade vinyl weatherstrip to manufacturer's standard.

2.3 HARDWARE

.1 Brackets: Fabricated from 6.35 mm steel plate, with sealed ball bearings on the operating side.

.2 Guides: Fabricated from structural steel, complete with integral windlock bar, of sufficient depth to retain curtain to meet design criteria. Provide vinyl guide weather strip on operating side.

.3 Spring counter balance: heavy duty oil tempered torsion spring with manufacturers standard brackets:

.3 Drum: Die cast aluminum; size as recommended by door manufacturer to suit intended application.

.4 Shaft: Solid steel; size as recommended by door manufacturer to suit intended application.

.4 Crank hoist operator: Provide waist high crank hoist operator using gears and removable hand crank.

.5 Hood: Minimum 24 ga. Galvanized steel sheet. Provide neoprene hood baffle in hood to prevent air infiltration.

.6 Endlocks: Each end of alternate slats to be fitted with endlocks to act as a wearing surface in the guides and maintain slat alignment. Provide roller endlocks and windlocks for Door Type 2 as required.

.7 Reinforcing: Provide reinforcing as required for complete installation and to prevent sag.

.8 Chain Operator unit (emergency): Hand-chain actuated unit of type appropriate for the track type used. Furnish endless chain of sufficient length to come within 600mm of floor and furnish a wall mounted keeper. Design gear reduction unit to reduce pull required on the hand chain to 35 pounds maximum.

.9 Locking:

.1 Door (Type 1): Locking disc on crank box of crank hoist suitable for padlocking. Padlock by Owner.

2.5 FABRICATION

.1 Fabricate overhead coiling doors in accordance with reviewed shop drawings and manufacturer's written instructions.

.2 Coiling door curtain interlocking slat sections:

.1 Roll formed steel: no less than 66.68 mm high.

.2 Profile: 'Type T3' slat profile.

.3 Rivet continuous end locks to slat ends.

.4 Provide bottom bar of double equal weight steel angles.

.5 Form guides of metal angles of sections of 6 mm minimum thickness for between jambs installation.

.6 Construct counterbalance assembly of heat treated torsion spring with 25% overload factor. Enclose spring in steel pipe to support door curtain and counterbalance mechanism. Provide ball bearings and rotating points. Provide spring tension adjusting wheel, accessible for setting.

.7 Support counterbalance assembly on 6.35 mm minimum thickness steel plate bracket, forming end enclosures.

.8 Enclose counterbalance assembly with galvanized steel sheet formed hood.

2.6 FINISHES

.1 Prefinish sheet steel: Galvanized finish with baked on epoxy modified polyester finish in colour as selected by the Consultant.

.2 Steel: Hot dip galvanized in accordance with CAN/CSA G164-M.

Part 3 Execution

3.1 EXAMINATION

.1 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of Work means acceptance of existing conditions.

3.2 INSTALLATION

.1 Install doors as shown and in accordance with reviewed shop drawings and manufacturer's printed instructions.

.2 Fasten door guides and associated components securely to walls using anchors where required.

.3 Supply and install all necessary steel, brackets, clips, angles, supports, anchors, etc., which may be required to support the door and mechanisms.

.4 Install operator including electrical motors, controller units, pushbutton stations, relays and other electrical equipment required for door operation in accordance with CSA C22.1 and Ontario Hydro Electrical Safety Code.

.5 Erect door true to line with all hardware carefully and neatly applied. Make all necessary adjustments and leave door in proper working order.

.6 Install crank hoist in location indicated.

.7 Adjust door operating components to ensure smooth opening and closing of doors.

3.3 ERECTION TOLERANCES

.1 Maintain dimensional tolerances and alignment with adjacent work and as follows:

.1 Maximum variation and alignment from plum: 1.5 mm.
.2 Maximum variation from level: 1.5 mm.
.3 Longitudinal or diagonal warp: Plus or minus 3 mm per 3 m straight edge.

3.4 FIELD QUALITY CONTROL

.1 Testing: Test operate door and demonstrate the operation of same to the satisfaction of the Consultant.

.2 Adjust door operating components to ensure smooth opening and closing of doors.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 61 00 - Common Product Requirements.

.3 Section 01 78 00 - Closeout Submittals.

.4 Section 05 50 00 - Metal Fabrications: Metal fabricated framed openings, structural support framing for sloped glazing.

.5 Section 07 27 10 - Air Barriers - Descriptive or Proprietary.

.6 Section 07 84 00 - Firestopping: Fire safing between floor edge and curtain wall system.

.7 Section 07 92 10 - Joint Sealing: System perimeter sealant and back-up materials.

.8 Section 08 80 50 - Glazing.

.9 Section 09 91 23 - Interior Painting: Field painting of interior surface of infill.

1.2 REFERENCES

.1 Aluminum Association Designation System For Aluminum Finishes (AA)-[1997].

.1 DAF 45 [2003], Designation System For Aluminum Finishes.

.2 American Architectural Manufacturers Association (AAMA).

.1 AAMA CW-DG-1-[96], Aluminum Curtain Wall Design Guide Manual.

.2 AAMA CW-10-[97], Care and Handling of Architectural Aluminum From Shop to Site.

.3 AAMA CW-11-[85], Design Wind Loads for Buildings and Boundary Layer Wind Tunnel Testing.

.4 AAMA T1R-A1-[02], Sound Control for Fenestration Products.

.5 AAMA 501-[94], Methods of Test for Exterior Walls.

.6 AAMA 503-[92], Voluntary Specification for Field Testing of Metal Storefronts, Curtain Wall and Sloped Glazing Systems.

.7 AAMA 611-[98], Voluntary Specifications for Anodized Finishes Architectural Aluminum.

.8 AAMA 612-[02], Voluntary Specifications, Performance Requirements, and Test Procedures for Combined Coatings of Anode Oxide and Transparent Organic Coatings on Architectural Aluminum.

.9 AAMA 2603-[02], Voluntary Specification Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.

.10 AAMA 2604-[02], Voluntary Specification Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.

.3 American Society for Testing and Materials International, (ASTM).

.1 ASTM A36/A36M-[103a], Specification for Carbon Structural Steel.

.2 ASTM A123/A123M-[02], Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

.3 ASTM A167-[99], Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

.4 ASTM A653/A653M-[03], Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.5 ASTM B209-[02a], Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

.6 ASTM B221-[02], Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

.7 ASTM E283-[91(1999)], Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

.8 ASTM E330-[02], Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls, by Uniform Static Air Pressure Difference.

.9 ASTM E331-[00], Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform Static Air Pressure Difference.

.10 ASTM E413-[87(1999)], Classification for Rating Sound Insulation.

.11 ASTM E1105-[00], Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.

.4 Canadian General Standards Board (CGSB).

.1 CAN/CGSB 1.108-[M89], Bituminous Solvent Type Paint.

.2 CAN/CGSB-12.20-[M89], Structural Design of Glass for Buildings.

.5 Canadian Standards Association (CSA International).

.1 CSA-G40.20/G40.21-[98(R2003)], General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steels.

.2 CAN/CSA-G164-[M92(R2003)], Hot Dip Galvanizing of Irregularly Shaped Articles.

.3 CSA-S136-[01], North American Specification for the Design of Cold-Formed Steel Structural Members.

.4 CAN3-S157-[M83(R2002)], Strength Design in Aluminum.

.5 CSA W59.2-[M1991(R2003)], Welded Aluminum Construction.

.6 Environmental Choice Program (ECP).

.1 CCD-45-[95], Sealants and Caulking Compounds.

.2 CCD-47-[1998], Surface Coatings.

.3 CCD-48-[95], Recycled Water-Borne Surface Coatings.

.7 Society for Protective Coatings (SSPC).

.1 SSPC - Paint 20 Zinc Rich Coating.

.2 SSPC - Paint 25 Alkyd, Zinc Oxide Linseed Oil and Primer for Use Over Hand Cleaned Steel Type 1 and Type 2.

1.3 SYSTEM DESCRIPTION

.1 Work included: Furnish labour, materials and other services to complete the fabrication and installation of the framing, including all materials and fitments required for the operation of any entrance units included, in the manner, direction and performance shown on the shop drawings and specified herein. Work not included: Structural support of framing, interior trims. Related work specified elsewhere.

1.4 QUALITY ASSURANCE

.1 Installation crews engaged or provided by the approved supplier shall have proven experience specifically trained and qualified in this work (written proof of minimum of five (5) years employment or service with the window manufacturer or similar manufacturer). Individuals are to be either employees of the manufacturer and/or workers approved by the manufacturer.

.2 Provide one (1) thoroughly experienced. reliable, qualified and competent foreman in charge of the work to be on site at all times when work is taking place. Individual to be designated in charge from start of activities on site until final deficiencies are complete. Foreman may only be changed by written approval *or request* of the Consultant or owner.

.3 Window supplier is to have adequate plant and skilled tradesmen and is known to have manufactured and installed similar windows for a minimum of five (5) years in the Province of Ontario.

1.5 PERFORMANCE REQUIREMENTS

.1 Structural performance shall be based on CSA standard CAN3-S157 "Strength Design in Aluminum" and a maximum deflection of 1/175 of the span.

.2 Air infiltration shall not exceed 0.06 cfm/ft2 (0.0003 m3/s-m2) when tested in accordance with ASTM E283 at a pressure differential of6.24p.s.f. (300 Pa.)

.3 There shall be no water infiltration when tested in accordance with ASTM E331 with a pressure differential of 15.0 p.s.f. (720 Pa.) Thermally, the grid members shall have a condensation resistance equal to or better than the area along the bottom of a 1" sealed glass unit with standard metal spacer edge construction.

.4 Size glass units and glass dimensions to limits established in CAN/CGSB-12.20.

.5 Provide system to accommodate, without damage to components or deterioration of seals:

.1 Movement within system.

.2 Movement between system and perimeter framing components.

.3 Dynamic loading and release of loads.

.4 Deflection of structural support framing.

.5 Shortening of building concrete structural columns.

.6 Creep of concrete structural members.

.6 Vapour seal with interior atmospheric pressure of 25 mm sp, 22 degrees C, 40% RH: No failure.

.7 Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to the exterior by a weep drainage network.

.8 Ensure no vibration harmonics, wind whistles, noises caused by thermal movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system occur.

1.6 PRODUCT DATA

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

.2 Provide component dimensions; describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details and water flow diagrams.

1.7 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Indicate system dimensions, framed opening requirements and tolerances, internal million reinforcement, adjacent construction, anchor details anticipated deflection under load, affected related Work, weep drainage network, expansion and contraction joint location and details, and field welding required.

.3 Curtain wall shop drawings are to be approved for structural integrity by a Professional Engineer licensed to design structures in the Province of Ontario. Shop drawings are to bear Engineer’s seal of approval.

1.8 SAMPLES

.1 Drawings and specifications for work of this section are based upon Thermawall 2600 series Curtain Wall system by Alumicor. For all approved products and acceptable alternatives, submit supporting technical literature, samples, drawings and performance data to meet or exceed these specifications.

.2 Submit two samples 800 x 800 mm in size illustrating prefinished aluminum surface, finish, colour, texture, specified glass units, insulated infill panels, glazing materials illustrating edge and corner.

1.9 DESIGN DATA

.1 Submit design data in accordance with Section 01 33 00 - Submittal Procedures.

.2 Provide framing member structural and physical characteristics, calculations, dimensional limitations, special installation requirements.

1.10 TEST REPORTS

.1 Submit test reports in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit substantiating engineering data, test results of previous tests by independent laboratory which purport to meet performance criteria, and supportive data.

1.11 REGULATORY REQUIREMENTS

.1 Conform to applicable code for acoustic attenuation, and sound transmission.

.2 Use the following paragraph for assessing full sized erected assemblies for review of construction, coordination of work of several sections, testing, or observation of operation. A mock-up may also be used for assessing field applied finishes.

1.12 MOCK-UP

.1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.

.2 Locate where directed.

.3 Allow 24 hours for inspection of mock-up Consultant before proceeding with work.

.4 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may not remain as part of finished work.

1.13 PRE-INSTALLATION MEETING

.1 Convene one week before starting work of this section.

1.14 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, store, handle and protect materials in accordance with Division 1 requirements.

.2 Handle work of this section in accordance with AAMA CW-10.

.3 Protect prefinished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.

1.15 ENVIRONMENTAL REQUIREMENTS

.1 Do not install sealants when ambient and surface temperature is less than 5 degrees C.

.2 Maintain this minimum temperature during and after installation of sealants.

1.16 SEQUENCING

.1 Coordinate work of this section with installation of fire stopping, air barrier placement, vapour retarder placement, flashing placement, installing ductwork to rear of louvers.

1.17 WARRANTY

.1 Submit a manufacturer's warranty against defects in materials and workmanship covering the components of the window system for a period of ten (10) years. The manufacturer shall supply a non-pro-rated warranty covering labour, materials, tools and equipment to repair and/or replace any materials defects at no additional cost, for a period of ten (10) years including defects or failures due to poor workmanship and installation.

.2 The supplier shall also submit a warrantee, in accordance with Section 088050-Glazing, for 10 years warranting the sealed units against defects.

1.18 MAINTENANCE DOCUMENTS AND MATERIALS

.1 Provide 2 copies of data for maintenance and routine cleaning.

.2 Provide 2 copies of final record reviewed shop drawings for owner's records.

.3 Contractor shall supply all accessories as may be required for the operation and performance of the windows system.

1.19 EXTRA MATERIALS

.1 Provide extra materials of glass units in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide protected and packaged in wood crates suitable for storage. Clearly identify each crate.

.3 Deliver Consultant, upon completion of the work of this section.

.4 Store where directed by Consultant.

1.20 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

Part 2 Products

2.1 MATERIALS

.1 **Exterior Curtain Walls** – Alumicor Thermawall 2600 or Kawneer 1600UT, Ultra Thermal Performance curtain wall, (63.5 mm x 190.5mm – incl. glazing & cap).

.1 Must be designed to withstand a wind load of min. 30 psf.

.2 Provide high thermal performance gaskets.

.3 Fixed (non opening) thermally broken anodized aluminum curtain wall system, glazed with tempered, insulating vision glass and tempered spandrel glass.

.4 Standard pressure cap for most locations.

.5 Deep Pressure Cap: Provide 150mm extended pressure cap where noted on drawings.

.6 Provide double width mullion where required (near main entrance).

.7 Provide Structural Silicone Mullion (SSG) where noted on drawings. Back section depth to match capped assembly where noted in drawings.

.8 Provide operable 'phantom vent 5000' where indicated on drawings.

.9 Provide insect screens to operable vents at Learning Commons and Art Classrooms.

.2 **Interior Curtain Walls** - Drawings and Details are based on Alumicor Versawall 2500 (non-thermal) curtain wall, (63.5 mm x 153mm – incl. glazing & cap).

.1 Fixed (non opening) anodized aluminum curtain wall system, glazed with tempered, vision glass and tempered spandrel glass.

.3 Acceptable Materials : Curtain wall systems meeting or exceeding these specifications manufactured by:

.1 Alumicor
.2 Aerloc Industries
.3 Alwind Industries
.4 Kawneer Company of Canada
.5 Windspec Inc.

.4 Extrusions shall be 6063 T54 alloy and temper.

.5 Formed aluminum components shall be sheet of alloy and temper suitable for their purpose and finish.

.6 Fasteners shall be 300 series stainless steel or 400 series stainless steel cadmium plated and of sufficient size and quantity to perform their intended function.

.7 Weathering and glazing gaskets shall be extruded, black, closed cell or dense elastomer of durometer appropriate to the function.

.8 Provide glazed and aluminum spandrel sections where indicated on drawings.

.9 Provide structural silicone mullions where described on drawings.

.10 Refer to Section 08 80 50 – Glazing for information on tinted glazing sections and glazed spandrel panels. Refer to drawings for locations.

.11 Manufacturer / Installer to determine if mullions require internal reinforcement to achieve specified load resistance.

.12 At all curtain wall spandrel panels exposed on interior of building, curtain wall spandrel panels shall be laminated with aluminum panel of same pre-finish as mullions with bent edges.

.13 Allow for two (2) additional colours of exterior infill panels other than anodized. Enamel finish shall be PPG Duranar finish (Kynar 500), 10,000 series or approved alternate.

2.2 FINISHES

.1 CLEAR ANODIZED.

.1 Exposed aluminum sections shall be given an anodic oxide treatment in accordance with Aluminum Association specification AA-M12C22A31: "Clear anodized".

.2 Custom Duranar finish on accent extended depth mullions where noted on drawings. Colour to be selected by consultant.

2.3 ALUMINUM SPANDRAL PANEL

.1 Composition: Two sheets of aluminum sandwiching a core of extruded thermoplastic formed in a continuous process without the use of glues or adhesives between dissimilar materials. Bond integrity testing to adhere to ASTM D1781-76

.2 Aluminum face sheets: Aluminum alloy 3003, thickness: 0.51 mm

.3 Panel thickness: 4 mm

.4 Panel weight: 5.28 kg/sq.m.

.5 Tolerances:

.1 Panel bow: Maximum 0.8% of panel dimension (width or length).

.2 Panel Dimensions: Take site measurements before proceeding with production unless dimensions can be guaranteed by General Contractor.

.3 Panel lines, breaks and angles to be sharp and true; panel surfaces to be free from warp or buckle.

.6 Panel System: Dry joint SL-2000 with 12.5 mm wide panel joints using proprietary aluminum extrusions.

.7 Acceptable material and manufacturer:

.1 Alucobond Plus supplied by Sobotec Ltd., 67 Burford Road, Hamilton Ontario, L8E 3C6 Tel: 905-578-1278.

.2 Similar systems meeting the exact fire rated and compositional requirements of this specification section by "Alpolic" by Mitsubishi Chemical; Vicwest (905 825-2252), Kanalco Ltd (tel: 905-623-2303) or Flynn Canada, or Alcotex as supplied by Ontario Panelization (tel. 519 659-8900) or others approved by Consultant.

.8 Aluminum Composite to have a fire resistant core, meeting OBC requirements for non-combustible materials.

.9 Refer to 'Glazing' specification for glazed spandrel panels.

.2 Panel finishes: Duranar, three coat, coil-coated baked enamel finish containing Kynar 500 polyvinylidene fluoride resin, metallic finish as specified below.

.3 Panel Colours: Allow for 1 colour as follows:

.1 **Colour A**: to match quality level, finish and colour series as Alpolic Metallic Series, colour to be confirmed.

.2 Locations: spandrel wall panels noted on drawings.

.3 Contractor to submit triplicate samples of colours for review by Consultant prior to order and fabrication.

2.4 FABRICATION

.1 Fabricate aluminum work in accordance with reviewed shop drawings and manufacturer's written instructions.

.2 Fabricate framing from extrusions of size and shape shown on shop drawings.

.3 Vertical and horizontal members shall be tubular extrusions designed for shear block comer construction.

.4 All joints shall be accurately machined, assembled and sealed to provide neat weather tight joints. Shielded drainage and pressure equalization vents shall be provided where required. AH horizontal members shall be sealed to vertical members to provide individual compartments within the system in accordance with the rain screen principle.

.5 Fabricate system components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.

.6 Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.

.7 Prepare components to receive anchor devices. Install anchors.

.8 Arrange fasteners and attachments to ensure concealment from view.

.9 Reinforce framing members for external imposed loads.

.10 Visible manufacturer's identification labels not permitted.

.11 Break shapes must be approved by the Consultant prior to use.

.12 At all curtain wall spandrel panels exposed on interior of building, curtain wall spandral panels shall be laminated w/ aluminum panel of same pre-finish as mullions with bent edges.

.13 Provide spandrel panels at locations of exterior light fixtures as shown on elevations. Coordinate with Div. 16 for lighting location and size of openings.

.14 All perimeter sections to be tubular/closed back sections for continuous adhesion and continuity of building envelope membrane.

.15 Spandrel panels:

.1 Fabricate insulated spandrel panel inner facing of 20 gauge aluminum sheet. Wrap edges with aluminum sheet, enabling installation and minor movement of perimeter seal.

.2 Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.

.3 Place insulation within panel, adhered to exterior face of interior panel sheet over entire area of sheet with impale fasteners.

.4 Provide integral reinforcing and stiffeners as required to reinforce panel against deflection caused by wind and suction loads.

.5 Provide non-metallic spacers as necessary to separate dissimilar metals.

.6 Ventilate and pressure equalize the air space outside the exterior surface of the insulation, to the exterior.

.7 Arrange fasteners and attachments to ensure concealment from view.

.8 Glass panels: Consists of spandrel glass in accordance with Section 08 80 00 to the exterior with insulated backpan to the inside. Interior face of panel to be finished with a pre-finished aluminum sheet of the same grade as the exterior, colour matching the exterior. Insulation thickness shall be as indicated, retained with stick clips. Seal all joints in shop with high grade butyl sealant, including perimeter seal at backpan. Colour to later selection by Consultant.

.9 Metal panels: Consists of an exterior prefinished flush aluminum panel with panel stiffeners as required, to match colour of window framing, with insulation core thickness as indicated and galvanized sheet back-pan. Interior face of panel to be finished with a pre-finished aluminum sheet of the same grade as the exterior, colour matching the exterior.

Part 3 Execution

3.1 EXAMINATION

.1 Verify dimensions, tolerances, and method of attachment with other work.

.2 Verify wall openings and adjoining air barrier and vapour retarder materials are ready to receive work of this section.

3.2 INSTALLATION

.1 Framing shall be installed, glazed and adjusted by experienced personnel in accordance with the manufacturer's instructions and approved shop drawings. All items in this section shall be set in their correct location and shall be set level, square, plumb and at proper elevations and in alignment with other work.

.2 Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

.3 Provide alignment attachments and shims to permanently fasten system to building structure. Clean weld surfaces; apply protective primer to field welds and adjacent surfaces.

.4 Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances and align with adjacent work.

.5 Provide thermal isolation where components penetrate or disrupt building insulation.

.6 Co-ordinate attachment and seal of perimeter air barrier and vapour retarder materials.

.7 Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

.8 Install fire-safing in areas as indicated.

3.3 FIELD QUALITY CONTROL

.1 Inspection will monitor quality of installation and glazing.

.2 Test to ASTM E1105, and AAMA 501.

.3 Evaluate installed system by thermo-photographic scan.

3.4 ADJUSTING

.1 Adjust operating sash for smooth operation.

3.5 CLEANING

.1 Remove protective material from prefinished aluminum surfaces.

.2 Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.

.3 Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

3.6 PROTECTION

.1 Protect finished Work from damage.

.2 Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint."

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 11 – Final Cleaning.

.3 Section 08 80 50 – Glazing.

.4 Section 07 92 10 - Joint Sealing: caulking of joints between frames and other building components.

1.2 REFERENCES

.1 Aluminum Association (AA), Designation System for Aluminum Finishes (2000)

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.40-[97], Anticorrosive Structural Steel Alkyd Primer.

.2 CAN/CGSB-79.1-[M91], Insect Screens.

.3 Canadian Standards Association (CSA) International

.1 CSA-A440-[00]/A440.1-[00], A440-[00], Windows / Special Publication A440.1-[00], User Selection Guide to CSA Standard A440-[00], Windows.

.2 CAN/CSA-G164-[M92(R1998)], Hot Dip Galvanizing of Irregularly Shaped Articles.

.3 CAN/CSA-Z91-[M90(R2000)], Safety Code for Window Cleaning Operations.

1.3 SYSTEMS AND MANUFACTURERS

.1 Drawings and details are based on 1970 Series RainBlade with 1350 Series Vents as manufactured by Alumicor Ltd.

.2 Approved exterior window systems meeting or exceeding these specifications by the following manufacturers are to be supplied:

.1 Alumicor
.2 Aerloc Industries
.3 Alwind Industries
.4 Kawneer Company of Canada
.5 Windspec Inc.”

.3 Work of this Section must be designed by a Professional Engineer licensed to design structures in the Province of Ontario.

.4 By submitting a price for supply and install; the Contractor for work to this section shall guarantee that he has carried products and pricing from one of the above approved manufacturers.

.5 All curtain wall framing has been drawn using a nominal 5-1/4" framing and set back 30mm from brick veneer face.

.6 All punch window framing has been drawn using a nominal 6" framing and set back 60mm from brick veneer face.

1.4 QUALITY ASSURANCE

.1 Installation crews engaged or provided by the approved supplier shall have proven experience specifically trained and qualified in this work (written proof of minimum of five (5) years employment or service with the window manufacturer or similar manufacturer). Individuals are to be either employees of the manufacturer and/or workers approved by the manufacturer.

.2 Provide one (1) thoroughly experienced. reliable, qualified and competent foreman in charge of the work to be on site at all times when work is taking place. Individual to be designated in charge from start of activities on site until final deficiencies are complete. Foreman may only be changed by written approval *or request* of the Consultant or owner.

.3 Window supplier is to have adequate plant and skilled tradesmen and is known to have manufactured and installed similar windows for a minimum of five (5) years in the Province of Ontario.

1.5 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Clearly indicate on shop drawings all materials and large scale details for head, jamb and sill as they will be installed in contact with building components for this project, profiles of components, elevations of unit, anchorage details, location of isolation coating, location of insulation to jambs head and sill, drainage locations, description of related components and exposed finishes and fasteners.

.3 Show paths of interior drainage and venting.

1.6 CERTIFICATES

.1 Submit manufacturer's certificate, and test performance data certifying compliance with specification requirements from an Independent Testing Laboratory, for:

.1 windows
.2 finishes.
.3 removable self framed insect screens.
.4 infiltration/exfiltration rates.
.5 thermal transfer resistance of frames.
.6 locking hardware
.7 vandal resistance

1.7 PERFORMANCE

.1 The overall thermal transmittance of fenestration assemblies shall be less than 0.81 Btu. Thermal transmittance for the fenestration shall be determined using ASHRAE 90.1 calculation procedures and shall include the effect of sash, frame, edge effect and spacer for multiple-glazed units.

.2 Fenestration shall meet CAN/CSA – A440 windows:

- .1 Air Leakage: A3
- .2 Water Leakage: B7
- .3 Wind Load Resistance: C5
- .4 Condensation Resistance Factor: fixed frame: 60 minimum
- .5 Glass: 59 minimum

.3 Window shall also meet the requirements for blocked operation, ease of operation, sash strength, stiffness and resistance to forced entry.

.4 Submit test reports from a recognized Canadian Independent Testing Laboratory as well as manufacturer's certificate, certifying compliance with the above-noted requirements.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal recyclable packaging materials in appropriate on-site for recycling.

.3 Unused or damaged glazing materials are not recyclable and must not be diverted to municipal recycling programs.

.4 Divert unused or damaged wood materials from landfill to recycling facility approved by Consultant.

.5 Divert unused metal materials from landfill to metal recycling facility approved by Consultant.

.6 Divert unused caulking material from landfill to official hazardous material collections site approved by Consultant.

.7 Plastic caulking tubes are not recyclable and must not be diverted for recycling with other plastic materials.

1.9 WARRANTY

.1 Submit a manufacturer’s written warranty against defects in materials and workmanship covering the components of the window system for a period of five (5) years. The manufacturer shall supply a non-pro-rated warranty covering labour, materials, tools and equipment to repair and/or replace any materials defects at no additional cost, for a period of five (5) years including defects or failures due to poor workmanship and installation.

.2 The supplier shall also submit a written warrantee, in accordance with Section 088050-Glazing, for ten (10) years warranting the sealed units against defects.

1.10 MAINTENANCE DOCUMENTS AND MATERIALS

.1 Provide 2 copies of data for maintenance and routine cleaning.

.2 Provide 2 copies of final record reviewed shop drawings for owner's records.

.3 Contractor shall supply all accessories as may be required for the operation and performance of the windows system.

1.11 MOCK UP

.1 Construct a window mock up in accordance with Section 01 45 00 – Quality Control. Allow 24 hours for inspection of mock-up by Consultant before proceeding with work. When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may not remain as part of finished work."

Part 2 Products

2.1 MATERIALS

.1 Extrusions shall be AA6063 T54 alloy and temper for framing.

.2 Formed aluminum sheet and plate components shall be AA1100-H14 alloy and temper suitable for their purpose and finish.

.3 Exposed anodized sheet and plate to AA5005-H14 alloy and temper or AA1100-H14 alloy and temper (anodizing quality, 1.6 mm thickness).

.4 Non-exposed sheet and plate to AA3003-H14 alloy and temper, mill finish.

.5 Fasteners shall be 300 series stainless steel or 400 series stainless steel cadmium plated and of sufficient size and quantity to perform their intended function.

.6 Weathering and glazing gaskets shall be extruded, black, closed cell or dense elastomer of durometer appropriate to the function.

.7 Glazing tapes shall be preformed polyisobutylene-butyl glazing tape with integral shim strip, 10-15 durometer, hardness, paper release, black color. Acceptable materials: Tremco Polyshim II by Tremco Ltd.

.8 Exterior Sills: extruded aluminum, minimum 3 mm thick, complete with joint covers, complete with jamb drip deflectors on both sides of each sill (refer also to drawings for type), chairs, anchors, anchoring devices. All corners shall be ground or rounded to eliminate burrs and sharp edges. Sills to be one continuous piece along sill of window. Review installation with the consultant prior to caulking.

.9 Sealants: shall be in accordance with Section 07900. Colours to Consultant's selection to either match building materials or window frame.

.10 Foam Backer Rod: to be extruded, closed cell foam, round polyethylene rope, minimum 25% wider than width of joint cavity to be caulked. To be compatible with primers and sealants.

.11 Void filler foam: one part expanding polyurethane closed cell foam by BASF, Hilti or approved alternate specifically designed for window applications. To be compatible with primers and sealers

.12 Bedding Compound: to CGSB 19-GP-14M.

.13 Isolation Coating: alkali resistant bituminous paint.

.14 Vandal Screens: if called for on drawings, prefinished metal vandal screens shall be by Armoured Guard Security Screens Inc. Tel. 1 877-372-7336. Colour as selected by Architect.

2.2 FABRICATION

.1 Fabricate in accordance with CSA-A440/A440.1 supplemented as follows:

.2 Fabricate framing from extrusions of size and shape shown on shop drawings. Interior and exterior extruded aluminum framing sections shall be integrated with a glass reinforced nylon thermal break to form a rigid composite assembly without the use of fasteners or other thermal bridging elements.

.3 Composite frame assembly shall have a minimum of 1100 lbf/4 in. (4815N/ 100 mm) resistance to shear between the aluminum and the thermal break materials.

.4 Dry shrinkage of the thermal break shall not exceed 0.1% of the framing member length.

.5 Fixed framing shall be designed for screw spline corner construction. 518 ISOPORT frameless vent operating sash extrusions shall be tubular with mitred, clip, adhesive , stake joint construction.

.6 All framing joints shall be accurately machined, assembled, and sealed to provide neat weather tight connections. Coupling mullions shall be designed to provide a functional split to permit modular construction and allow for thermal expansion. Glass stops shall be aluminum and lock-in screwless type.

.7 All glazing pockets shall be vented, pressure equalized and drained to the exterior.

.8 Elastomeric air seal gasket shall be installed around the full perimeter of glass and sealed at corners wit silicone sealant. Air seal gasket must provide adhesion with silicone sealant.

2.3 ALUMINUM FINISHES

.1 Exposed aluminum sections and infill panels or interior column covers, if any, shown on drawings be given an anodic oxide treatment in accordance with Aluminum Association specification AA-M12C22A31. and clear anodized Class II, 10μm (.0004 inch.) in accordance with AAMA 611.

.2 For exterior spandrel panels –if required on the project, to be a clear anodized infill panel to match windows finish complete with solid support substrate and insulation layer, anodized aluminum smooth or textured finish to Consultant selection.

.3 Allow for two (2) additional colours of infill panels other than anodized. Enamel finish shall be PPG Duranar finish (Kynar 500), 10,000 series or approved alternate.

.4 Final approval of finish and colour to be made by Consultant.

2.4 HARDWARE

.1 Hinging hardware shall be 4 bar concealed hinge 301 Series Heavy Duty Steel 4 bar hinges by Anderberg with positive stop and adjustable friction shoe. Following review window operator location conditions on site, install metal bar restrictors to each hinge at jamb to allow maximum 225 mm opening. only following Consultant direction. Sash projection shall not extend past exterior plane of building wall

.2 For bottom hinged open-in vents, where shown, provide solid cast cam handles and keepers in white satin bronze. Do not cut cam handles to fit sash profiles. Where possible secure cam handles with fastenings concealed from view at underside of frame for top hinged units. Provide a minimum of two (2) solid bronze or stainless steel cam handles per awning unit.

.3 For top hinged/side hinged open out sashes provide roto-operators.

.4 If shown on drawings, provide Teleflex mechanical operators and manual crank operating system for all windows where cams are required to be higher than 1800 above finished floor. Refer to drawings for locations.

2.5 INSECT SCREENS

.1 Fly screens: Provide to all operable units meeting CGSB 79-GP-1M and CSA/CAN-A440 rating heavy duty shall consist of extruded aluminum frame having a wall thickness of 1.9 mm, finish to match windows. Screen cloth shall be 18 x 14 aluminum mesh.

2.6 ISOLATION COATING

.1 Isolate aluminum from following components, by means of isolation coating:

.1 Dissimilar metals except stainless steel, zinc, or white bronze or small area.

.2 Concrete, mortar and masonry.

.3 Wood.

2.7 GLAZING

.1 Prepare windows to receive 25 mm thick double glazed insulating glass specified under Section 088050 – Glazing. Glaze windows in accordance with CSA-A440/A440.1.

2.8 THRU-WALL FLASHING

.1 Sub-sill flashings to be Blueskin SA by Bakor in locations shown on drawings. Adhere to substrate using primer approved by manufacturer. Ensure clean-up of excess primer and no visible edges of flashing upon completion of the work.

2.9 EXTRUDED SILLS

.1 Sills are to be a minimum of 7 degree (7°) downward slope and integral drip which extends a minimum of 25 mm from the face of the wall cladding.

.2 Install metal sills with uniform wash to exterior, level in length, straight in alignment with plumb upstands and faces. Break form shapes are not permitted.

2.10 ALUMINUM PANNING

.1 Panning to be extruded aluminum minimum 1.6 mm thick with pre-coated finish to be identical process and match to aluminum frames and sills. Break form shapes are not permitted.

.2 Submit samples of panning along with samples of other extrusions and materials.

.3 Metal panning to be designed to lock into new window frames and have true flat planes with no twists, buckles dents, “oil canning” or other similar visual defects caused by manufacturing or handling.

Part 3 Execution

3.1 PREPARATION

.1 Protect adjacent surfaces from damage resulting from work under this specification.

3.2 WINDOW INSTALLATION

.1 Install in accordance with CSA-A440/A440.1.

.2 Arrange components to prevent abrupt variation in colour.

.3 Install the windows in accordance with the manufacturer’s instructions. Install the windows plumb, level and true relative to building structure. Do not exceed 3mm in 3050 mm (1/8” in 10’0”) variation from plumb and level. Foam insulate between the frame members and the window opening using a single component polyurethane foam, insulating sealant.

3.3 SILL INSTALLATION

.1 Install metal sills with uniform wash to exterior, level in length, straight in alignment with plumb upstands and faces. Ensure integral end caps are secured with no burrs or exposed sharp edges and do not require excessive caulking due to profiles at jamb. Break form shapes are not permitted. Include sill end dams of same material. Ensure no sharp edges.

3.4 CAULKING

.1 Seal joints between frame members and other non-operating components with sealant to provide weathertight seal at outside.

.2 Seal joints between windows and window sills with sealant. Bed sill expansion joint cover plates and drip reflectors in bedding compound. Caulk between sill upstand and window-frame. Caulk butt joints in continuous sills.

.3 Apply sealant in accordance with Section 07 92 10 - Joint Sealing. Conceal sealant within window units except where exposed use is permitted by Consultant.

.4 Interior trims and sealant not to be applied until installed window has been inspected and approved by Consultant.

3.5 CLEAN UP

.1 Clean glass at the factory. For final cleaning of glass to remove job site soiling refer to Section 088050 - Glazing. Leave all surfaces clean, free from sealants, caulking or other foreign material. Remove all surplus materials and debris resulting from the work of this Trade.

.2 Refer to other sections for requirements to make good all finishes.

3.6 PROTECTION

.1 Aluminum shall be isolated from concrete, mortar, plaster or dissimilar metals with bituminous paint or epoxy solution. Framing shall be protected from other building materials during and after installation until acceptance.

END OF SECTION

PART 1 - GENERAL

1.1 This hardware schedule has been prepared by:

Commercial Doors & Hardware Ltd.
2150 Winston Park Dr., Oakville, ON

Ross Ruprecht
Architectural Sales Consultant

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PART 2 - FINISHING HARDWARE SCHEDULE

Refer to the Finishing Hardware List on the following pages.

Finishing Hardware Schedule

Oakville #5 P.S. HDSB

Architect
Hossack Architecture

Detailer: **RILEY RYKHOFF**
Consultant: **ROSS RUPRECHT B.A., A.H.C.**

Plan Revision: **1**
Submittal Date: **May 1/24, Nov 3/25, Nov 14/25, Nov 18/25, Nov 19/25**

Manufacturers & Finishes

Manufacturers

Baron Metal
BEST
Camden
Canadian Builders Hdw
CBH
Gallery
Glynn-Johnson
GYRO-TECH
Ives
K.N. Crowder
LCN
MISC
Schlage
Schlage E.S.
UNK
Von Duprin
Zero

Finishes

626 - Satin chromium plated over nickel
628 - Satin aluminum, clear anodized
630 - Satin stainless steel
652 - Satin chromium plated over nickel
689 - Aluminum painted
US26D - Satin chromium plated over nickel
US28 - Satin aluminum, clear anodized
US32D - Satin stainless steel

Openings Schedule

Opening Number(s)	Qty	Type	Door Catalog	Location 1	To/ From	Location 2	Nominal Width	Nominal Height	Door Thickness	Hand	Label	Degree of Opening	Hardware Group	Heading Num.	Remarks
101A	1	Pair	<Aluminum>	EXTERIOR	FROM	VESTIBULE	1000, 1000	2150	57	LHRA/RHRA		90°	39	1	CH, ADO, ES, CR , VINT , CW1FM
101B	1	Pair	<Aluminum>	EXTERIOR	FROM	VESTIBULE	1000, 1000	2150	57	LHRA/RHRA		90°	EXT ALUM PR	2	CH , CW1FM
101C	1	Pair	<Hollow Metal>	VESTIBULE	FROM	LOBBY	1000, 1000	2150	45	LHRA/RHRA		90°	41	3	ADO
101D	1	Pair	<Hollow Metal>	VESTIBULE	FROM	LOBBY	1000, 1000	2150	45	LHRA/RHRA		90°	O101C	4	
103A	1	Single	<Hollow Metal>	LOBBY	TO	GENERAL OFFICE	1050	2150	45	LH		90°	O103A	5	ADO
104A	1	Single	<Wood>	GENERAL OFFICE	TO	OFFICE	950	2150	45	LH		90°	36	6	
105A	1	Single	<Wood>	GENERAL OFFICE	TO	OFFICE	950	2150	45	LH		90°	36	6	
106A	1	Single	<Wood>	GENERAL OFFICE	TO	OFFICE	950	2150	45	LH		90°	36	6	
107A	1	Single	<Wood>	GENERAL OFFICE	TO	MEETING	950	2150	45	LH		90°	36	6	
108A	1	Single	<Wood>	GENERAL OFFICE	TO	HEALTH	950	2150	45	LH		90°	36	6	
109A	1	Single	<Hollow Metal>	HEALTH	FROM	B/F W/R	950	2150	45	RHR		90°	WR ADO PUSH	7	NOV 3/25 ADD ADO
110A	1	Single	<Hollow Metal>	GENERAL OFFICE	TO	COPY	950	2150	45	RH		90°	O110A	8	
110B	1	Single	<Hollow Metal>	LOBBY	FROM	COPY	950	2150	45	LHR		90°	29 OHS	9	
111A	1	Single	<Hollow Metal>	CORRIDOR	TO	STAFF LOUNGE	950	2150	45	RH	ULMYLX.75	90°	29	10	
112A	1	Single	<Hollow Metal>	EXTERIOR	FROM	SPRINKLER	950	2150	45	RHR		110°	EXT STORAGE SGL	11	
112B	1												NO DR	12	1100 W x 2200 H DOOR OPENING IN WALL. REFER TO ELEVATION. DOUBLE BULLNOSE BLOCK AT JAMBS
113A	1	Single	<Hollow Metal>	CORRIDOR	TO	ELECTRICAL	950	2150	45	LH	ULMYLX.75	90°	15	13	STANLEY CANADA LOCK / BEST
115A	1	Single	<Wood>	CORRIDOR	TO	KINDERGARTEN CLASSROOM	950	2150	45	RH		180°	CLASS RM WS DC	14	DC FOR AUDIBLE BUZZER
116A	1	Single	<Hollow Metal>	KINDERGARTEN CLASSROOM	FROM	B/F W/R	950	2150	45	LHR		90°	WR KINDER ADO PUSH OHS	15	
117A	1	Single	<Hollow Metal>	KINDERGARTEN CLASSROOM	FROM	STORAGE	950	2150	45	LHR		90°	52 STORAGE NO CL	16	
118A	1	Single	<Hollow Metal>	KINDERGARTEN CLASSROOM	FROM	STORAGE	950	2150	45	RHR		90°	52 STORAGE NO CL	16	

Opening Number(s)	Qty	Type	Door Catalog	Location 1	To/ From	Location 2	Nominal Width	Nominal Height	Door Thickness	Hand	Label	Degree of Opening	Hardware Group	Heading Num.	Remarks
119A	1	Single	<Hollow Metal>	KINDERGARTEN CLASSROOM	FROM	B/F W/R	950	2150	45	RHR		90°	WR KINDER ADO PUSH OHS	15	
120A	1	Single	<Wood>	CORRIDOR	TO	KINDERGARTEN CLASSROOM	950	2150	45	LH		180°	CLASS RM WS DC	14	DC FOR AUDIBLE BUZZER
121A	1	Single	<Wood>	CORRIDOR	TO	KINDERGARTEN CLASSROOM	950	2150	45	RH		180°	CLASS RM WS DC	14	DC FOR AUDIBLE BUZZER
122A	1	Single	<Hollow Metal>	KINDERGARTEN CLASSROOM	FROM	B/F W/R	950	2150	45	LHR		90°	WR KINDER ADO PUSH OHS	15	
123A	1	Single	<Hollow Metal>	KINDERGARTEN CLASSROOM	FROM	STORAGE	950	2150	45	LHR		90°	52 STORAGE NO CL	16	
124A	1	Single	<Hollow Metal>	KINDERGARTEN CLASSROOM	FROM	STORAGE	950	2150	45	RHR		90°	52 STORAGE NO CL	16	
125A	1	Single	<Hollow Metal>	KINDERGARTEN CLASSROOM	FROM	B/F W/R	950	2150	45	RHR		90°	WR KINDER ADO PUSH OHS	15	
126A	1	Single	<Wood>	CORRIDOR	TO	KINDERGARTEN CLASSROOM	950	2150	45	LH		180°	CLASS RM WS DC	14	DC FOR AUDIBLE BUZZER
114A	1	Single	<Hollow Metal>	CORRIDOR	TO	RECYCLING & CUSTODIAN STORAGE AREA	1100	2150	45	LH	ULMYLX.75	90°	16	17	
114B	1	Single	<Hollow Metal>	EXTERIOR	TO	RECYCLING & CUSTODIAN STORAGE	950	2150	45	RHR		110°	EXT STORAGE SGL	11	
114C-OH	1	Single	<Hollow Metal>				1830	2135	45				OH DR	18	INSULATED STEEL OVERHEAD COILING DOOR
127AA	1	Pair	<Hollow Metal>	VESTIBULE	FROM	CORRIDOR	1000, 1000	2150	45	LHRA/RHRA		180°,90°	O127AA	19	ADO , LHR 180, FM
127AB	1	Pair	<Aluminum>	EXTERIOR	FROM	VESTIBULE	1000, 1000	2150	57	LHRA/RHRA		110°,100°	O128B	20	CH , ADO , CR , ES CW2FM
128A	1	Single	<Hollow Metal>	STAIR B	FROM	CORR	1000	2150	45	LHR	ULMYLX.75	90°	63 SGL	21	
128B	1	Pair	<Aluminum>	EXTERIOR	FROM	STAIR B	1000, 1000	2150	57	LHRA/RHRA		110°	EXT ALUM PR RM	22	CH, CW3 REM HRWD MULL
129A	1	Single	<Wood>	CORRIDOR	TO	KINDERGARTEN CLASSROOM	950	2150	45	RH		90°	CLASS RM OHS DC	23	DC FOR AUDIBLE BUZZER
129B	1	Single	<Hollow Metal>	EXTERIOR	FROM	KINDERGARTEN CLASSROOM	1000	2150	45	LHR		90°	EXT SGL KINDER	24	DC FOR AUDIBLE BUZZER
130A	1	Single	<Hollow Metal>	KINDERGARTEN CLASSROOM	TO	STORAGE	950	2150	45	RH		90°	STORAGE WS NO CL	25	
131A	1	Single	<Hollow Metal>	KINDERGARTEN CLASSROOM	TO	W/R	950	2150	45	RH		90°	WR KINDER	26	
132A	1	Single	<Hollow Metal>	KINDERGARTEN CLASSROOM	TO	W/R	950	2150	45	LH		90°	WR KINDER	26	
133A	1	Single	<Hollow Metal>	KINDERGARTEN CLASSROOM	TO	STORAGE	950	2150	45	LH		90°	STORAGE WS NO CL	25	
134A	1	Single	<Wood>	CORRIDOR	TO	KINDERGARTEN CLASSROOM	950	2150	45	LH		90°	CLASS RM OHS DC	23	
134B	1	Single	<Hollow Metal>	EXTERIOR	FROM	KINDERGARTEN CLASSROOM	1000	2150	45	RHR		90°	EXT SGL KINDER	24	
135A	1	Pair	<Hollow Metal>	VESTIBULE	FROM	CORRIDOR	1000, 1000	2150	45	LHRA/RHRA		100°	41	3	ADO
135B	1	Pair	<Hollow Metal>	EXTERIOR	FROM	VESTIBULE	1000, 1000	2150	45	LHRA/RHRA		110°	O135B	27	ADO , CR ES

Opening Number(s)	Qty	Type	Door Catalog	Location 1	To/ From	Location 2	Nominal Width	Nominal Height	Door Thickness	Hand	Label	Degree of Opening	Hardware Group	Heading Num.	Remarks
136A	1	Single	<Wood>	CORRIDOR	TO	KINDERGARTEN CLASSROOM	950	2150	45	RH		90°	CLASS RM OHS DC	23	
136B	1	Single	<Hollow Metal>	EXTERIOR	FROM	KINDERGARTEN CLASSROOM	1000	2150	45	LHR		90°	EXT SGL KINDER	24	
137A	1	Single	<Hollow Metal>	KINDERGARTEN CLASSROOM	TO	STORAGE	950	2150	45	RH		90°	STORAGE WS NO CL	25	
138A	1	Single	<Hollow Metal>	KINDERGARTEN CLASSROOM	TO	W/R	950	2150	45	RH		90°	WR KINDER	26	
139A	1	Single	<Hollow Metal>	KINDERGARTEN CLASSROOM	TO	STORAGE	950	2150	45	LH		90°	STORAGE WS NO CL	25	
140A	1	Single	<Hollow Metal>	KINDERGARTEN CLASSROOM	TO	W/R	950	2150	45	LH		90°	WR KINDER	26	
141A	1	Single	<Wood>	CORRIDOR	TO	KINDERGARTEN CLASSROOM	950	2150	45	LH		90°	CLASS RM OHS DC	23	
141B	1	Single	<Hollow Metal>	EXTERIOR	FROM	KINDERGARTEN CLASSROOM	1000	2150	45	RHR		90°	EXT SGL KINDER	24	DC FOR AUDIBLE BUZZER
142A	1	Single	<Hollow Metal>	CORRIDOR	TO	W/R	950	2150	45	LH		90°	149A	28	
143A	1	Single	<Hollow Metal>	CORRIDOR	TO	W/R	950	2150	45	RH		90°	149A	28	
144A	1	Single	<Wood>	CORRIDOR	TO	SENSORY	950	2150	45	RH		90°	33	29	
145A	1	Single	<Hollow Metal>	CORRIDOR	TO	SPECIAL ED STORAGE & RESOURCES	950	2150	45	RH		90°	32	30	
146A	1	Single	<Wood>	CORRIDOR	TO	PRIMARY LITERACY ROOM	950	2150	45	LH		90°	CLASS RM WS	31	
146AA	1	Single	<Hollow Metal>	PRIMARY LITERACY ROOM	FROM	MACHINE ROOM	1050	2150	45	RHR	ULMYLX.75	90°	MECH RM	32	
149A	1	Multi	<Hollow Metal>	CORRIDOR	To/From	CORRIDOR	1200, 1200, 1200	2150	45	RH/RHR/LHR		90°	59	33	EMHO , CLOSER EMHO ON MIDDLE DR
150A	1	Single	<Wood>	CORRIDOR	TO	LIFESKILLS CALSSROOM	1050	2150	45	LH		90°	CLASS RM ADO	34	ADO
151A	1	Single	<Hollow Metal>	LIFESKILLS CLASSROOM	TO	KITCHENETTE	1050	2150	45	LH	ULMYLX.75	90°	CLASS RM EMHO	35	EMHO
151B	1	Single	<Hollow Metal>	LIFESKILLS CLASSROOM	TO	KITCHENETTE	1050	2150	45	RH	ULMYLX.75	90°	CLASS RM EMHO	35	EMHO
152A	1	Single	<Hollow Metal>	KITCHENETTE	TO	UTR	1000	2150	45	LH	ULMYLX.75	90°	WR ADO 19	36	ADO
154A	1	Single	<Hollow Metal>	KITCHENETTE	FROM	SENSORY	1050	2150	45	LHR	ULMYLX.75	90°	SENSORY	37	
155A	1	Single	<Wood>	CORRIDOR	TO	LIFESKILLS CALSSROOM	1050	2150	45	RH		90°	CLASS RM ADO	34	ADO
157A	1	Pair	<Hollow Metal>	STAIR A	FROM	CORRIDOR	1000, 1000	2150	45	LHRA/RHRA	ULMYLX.75	180°,90°	63 DBL	38	LHR 180
157B	1	Pair	<Aluminum>	EXTERIOR	FROM	STAIR A	1000, 1000	2150	57	LHRA/RHRA		110°,90°	O157B	39	CH, CR , ES LHR 110, CW4FM
158A	1												ELEV	40	ELEVATOR
159A	1	Single	<Hollow Metal>	CORRIDOR	TO	KITCHENETTE	950	2150	45	RH	ULMYLX.75	90°	CLASS RM CL	41	

Opening Number(s)	Qty	Type	Door Catalog	Location 1	To/ From	Location 2	Nominal Width	Nominal Height	Door Thickness	Hand	Label	Degree of Opening	Hardware Group	Heading Num.	Remarks
160A	1	Single	<Hollow Metal>	CORRIDOR	TO	W/R	950	2150	45	RH		90°	08	42	
161A	1	Single	<Wood>	CORRIDOR	FROM	MUSIC ROOM	950	2150	45	LHR	ULMYLX.33	90°	CLASS RM CL	43	
162AA	1	Single	<Hollow Metal>	MUSIC ROOM	TO	PRACTICE RM	950	2150	45	RH		90°	10	44	
162BA	1	Single	<Hollow Metal>	MUSIC ROOM	TO	PRACTICE RM	950	2150	45	LH		90°	10	44	162BB ON DR SCHEDULE 162BA ON FP
163A	1	Pair	<Hollow Metal>	GYMNASIUM	TO	GYM STORAGE	1000, 1000	2150	45	RHA		90°	04	45	NO MULLION
164A	1	Pair	<Hollow Metal>	CORRIDOR	FROM	GYMNASIUM	1000, 1000	2150	45	LHRA/RHRA	ULMYLX.33	90°	01	46	REM MULLION
164B	1	Pair	<Aluminum>	EXTERIOR	FROM	GYNASIUM	1000, 1000	2150	57	LHRA/RHRA		110°	02	47	CH, REM MULLION CW5
164C	1	Pair	<Aluminum>	EXTERIOR	FROM	GYNASIUM	1000, 1000	2150	57	LHRA/RHRA		110°	O164C	48	CH, CW6
164AA	1	Single	<Hollow Metal>	GYMNASIUM	FROM	METAL STORAGE	1000	2150	45	RHR		100°	O164AA	49	
165A	1	Single	<Hollow Metal>	GYMNASIUM	TO	BOYS CHANGE RM	950	2150	45	RH		90°	06	50	
166A	1	Single	<Hollow Metal>	GYMNASIUM	TO	GIRLS CHANGE RM	950	2150	45	LH		90°	06	50	
167A	1	Single	<Hollow Metal>	GYMNASIUM	TO	INSTRUCTOR OFFICE	950	2150	45	RH		90°	INSTRUCTOR	51	
401A	1	Pair	<Aluminum>	EXTERIOR	FROM	VESTIBULE	1000, 1000	2150	57	LHRA/RHRA		100°	O401A	54	CH, ADO, ES, CR , VINT, CW8FM
401B	1	Pair	<Hollow Metal>	VESTIBULE	FROM	CORRIDOR	1000, 1000	2150	45	LHRA/RHRA		100°	41-ES	55	ADO , REM MULL, CR, ES
401C	1	Pair	<Hollow Metal>	VESTIBULE	FROM	CORRIDOR	1000, 1000	2150	45	LHRA/RHRA		100°	O401C	56	ADO , REM MULL, CR, ES
402A	1	Single	<Wood>	CORRIDOR	TO	OFFICE	950	2150	45	LH		90°	CLASS RM FG	57	
405A	1	Single	<Wood>	CORRIDOR	TO	INFANT	950	2150	45	RH		90°	CLASS RM FG	57	
403A	1	Single	<Wood>	INFANT	TO	W/R	950	2150	45	RH		90°	403A	58	100MM UNDERCUT DUTCH DR
403AA	1	Single	<Hollow Metal>	INFANT	TO	STORAGE	950	2150	45	RH		90°	STORAGE WS NO CL	25	
404A	1												NO DR	12	1100 W x 2200 H DOOR OPENING IN WALL. REFER TO ELEVATION. DOUBLE BULLNOSE BLOCK AT JAMBS
406A	1	Single	<Wood>	CORRIDOR	TO	TODDLER	950	2150	45	LH		90°	CLASS RM FG	57	
407A	1	Single	<Hollow Metal>	CORRIDOR	FROM	B/F W/R	950	2150	45	LHR		90°	WR ADO FG	59	ADO
408A	1	Single	<Wood>	TODDLER	TO	W/R	950	2150	45	LH		90°	20	60	1/2 DR , 100MM UC
409A	1	Single	<Wood>	TODDLER	TO	W/R	950	2150	45	RH		90°	20	60	1/2 DR , 100MM UC

Opening Number(s)	Qty	Type	Door Catalog	Location 1	To/ From	Location 2	Nominal Width	Nominal Height	Door Thickness	Hand	Label	Degree of Opening	Hardware Group	Heading Num.	Remarks
410A	1	Single	<Hollow Metal>	TODDLER	FROM	COT STORAGE	950	2150	45	LHR		90°	STORAGE WS OHS	61	
410B	1	Single	<Hollow Metal>	TODDLER	FROM	COT STORAGE	950	2150	45	RHR		90°	STORAGE WS OHS	61	
411A	1	Single	<Wood>	CORRIDOR	TO	TODDLER	950	2150	45	RH		90°	CLASS RM FG	57	
412A	1	Single	<Wood>	CORRIDOR	TO	PRE-SCHOOL	950	2150	45	RH		90°	CLASS RM FG	57	
413A	1	Single	<Wood>	PRE-SCHOOL	TO	W/R	950	2150	45	LH		90°	20	60	1/2 DR , 100MM UC
414A	1	Single	<Wood>	PRE-SCHOOL	TO	W/R	950	2150	45	LH		90°	20	60	1/2 DR , 100MM UC
415A	1	Single	<Hollow Metal>	PRE-SCHOOL	FROM	COT STORAGE	950	2150	45	LHR		90°	STORAGE WS OHS	61	
415B	1	Single	<Hollow Metal>	PRE-SCHOOL	FROM	COT STORAGE	950	2150	45	RHR		90°	STORAGE WS OHS	61	
416A	1	Single	<Wood>	CORRIDOR	FROM	PRE-SCHOOL	950	2150	45	RH		90°	CLASS RM FG	57	
417A	1	Single	<Hollow Metal>	CORRIDOR	TO	STAFF	950	2150	45	LH		90°	CLASS RM FG	62	
418A	1	Single	<Hollow Metal>	CORRIDOR	FROM	LAUNDRY	950	2150	45	LHR		90°	LAUNDRY	63	
419A	1	Single	<Hollow Metal>	CORRIDOR	TO	KITCHEN	950	2150	45	RH		90°	KITCHEN	64	
421A	1	Single	<Hollow Metal>	CORRIDOR	FROM	UTILITY	1050	2150	45	LHR	ULMYLX.75	90°	211A-1067	65	
422A	1	Pair	<Hollow Metal>	EXTERIOR	FROM	VESTIBULE	1000, 1000	2150	45	LHRA/RHRA		110°	O135B	27	ADO, CR, ES
422B	1	Pair	<Hollow Metal>	VESTIBULE	FROM	CORRIDOR	1000, 1000	2150	45	LHRA/RHRA		90°	O4BB2	66	ADO
423A	1	Pair	<Hollow Metal>	STAIR C	FROM	CORRIDOR	1000, 1000	2150	45	LHRA/RHRA	ULMYLX.75	90°,180°	O423A	67	LOCK ON BOTH SIDES, NO EXIT HW. DR IS NOT AN EXIT.
423B	1	Pair	<Aluminum>	EXTERIOR	FROM	STAIR C	1000, 1000	2150	57	LHRA/RHRA		110°,90°	O423B	68	CH , LHR 110 , CW7FM
201A	1	Pair	<Hollow Metal>	STAIR A	FROM	CORRIDOR	1000, 1000	2150	45	LHRA/RHRA	ULMYLX.75	180°,90°	64	69	EMHO , LHR 180
202A	1												ELEV	40	ELEVATOR
204A	1	Single	<Wood>	CORRIDOR	TO	SEMINAR ROOM	950	2150	45	LH		90°	30	70	
205A	1	Single	<Hollow Metal>	CORRIDOR	TO	HUB	1000	2150	45	LH		90°	STORAGE WS 1000	71	
206A	1	Single	<Wood>	CORRIDOR	TO	COPIER	950	2150	45	LH		90°	STORAGE	72	
207A	1	Single	<Wood>	LIBRARY	FROM	LAPTOP STORAGE	950	2150	45	LHR		90°	STORAGE OHS ONLY	73	
210AA	1	Single	<Wood>	CO-LAB	TO	SEMINAR ROOM	950	2150	45	LH		90°	CLASS RM OHS	74	
211A	1	Single	<Wood>	CORRIDOR	TO	RESOURCE ROOM	950	2150	45	RH		90°	30	70	

Opening Number(s)	Qty	Type	Door Catalog	Location 1	To/ From	Location 2	Nominal Width	Nominal Height	Door Thickness	Hand	Label	Degree of Opening	Hardware Group	Heading Num.	Remarks
211B	1	Single	<Wood>	SPECIAL EDUCATION CLASSROOM	TO	RESOURCE ROOM	950	2150	45	RH		90°	CLASS RM OHS	74	
212A	1	Single	<Wood>	CORRIDOR	TO	SPECIAL EDUCATION CLASSROOM	1050	2150	45	LH		90°	CLASS RM WS 5"	75	
213A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	LH		90°	CLASS RM WS	31	
214A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	RH		90°	CLASS RM WS	31	
214B	1	Single	<Wood>	CLASSROOM	TO	CLASSROOM	950	2150	45	LH		90°	CLASS TO CLASS	76	
215A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	LH		90°	CLASS RM WS	31	
216A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	RH		90°	CLASS RM WS	31	
216B	1	Single	<Wood>	CLASSROOM	TO	CLASSROOM	950	2150	45	LH		90°	CLASS TO CLASS	76	
217A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	RH		90°	CLASS RM WS	31	
218A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	RH		90°	CLASS RM WS	31	
220A	1	Pair	<Hollow Metal>	STAIR B	FROM	CORRIDOR	1000, 1000	2150	45	LHRA/RHRA	ULMYLX.75	180°,90°	64	69	EMHO , 180 DEG SWING , LHR 180
221A	1	Single	<Wood>	CORRIDOR	TO	RESOURCE ROOM	950	2150	45	RH		90°	30	70	
222A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	RH		90°	CLASS RM WS	31	
223A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	LH		90°	CLASS RM WS	31	
223B	1	Single	<Wood>	CLASSROOM	TO	CLASSROOM	950	2150	45	RH		90°	CLASS TO CLASS	76	
224A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	RH		90°	CLASS RM WS	31	
225A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	LH		90°	CLASS RM WS	31	
225B	1	Single	<Wood>	CLASSROOM	TO	CLASSROOM	950	2150	45	RH		90°	CLASS TO CLASS	76	
226A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	RH		90°	CLASS RM WS	31	
227A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	RH		90°	CLASS RM WS	31	
229A	1	Single	<Aluminum>	CORRIDOR	FROM	QUIET RM	950	2397	45	LHR		90°	QUIET RM	77	
231A	1	Single	<Aluminum>	CORRIDOR	FROM	QUIET RM	950	2397	45	LHR		90°	QUIET RM	77	
232A	1	Single	<Hollow Metal>	CORRIDOR	TO	B/F W/R	950	2150	45	LH		90°	WR ADO	78	ADO
235A	1	Single	<Hollow Metal>	CORRIDOR	TO	W/R	950	2150	45	RH		90°	149A	28	
236A	1	Single	<Hollow Metal>	CORRIDOR	FROM	CUST	1000	2150	45	RHR		90°	151A-1067	79	

Opening Number(s)	Qty	Type	Door Catalog	Location 1	To/ From	Location 2	Nominal Width	Nominal Height	Door Thickness	Hand	Label	Degree of Opening	Hardware Group	Heading Num.	Remarks
237A	1	Single	<Hollow Metal>	CORRIDOR	TO	MECHANICAL	1100	2150	45	LH	ULMYLX.75	90°	MECH RM 1100	80	
237B	1	Single	<Hollow Metal>	CORRIDOR	TO	MECHANICAL	1100	2150	45	RH	ULMYLX.75	90°	MECH RM 1100	80	
240A	1	Single	<Aluminum>	CORRIDOR	TO	QUIET RM	950	2397	45	LH		90°	QUIET RM	77	
241A	1	Single	<Hollow Metal>	CORRIDOR	TO	WR	950	2150	45	LH		90°	149A	28	
242A	1	Single	<Hollow Metal>	CORRIDOR	TO	WR	950	2150	45	RH		90°	149A	28	
243A	1	Single	<Hollow Metal>	CORRIDOR	FROM	BF WR	950	2150	45	LHR		90°	WR ADO PUSH	7	ADO
245A	1	Single	<Aluminum>	CORRIDOR	TO	QUIET RM	950	2397	45	LH		90°	QUIET RM	77	
246A	1	Single	<Hollow Metal>	CORRIDOR	TO	WR	950	2150	45	LH		90°	149A	28	
247A	1	Single	<Hollow Metal>	CORRIDOR	TO	WR	950	2150	45	RH		90°	149A	28	
248A	1	Single	<Aluminum>	CORRIDOR	TO	QUIET RM	950	2397	45	RH		90°	QUIET RM	77	
250A	1	Pair	<Hollow Metal>	STAIR C	FROM	CORRIDOR	1000, 1000	2150	45	LHRA/RHRA	ULMYLX.75	180°,90°	64	69	EMHO , 180 DEG SWING
251A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	RH		90°	CLASS RM WS	31	
252A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	LH		90°	CLASS RM WS	31	
252B	1	Single	<Wood>	CLASSROOM	TO	CLASSROOM	950	2150	45	RH		90°	CLASS TO CLASS	76	
253A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	RH		90°	CLASS RM WS	31	
254A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	LH		90°	CLASS RM WS	31	
254B	1	Single	<Wood>	CLASSROOM	TO	CLASSROOM	950	2150	45	RH		90°	CLASS TO CLASS	76	
255A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	RH		90°	CLASS RM WS	31	
256A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	LH		90°	CLASS RM WS	31	
256B	1	Single	<Wood>	CLASSROOM	TO	CLASSROOM	950	2150	45	RH		90°	CLASS TO CLASS	76	
301A	1	Pair	<Hollow Metal>	STAIR A	FROM	CORRIDOR	1000, 1000	2150	45	LHRA/RHRA	ULMYLX.75	180°,90°	64	69	EMHO , 180 DEG SWING
301B	1	Single	<Hollow Metal>	STAIR A	TO	ROOF	1000	2150	45	RH		90°	58	81	
305A	1	Single	<Hollow Metal>	CORRIDOR	TO	LIBRARY MEZZANINE/SEMINAR	950	2150	45	LH	ULMYLX.75	90°	CLASS RM CL OHS	82	UL RATED HM DR IN ALUM FRAME
302A	1												ELEV	40	ELEVATOR
307AA	1	Single	<Wood>	CO-LAB	TO	SEMINAR ROOM	950	2150	45	LH		90°	CLASS RM CL OHS	83	

Opening Number(s)	Qty	Type	Door Catalog	Location 1	To/ From	Location 2	Nominal Width	Nominal Height	Door Thickness	Hand	Label	Degree of Opening	Hardware Group	Heading Num.	Remarks
308A	1	Single	<Wood>	CORRIDOR	TO	RESOURCE	950	2150	45	RH		90°	30	70	
308B	1	Single	<Wood>	CLASSROOM	TO	RESOURCE	950	2150	45	RH		90°	CLASS RM OHS	74	
309A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	LH		90°	CLASS RM WS	31	
310A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	LH		90°	CLASS RM WS	31	
310B	1	Single	<Wood>	CLASSROOM	TO	CLASSROOM	950	2150	45	LH		90°	CLASS TO CLASS	76	
311A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	RH		90°	CLASS RM WS	31	
312A	1	Single	<Wood>	CORRIDOR	TO	APPLICATIONS	1050	2150	45	LH		90°	CLASS RM WS 5"	75	
312AA	1	Single	<Hollow Metal>	APPLICATIONS	FROM	DUST EXTRACTOR	1000	2150	45	LHR		90°	STORAGE CL CUSH 1000	84	
312B	1	Single	<Wood>	CORRIDOR	TO	APPLICATIONS	1050	2150	45	RH		90°	CLASS RM WS 5"	75	
313A	1	Single	<Wood>	CORRIDOR	TO	ART	1050	2150	45	LH		90°	CLASS RM WS 5"	75	
313AA	1	Single	<Hollow Metal>	ART	TO	ART STOR	1050	2150	45	RH		90°	CLASS RM WS 5"	85	
314A	1	Single	<Wood>	CORRIDOR	TO	RESOURCE ROOM	950	2150	45	RH		90°	CLASS RM WS	31	
316A	1	Pair	<Hollow Metal>	STAIR B	FROM	CORRIDOR	1000, 1000	2150	45	LHRA/RHRA	ULMYLX.75	180°,90°	CLASS RM WS 5"	86	EMHO , 180 DEG SWING
317A	1	Single	<Wood>	CORRIDOR	TO	SCIENCE	950	2150	45	LH		90°	CLASS RM OHS	74	
317B	1	Single	<Wood>	CORRIDOR	TO	SCIENCE	950	2150	45	RH		90°	CLASS RM OHS	74	
318A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	LH		90°	CLASS RM WS	31	
319A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	RH		90°	CLASS RM WS	31	
319B	1	Single	<Wood>	CLASSROOM	TO	CLASSROOM	950	2150	45	RH		90°	CLASS TO CLASS	76	
320A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	LH		90°	CLASS RM WS	31	
321A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	RH		90°	CLASS RM WS	31	
321B	1	Single	<Wood>	CLASSROOM	TO	CLASSROOM	950	2150	45	RH		90°	CLASS RM WS	31	
322A	1	Single	<Wood>	CORRIDOR	TO	CLASSROOM	950	2150	45	RH		90°	CLASS RM WS	31	
323A	1	Single	<Hollow Metal>	CORRIDOR	TO	B/F W/R	950	2150	45	LH		90°	WR ADO	78	ADO
326A	1	Single	<Hollow Metal>	CORRIDOR	TO	W/R	950	2150	45	RH		90°	149A	28	
327A	1	Single	<Hollow Metal>	CORRIDOR	FROM	CUST	1000	2150	45	RHR		90°	151A-1067	79	

Opening Number(s)	Qty	Type	Door Catalog	Location 1	To/ From	Location 2	Nominal Width	Nominal Height	Door Thickness	Hand	Label	Degree of Opening	Hardware Group	Heading Num.	Remarks
329A	1	Single	<Aluminum>	CORRIDOR	FROM	QUIET RM	950	2397	45	LHR		90°	QUIET RM	77	
331A	1	Single	<Aluminum>	CORRIDOR	FROM	QUIET RM	950	2397	45	LHR		90°	QUIET RM	77	
332A	1	Single	<Hollow Metal>	CORRIDOR	FROM	ELECT	1000	2150	45	RHR		90°	STORAGE CL CUSH	87	
TC-CLOSET	1		<Wood>	TEACHERS CLOSET									TC-CLOSET	88	
MISC													MISC		

GENERAL:

-ALL AUTO DOOR OPERATORS SPECIFIED MUST BE SUPPLIED & INSTALLED BY THE HARDWARE SUPPLIER SECTION 08710.
WARRANTIES FOR HARDWARE AND AUTO OPERATORS MUST BE FROM ONE SUPPLIER(HARDWARE SUPPLIER)

Hardware Schedule

Heading #1 (Group: 39)

Item #1 — 1 Pair of doors 101A, EXTERIOR FROM VESTIBULE — 90° LHRA/RHRA

1000, 1000 x 2150 x 57 - AL DR x AL FR

CARD READER & VIDEO INTERCOM BY SECURITY COMPANY.
INSTALL ADO ON RHR LEAF

2	Continuous Hinge	Ives 112XY-83" US28	US28
1	Exit Device	Von Duprin CD-33A-EO-4'-626- 57-- INS-2	626
1	Exit Device	Von Duprin CD-33A-NL-OP-4' -626- 57--388/626- INS-2	626/626
		RHR LEAF	
2	Cylinder	Schlage 20-001 114 XQ11-949 36-083 GMK	626
1	Cylinder	Schlage 20-021 Open 626	626
1	Electric Strike	Von Duprin 6300- CON 24VAC -630	630
		RHR LEAF	
2	Door Pull	Gallery GSH 1180-2 C32D 57	US32D
1	Surface Closer	LCN 4021 REG AL	AL
		LHR LEAF	
1	Mounting Bracket	LCN 4020-18G	689
1	Electronic Closer	GYRO-TECH AUTO OPERATOR 8710 X DR WIDTH HEADER CA 628	
		RHR LEAF	
2	Overhead Door Stop	Glynn-Johnson 104S US32D	US32D
1	Threshold	Zero 625A 96	A
1	Weatherstripping	UNK WEATHER STRP BY DOOR AND FRAME SUPPLIER	
2	Gasketing	Zero SWEEP 8192AA 48	AA
2	Miscellaneous Item	Schlage E.S. 679-05HM BY SECURITY CONTRACTOR	BLK
1	Key Switch	Camden CM-160/22 INSTALL ADO HEADER	
2	Actuator	Camden CM-60/4	
2	Escutcheon	Camden CM-89S	
1	Advanced Logic Relay	Camden CX-33	
1	Miscellaneous Hardware	UNK DOOR CONTACT FOR AUDIBLE ALARM BY OTHERS	
1	Miscellaneous Hardware	UNK MULLION BY FRAME SUPPLIER	
1	Miscellaneous Hardware	LCN WEATHER RING8310-802	PLA

THIS HARDWARE SUPPLIER SECTION 08710 TO SUPPLY AND INSTALL AUTO OPERATOR.

DIV 16 ELECTRICAL CONTRACTOR TO PROVIDE 120VAC TO FRAME HEADER AND SUPPLY & INSTALL ALL LVW IN CONDUIT TO ALL ACTUATORS AND ELECTRICAL COMPONENTS LISTED IN THE HARDWARE SCHEDULE.
INTEGRATION OF SECURITY INTERCOM WITH ADO BY DIV 26

Heading #2 (Group: EXT ALUM PR)

Item #2 | 1 Pair of doors 101B, EXTERIOR FROM VESTIBULE | 90° LHRA/RHRA

1000, 1000 x 2150 x 57 - AL DR x AL FR

2	Continuous Hinge	Ives 112XY-83" US28	US28
1	Exit Device	Von Duprin CD-33A-EO-4'-626- 57-- INS-2	626
1	Exit Device	Von Duprin CD-33A-NL-OP-4' -626- 57--388/626- INS-2	626/626
2	Cylinder	Schlage 20-001 114 XQ11-949 36-083 GMK	626
1	Cylinder	Schlage 20-021 Open 626	626
2	Door Pull	Gallery GSH 1180-2 C32D 57	US32D
2	Surface Closer	LCN 4021 REG AL	AL
2	Mounting Bracket	LCN 4020-18G	689
2	Overhead Door Stop	Glynn-Johnson 104S US32D	US32D
2	Threshold	Zero 625A 48"	A
1	Weatherstripping	UNK WEATHER STRP BY DOOR AND FRAME SUPPLIER	
2	Gasketing	Zero SWEEP 8192AA 48	AA
2	Miscellaneous Item	Schlage E.S. 679-05HM BY SECURITY CONTRACTOR	BLK
1	Miscellaneous Hardware	UNK MULLION BY FRAME SUPPLIER	

Heading #3 (Group: 41)

Item #3 1 Pair of doors 101C, VESTIBULE FROM LOBBY 90° LHRA/RHRA
Item #4 1 Pair of doors 135A, VESTIBULE FROM CORRIDOR 100° LHRA/RHRA

1000, 1000 x 2150 x 45 - HM DR x HM FR

DR 101D ADO INSTALL ON RHR LEAF.

12	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
4	Push Bar	Von Duprin 350 -4' 628	628
2	Surface Closer	LCN 4040XP EDA ST-3068	689
2	Electronic Closer	GYRO-TECH AUTO OPERATOR 8710 X DR WIDTH HEADER CA 628 RHR LEAF	
4	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D
4	Overhead Door Stop	Glynn-Johnson 105S US32D	US32D
2	Miscellaneous Item	LCN 4040XP-18PA 689	689
2	Key Switch	Camden CM-160/22 INSTALL ADO HEADER	
4	Actuator	Camden CM-60/4	
4	Escutcheon	Camden CM-89S	
2	Miscellaneous Hardware	MISC WIRING / RISER DIAGRAM	

THIS HARDWARE SUPPLIER SECTION 08710 TO SUPPLY AND INSTALL AUTO OPERATOR.

DIV 16 ELECTRICAL CONTRACTOR TO PROVIDE 120VAC TO FRAME HEADER AND SUPPLY & INSTALL ALL LVW IN CONDUIT TO ALL ACTUATORS AND ELECTRICAL COMPONENTS LISTED IN THE HARDWARE SCHEDULE.

Heading #4 (Group: O101C)

Item #5 1 Pair of doors 101D, VESTIBULE FROM LOBBY 90° LHRA/RHRA

1000, 1000 x 2150 x 45 - HM DR x HM FR

REFER TO DR 101D FOR HARDWARE ON PR DRS 101D

6	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
2	Door Pull	CBH CBH 7030-1 C32D TB No. 1 45	US32D
2	Push Bar	Von Duprin 350 -4' 628	628
2	Surface Closer	LCN 4040XP EDA ST-3068	689
2	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D
2	Overhead Door Stop	Glynn-Johnson 105S US32D	US32D
2	Miscellaneous Item	LCN 4040XP-18PA 689	689

Heading #5 (Group: O103A)

Item #6 — 1 Single door 103A, LOBBY TO GENERAL OFFICE — 90° LH

1050 x 2150 x 45 - HM DR x HM FR

3	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
1	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
1	Electric Strike	Von Duprin 6211- FSE Shim CON-630	630
1	Electronic Closer	GYRO-TECH AUTO OPERATOR 8710 X DR WIDTH HEADER CA 628	
1	Kick Plate	CBH CBH 903 200 X 1000 C32D	US32D
1	Overhead Door Stop	Glynn-Johnson 105S US32D	US32D
1	Key Switch	Camden CM-160/22 INSTALL ADO HEADER	
2	Actuator	Camden CM-60/4	
2	Escutcheon	Camden CM-89S	
1	Advanced Logic Relay	Camden CX-33	
1	Miscellaneous Hardware	MISC WIRING / RISER DIAGRAM	

THIS HARDWARE SUPPLIER SECTION 08710 TO SUPPLY AND INSTALL AUTO OPERATOR.

DIV 16 ELECTRICAL CONTRACTOR TO PROVIDE 120VAC TO FRAME HEADER AND SUPPLY & INSTALL ALL LVW IN CONDUIT TO ALL ACTUATORS AND ELECTRICAL COMPONENTS LISTED IN THE HARDWARE SCHEDULE. REFER TO WIRING /RISER DIAGRAM SUPPLIED BY HARDWARE SUPPLIER

Heading #6 (Group: 36)

Item #7 — 1 Single door 104A, GENERAL OFFICE TO OFFICE — 90° LH
Item #8 — 1 Single door 105A, GENERAL OFFICE TO OFFICE — 90° LH
Item #9 — 1 Single door 106A, GENERAL OFFICE TO OFFICE — 90° LH
Item #10 — 1 Single door 107A, GENERAL OFFICE TO MEETING — 90° LH
Item #11 — 1 Single door 108A, GENERAL OFFICE TO HEALTH — 90° LH

950 x 2150 x 45 - WD DR x HM FR

15	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
5	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
5	Wall Door Stop	Ives WS401/402CCV US26D	US26D
5	Miscellaneous Item	CBH CBH 61 C26D	US26D

Heading #7 (Group: WR ADO PUSH)

Item #12	1 Single door 109A, HEALTH FROM B/F W/R	90° RHR
Item #13	1 Single door 243A, CORRIDOR FROM BF WR	90° LHR

950 x 2150 x 45 - HM DR x HM FR

INSTALL WR SET UP AS FAIL SAFE .

6	Standard Hinge	Ives 5BB1 5 x 4 " 652	652
2	Lockset	Schlage ND80P6D RHO 626 CMK GMK	626
2	Electric Strike	Von Duprin 6211 FS CON 24 VAC/VDC	630
2	Electronic Closer	GYRO-TECH AUTO OPERATOR 8710 X DR WIDTH HEADER CA 628	
4	Kick Plate	CBH CBH 903 200 X 900 C32D MTD BOTH SIDES	US32D
2	Wall Door Stop	Ives WS401/402CVX	626
2	Key Switch	Camden CM-160/22 INSTALL ADO HEADER	
2	Miscellaneous Hardware	Schlage CON-6W	
2	WR Kit	Camden CX-WC13AXFM -PS	
2	Miscellaneous Hardware	MISC WIRING / RISER DIAGRAM	

THIS HARDWARE SUPPLIER SECTION 08710 TO SUPPLY AND INSTALL AUTO OPERATOR.

DIV 16 ELECTRICAL CONTRACTOR TO PROVIDE 120VAC TO FRAME HEADER AND SUPPLY & INSTALL ALL LVW IN CONDUIT TO ALL ACTUATORS AND ELECTRICAL COMPONENTS LISTED IN THE HARDWARE SCHEDULE. REFER TO WIRING /RISER DIAGRAM SUPPLIED BY HARDWARE SUPPLIER.

Heading #8 (Group: O110A)

Item #14	1 Single door 110A, GENERAL OFFICE TO COPY	90° RH

950 x 2150 x 45 - HM DR x HM FR

3	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
1	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
1	Surface Closer	LCN 1461 689 - REG MTD 45	689
1	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
1	Wall Door Stop	Ives WS401/402CCV US26D	US26D
1	Gasketing	Zero 188SBK PSA -18'	BK
1	Miscellaneous Item	CBH CBH 61 C26D	US26D

Heading #9 (Group: 29 OHS)

Item #15 — 1 Single door 110B, LOBBY FROM COPY — 90° LHR

950 x 2150 x 45 - HM DR x HM FR

3	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
1	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
1	Surface Closer	LCN 1461 EDA AL	AL
1	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
1	Overhead Door Stop	Glynn-Johnson 104S US32D	US32D
1	Gasketing	Zero 188SBK PSA -18'	BK

Heading #10 (Group: 29)

Item #16 — 1 Single door 111A, CORRIDOR TO STAFF LOUNGE — 90° RH

950 x 2150 x 45 - HM DR x HM FR - ULMYLX.75

3	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
1	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
1	Surface Closer	LCN 1461 689 - REG MTD 45	689
1	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
1	Wall Door Stop	Ives WS401/402CCV US26D	US26D
1	Gasketing	Zero 188SBK PSA -18'	BK

Heading #11 (Group: EXT STORAGE SGL)

Item #17 — 1 Single door 112A, EXTERIOR FROM SPRINKLER — 110° RHR

Item #18 — 1 Single door 114B, EXTERIOR TO RECYCLING & CUSTODIAN STORAGE — 110° RHR

950 x 2150 x 45 - HM DR x HM FR

6	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 630	630
2	Dead Lock	Schlage B660P 626 CMK GMK	626
2	Cylinder	CBH CBH 352 2 1/8 DIAM C26D 45	US26D
2	Push Plate	CBH CBH 923 C32D 5" x 20"	US32D
2	Surface Closer	LCN 4040XP SCUSH	689
2	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
2	Threshold	Zero 625A 48"	A
2	Gasketing	Zero HD SEAL 429AA 48 x 0	AA
4	Gasketing	Zero JS 485AA 84	AA
2	Gasketing	Zero SWEEP 8192AA 48	AA
2	Miscellaneous Item	Schlage E.S. 679-05HM BY SECURITY CONTRACTOR	BLK

Heading #12 (Group: NO DR)

Item #19 1 Elevation 112B
Item #20 1 Elevation 404A

__ x __ x __ - HM DR x HM FR

NO DOOR IN OPENING

Heading #13 (Group: 15)

Item #21 1 Single door 113A, CORRIDOR TO ELECTRICAL 90° LH

950 x 2150 x 45 - HM DR x HM FR - ULMYLX.75

3	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
1	Lockset	BEST 9K 3 (Pat.) 7 D 15 C S3 626	626
1	Surface Closer	LCN 1461 689 - REG MTD 45	689
1	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
1	Overhead Door Stop	Glynn-Johnson 904S 652	US32D
1	Gasketing	Zero 188SBK PSA -18'	BK
1	Gasketing	Zero SWEEP 8192AA 48	AA

Heading #14 (Group: CLASS RM WS DC)

Item #22 1 Single door 115A, CORRIDOR TO KINDERGARTEN CLASSROOM 180° RH
Item #23 1 Single door 120A, CORRIDOR TO KINDERGARTEN CLASSROOM 180° LH
Item #24 1 Single door 121A, CORRIDOR TO KINDERGARTEN CLASSROOM 180° RH
Item #25 1 Single door 126A, CORRIDOR TO KINDERGARTEN CLASSROOM 180° LH

950 x 2150 x 45 - WD DR x HM FR

12	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
4	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
4	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
4	Wall Door Stop	Ives WS401/402CVX	626
4	Miscellaneous Hardware	UNK DOOR CONTACT FOR AUDIBLE ALARM BY OTHERS	

Heading #15 (Group: WR KINDER ADO PUSH OHS)

Item #26	1 Single door 116A, KINDERGARTEN CLASSROOM FROM B/F W/R	90° LHR
Item #27	1 Single door 119A, KINDERGARTEN CLASSROOM FROM B/F W/R	90° RHR
Item #28	1 Single door 122A, KINDERGARTEN CLASSROOM FROM B/F W/R	90° LHR
Item #29	1 Single door 125A, KINDERGARTEN CLASSROOM FROM B/F W/R	90° RHR

950 x 2150 x 45 - HM DR x HM FR

INSTALL WR SET UP AS FAIL SAFE .

12	Standard Hinge	Ives 5BB1 5 x 4 " 652	652
4	Latchset	Schlage ND10S RHO	626
4	Electric Strike	Von Duprin 6211 FS CON 24 VAC/VDC	630
4	Electronic Closer	GYRO-TECH AUTO OPERATOR 8710 X DR WIDTH HEADER CA 628	
8	Kick Plate	CBH CBH 903 200 X 900 C32D MTD BOTH SIDES	US32D
4	Overhead Door Stop	Glynn-Johnson 104S US32D	US32D
4	Key Switch	Camden CM-160/22 INSTALL ADO HEADER	
4	Miscellaneous Hardware	Schlage CON-6W	
4	WR Kit	Camden CX-WC13AXFM -PS	
4	Miscellaneous Hardware	MISC WIRING / RISER DIAGRAM	

THIS HARDWARE SUPPLIER SECTION 08710 TO SUPPLY AND INSTALL AUTO OPERATOR.

DIV 16 ELECTRICAL CONTRACTOR TO PROVIDE 120VAC TO FRAME HEADER AND SUPPLY & INSTALL ALL LVW IN CONDUIT TO ALL ACTUATORS AND ELECTRICAL COMPONENTS LISTED IN THE HARDWARE SCHEDULE. REFER TO WIRING /RISER DIAGRAM SUPPLIED BY HARDWARE SUPPLIER.

Heading #16 (Group: 52 STORAGE NO CL)

Item #30	1 Single door 117A, KINDERGARTEN CLASSROOM FROM STORAGE	90° LHR
Item #31	1 Single door 118A, KINDERGARTEN CLASSROOM FROM STORAGE	90° RHR
Item #32	1 Single door 123A, KINDERGARTEN CLASSROOM FROM STORAGE	90° LHR
Item #33	1 Single door 124A, KINDERGARTEN CLASSROOM FROM STORAGE	90° RHR

950 x 2150 x 45 - HM DR x HM FR

12	Standard Hinge	Ives 5BB1 4.5 X 4 NRP 652	652
4	Lockset	Schlage ND80P6D RHO 626 CMK GMK	626
4	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
4	Overhead Door Stop	Glynn-Johnson 904S 652	US32D

Heading #17 (Group: 16)

Item #34 — 1 Single door 114A, CORRIDOR TO RECYCLING & CUSTODIAN STORAGE AREA — 90° LH

1100 x 2150 x 45 - HM DR x HM FR - ULMYLX.75

3	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
1	Lockset	Schlage ND80P6D RHO 626 CMK GMK	626
1	Surface Closer	LCN 4040XP REG AL	AL
1	Kick Plate	CBH CBH 903 200 X 1050 C32D	US32D
1	Wall Door Stop	Ives WS401/402CVX	626
1	Gasketing	Zero 188SBK PSA -18'	BK
1	Gasketing	Zero SWEEP 8192AA 48	AA

Heading #18 (Group: OH DR)

Item #35 — 1 Single door 114C-OH

1830 x 2135 x 45 - HM DR x HM FR

OH DOOR
HARDWARE COMPLETE BY OH DR SUPPLIER

Heading #19 (Group: O127AA)

Item #36 1 Pair of doors 127AA, VESTIBULE FROM CORRIDOR 180°,90° LHRA/RHRA

1000, 1000 x 2150 x 45 - HM DR x HM FR

DR 101D ADO INSTALL ON RHR LEAF.
REM HARDWARE MULLION

6	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
1	Removable Mullion	Von Duprin KR4954	689
1	Cylinder	Schlage 20-013 Open 626 158	626
2	Push Bar	Von Duprin 350 -4' 628	628
1	Surface Closer	LCN 4040XP EDA ST-3068	689
1	Electronic Closer	GYRO-TECH AUTO OPERATOR 8710 X DR WIDTH HEADER CA 628 RHR LEAF	
2	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D
2	Wall Door Stop	Ives WS401/402CVX	626
1	Miscellaneous Item	LCN 4040XP-18PA 689	689
1	Key Switch	Camden CM-160/22 INSTALL ADO HEADER	
2	Actuator	Camden CM-60/4	
2	Escutcheon	Camden CM-89S	
1	Miscellaneous Hardware	MISC WIRING / RISER DIAGRAM	

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Heading #20 (Group: O128B)

Item #37 — 1 Pair of doors 127AB, EXTERIOR FROM VESTIBULE — 110°,100° LHRA/RHRA

1000, 1000 x 2150 x 57 - AL DR x AL FR

REM HARDWARE MULLION

2	Continuous Hinge	Ives 112XY-83" US28	US28
1	Removable Mullion	Von Duprin KR4954	689
1	Exit Device	Von Duprin CD-33A-EO-4'-626- 57-- INS-2	626
1	Exit Device	Von Duprin CD-33A-NL-OP-4' -626- 57--388/626- INS-2	626/626
		RHR LEAF	
2	Cylinder	Schlage 20-001 114 XQ11-949 36-083 GMK	626
1	Cylinder	Schlage 20-013 Open 626 158	626
1	Cylinder	Schlage 20-021 Open 626	626
1	Electric Strike	Von Duprin 6300- CON 24VAC -630	630
		RHR LEAF	
2	Door Pull	Gallery GSH 1180-2 C32D 57	US32D
1	Surface Closer	LCN 4021 REG AL	AL
		LHR LEAF	
1	Mounting Bracket	LCN 4020-18G	689
1	Electronic Closer	GYRO-TECH AUTO OPERATOR 8710 X DR WIDTH HEADER CA 628	
		RHR LEAF	
2	Overhead Door Stop	Glynn-Johnson 104S US32D	US32D
2	Threshold	Zero 625A 48"	A
1	Weatherstripping	UNK WEATHER STRP BY DOOR AND FRAME SUPPLIER	
2	Gasketing	Zero SWEEP 8192AA 48	AA
2	Miscellaneous Item	Schlage E.S. 679-05HM BY SECURITY CONTRACTOR	BLK
1	Miscellaneous Hardware	UNK CARD READER BY SERURITY CONTRACTOR	
1	Key Switch	Camden CM-160/22 INSTALL ADO HEADER	
2	Actuator	Camden CM-60/4	
2	Escutcheon	Camden CM-89S	
1	Advanced Logic Relay	Camden CX-33	
1	Miscellaneous Hardware	LCN WEATHER RING8310-802	PLA

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INTEGRATION OF SECURITY INTERCOM WITH ADO BY DIV 26

Heading #21 (Group: 63 SGL)

Item #38 — 1 Single door 128A, STAIR B FROM CORR — 90° LHR

1000 x 2150 x 45 - HM DR x HM FR - ULMYLX.75

3	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
1	Exit Device	Von Duprin BE98L-F O6 4' -499F US26D LHR 1000	626/626
1	Surface Closer	LCN 4040XP EDA 689	689
1	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D
1	Wall Door Stop	Ives WS401/402CVX	626
1	Gasketing	Zero 188SBK PSA -18'	BK
1	Gasketing	Zero SWEEP 8192AA 48	AA

Heading #22 (Group: EXT ALUM PR RM)

Item #39 — 1 Pair of doors 128B, EXTERIOR FROM STAIR B — 110° LHRA/RHRA

1000, 1000 x 2150 x 57 - AL DR x AL FR

2	Continuous Hinge	Ives 112XY-83" US28	US28
1	Removable Mullion	Von Duprin KR4954	689
2	Exit Device	Von Duprin CD-33A-EO-4'-626- 57-- INS-2	626
2	Cylinder	Schlage 20-001 114 XQ11-949 36-083 GMK	626
1	Cylinder	Schlage 20-001-1 1/4 " L583-477 626 CMK GMK	626
2	Surface Closer	LCN 4021 REG AL	AL
2	Mounting Bracket	LCN 4020-18G	689
2	Overhead Door Stop	Glynn-Johnson 104S US32D	US32D
1	Threshold	Zero 625A 96	A
1	Weatherstripping	UNK WEATHER STRP BY DOOR AND FRAME SUPPLIER	
2	Gasketing	Zero SWEEP 8192AA 48	AA
2	Miscellaneous Item	Schlage E.S. 679-05HM BY SECURITY CONTRACTOR	BLK
2	Miscellaneous Hardware	UNK DOOR CONTACT FOR AUDIBLE ALARM BY OTHERS	

Heading #23 (Group: CLASS RM OHS DC)

Item #40	1 Single door 129A, CORRIDOR TO KINDERGARTEN CLASSROOM	90° RH
Item #41	1 Single door 134A, CORRIDOR TO KINDERGARTEN CLASSROOM	90° LH
Item #42	1 Single door 136A, CORRIDOR TO KINDERGARTEN CLASSROOM	90° RH
Item #43	1 Single door 141A, CORRIDOR TO KINDERGARTEN CLASSROOM	90° LH

950 x 2150 x 45 - WD DR x HM FR

12	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
4	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
4	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
4	Overhead Door Stop	Glynn-Johnson 904S 652	US32D
4	Miscellaneous Hardware	UNK DOOR CONTACT FOR AUDIBLE ALARM BY OTHERS	

Heading #24 (Group: EXT SGL KINDER)

Item #44	1 Single door 129B, EXTERIOR FROM KINDERGARTEN CLASSROOM	90° LHR
Item #45	1 Single door 134B, EXTERIOR FROM KINDERGARTEN CLASSROOM	90° RHR
Item #46	1 Single door 136B, EXTERIOR FROM KINDERGARTEN CLASSROOM	90° LHR
Item #47	1 Single door 141B, EXTERIOR FROM KINDERGARTEN CLASSROOM	90° RHR

1000 x 2150 x 45 - HM DR x HM FR

12	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 630	630
4	Exit Device	Von Duprin CD-98-EO-4' 626	626
4	Cylinder	Schlage 20-001 114 XQ11-949 36-083 GMK	626
4	Door Pull	Gallery GSH 4012-2 C32D 45	US32D
4	Surface Closer	LCN 4040XP EDA ST-3068	689
4	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D
4	Overhead Door Stop	Glynn-Johnson 105S US32D	US32D
4	Threshold	Zero 625A 48"	A
4	Gasketing	Zero HD SEAL 429AA 48 x 0	AA
8	Gasketing	Zero JS 485AA 84	AA
4	Gasketing	Zero SWEEP 8192AA 48	AA
4	Miscellaneous Item	Schlage E.S. 679-05HM BY SECURITY CONTRACTOR	BLK
4	Miscellaneous Hardware	UNK DOOR CONTACT FOR AUDIBLE ALARM BY OTHERS	

Heading #25 (Group: STORAGE WS NO CL)

Item #48	1 Single door 130A, KINDERGARTEN CLASSROOM TO STORAGE	90° RH
Item #49	1 Single door 133A, KINDERGARTEN CLASSROOM TO STORAGE	90° LH
Item #50	1 Single door 137A, KINDERGARTEN CLASSROOM TO STORAGE	90° RH
Item #51	1 Single door 139A, KINDERGARTEN CLASSROOM TO STORAGE	90° LH
Item #52	1 Single door 403AA, INFANT TO STORAGE	90° RH

950 x 2150 x 45 - HM DR x HM FR

15	Standard Hinge	Ives 5BB1 4.5 X 4 NRP 652	652
5	Lockset	Schlage ND80P6D RHO 626 CMK GMK	626
5	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
5	Wall Door Stop	Ives WS401/402CCV US26D	US26D

Heading #26 (Group: WR KINDER)

Item #53	1 Single door 131A, KINDERGARTEN CLASSROOM TO W/R	90° RH
Item #54	1 Single door 132A, KINDERGARTEN CLASSROOM TO W/R	90° LH
Item #55	1 Single door 138A, KINDERGARTEN CLASSROOM TO W/R	90° RH
Item #56	1 Single door 140A, KINDERGARTEN CLASSROOM TO W/R	90° LH

950 x 2150 x 45 - HM DR x HM FR

12	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
4	Latchset	Schlage ND10S RHO	626
8	Kick Plate	CBH CBH 903 200 X 900 C32D MTD BOTH SIDES	US32D
4	Wall Door Stop	Ives WS401/402CVX	626

Heading #27 (Group: O135B)

Item #57	1 Pair of doors 135B, EXTERIOR FROM VESTIBULE	110° LHRA/RHRA
Item #58	1 Pair of doors 422A, EXTERIOR FROM VESTIBULE	110° LHRA/RHRA

1000, 1000 x 2150 x 45 - HM DR x HM FR

CARD READER SECURITY COMPANY.

12	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 630	630
2	Exit Device	Von Duprin CD-98-EO-4' 626	626
2	Exit Device	Von Duprin CD-98-NL-OP -4' 626	626
		RHR LEAF	
4	Cylinder	Schlage 20-001 114 XQ11-949 36-083 GMK	626
2	Cylinder	Schlage 20-021 Open 626	626
2	Electric Strike	Von Duprin 6300- CON 24VAC -630	630
		RHR LEAF	
4	Door Pull	Gallery GSH 1180-2 C32D 45	US32D
2	Surface Closer	LCN 4040XP EDA 689	689
2	Electronic Closer	GYRO-TECH AUTO OPERATOR 8710 X DR WIDTH HEADER CA 628	
		RHR LEAF	
4	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D
4	Overhead Door Stop	Glynn-Johnson 105S US32D	US32D
4	Threshold	Zero 625A 48"	A
4	Gasketing	Zero HD SEAL 429AA 48 x 0	AA
8	Gasketing	Zero JS 485AA 84	AA
4	Gasketing	Zero SWEEP 8192AA 48	AA
4	Miscellaneous Item	Schlage E.S. 679-05HM BY SECURITY CONTRACTOR	BLK
2	Miscellaneous Hardware	UNK CARD READER BY SERURITY CONTRACTOR	
2	Key Switch	Camden CM-160/22 INSTALL ADO HEADER	
4	Actuator	Camden CM-60/4	
4	Escutcheon	Camden CM-89S	
2	Advanced Logic Relay	Camden CX-33	
2	Miscellaneous Hardware	UNK MULLION BY FRAME SUPPLIER	
2	Miscellaneous Hardware	LCN WEATHER RING8310-802	PLA

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INTEGRATION OF SECURITY INTERCOM WITH ADO BY DIV 26

Heading #28 (Group: 149A)

Item #59	1 Single door 142A, CORRIDOR TO W/R	90° LH
Item #60	1 Single door 143A, CORRIDOR TO W/R	90° RH
Item #61	1 Single door 235A, CORRIDOR TO W/R	90° RH
Item #62	1 Single door 241A, CORRIDOR TO WR	90° LH
Item #63	1 Single door 242A, CORRIDOR TO WR	90° RH
Item #64	1 Single door 246A, CORRIDOR TO WR	90° LH
Item #65	1 Single door 247A, CORRIDOR TO WR	90° RH
Item #66	1 Single door 326A, CORRIDOR TO W/R	90° RH

950 x 2150 x 45 - HM DR x HM FR

24	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
3	Lockset	Schlage L9456P 06B 626 LH L283-722 CMK GMK	626
5	Lockset	Schlage L9456P 06B 626 RH L283-722 CMK GMK	626
8	Kick Plate	CBH CBH 903 300 X 900 C32D	US32D
8	Wall Door Stop	Ives WS401/402CVX	626

Heading #29 (Group: 33)

Item #67	1 Single door 144A, CORRIDOR TO SENSORY	90° RH

950 x 2150 x 45 - WD DR x HM FR

3	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
1	Latchset	Schlage ND10S RHO	626
2	Kick Plate	CBH CBH 903 200 X 900 C32D MTD BOTH SIDES	US32D
1	Wall Door Stop	Ives WS401/402CVX	626

Heading #30 (Group: 32)

Item #68	1 Single door 145A, CORRIDOR TO SPECIAL ED STORAGE & RESOURCES	90° RH

950 x 2150 x 45 - HM DR x HM FR

3	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
1	Lockset	Schlage ND80P6D RHO 626 CMK GMK	626
1	Surface Closer	LCN 1461 689 45	689
1	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
1	Wall Door Stop	Ives WS401/402CVX	626

Heading #31 (Group: CLASS RM WS)

Item #69	1 Single door 146A, CORRIDOR TO PRIMARY LITERACY ROOM	90° LH
Item #70	1 Single door 213A, CORRIDOR TO CLASSROOM	90° LH
Item #71	1 Single door 214A, CORRIDOR TO CLASSROOM	90° RH
Item #72	1 Single door 215A, CORRIDOR TO CLASSROOM	90° LH
Item #73	1 Single door 216A, CORRIDOR TO CLASSROOM	90° RH
Item #74	1 Single door 217A, CORRIDOR TO CLASSROOM	90° RH
Item #75	1 Single door 218A, CORRIDOR TO CLASSROOM	90° RH
Item #76	1 Single door 222A, CORRIDOR TO CLASSROOM	90° RH
Item #77	1 Single door 223A, CORRIDOR TO CLASSROOM	90° LH
Item #78	1 Single door 224A, CORRIDOR TO CLASSROOM	90° RH
Item #79	1 Single door 225A, CORRIDOR TO CLASSROOM	90° LH
Item #80	1 Single door 226A, CORRIDOR TO CLASSROOM	90° RH
Item #81	1 Single door 227A, CORRIDOR TO CLASSROOM	90° RH
Item #82	1 Single door 251A, CORRIDOR TO CLASSROOM	90° RH
Item #83	1 Single door 252A, CORRIDOR TO CLASSROOM	90° LH
Item #84	1 Single door 253A, CORRIDOR TO CLASSROOM	90° RH
Item #85	1 Single door 254A, CORRIDOR TO CLASSROOM	90° LH
Item #86	1 Single door 255A, CORRIDOR TO CLASSROOM	90° RH
Item #87	1 Single door 256A, CORRIDOR TO CLASSROOM	90° LH
Item #88	1 Single door 309A, CORRIDOR TO CLASSROOM	90° LH
Item #89	1 Single door 310A, CORRIDOR TO CLASSROOM	90° LH
Item #90	1 Single door 311A, CORRIDOR TO CLASSROOM	90° RH
Item #91	1 Single door 314A, CORRIDOR TO RESOURCE ROOM	90° RH
Item #92	1 Single door 318A, CORRIDOR TO CLASSROOM	90° LH
Item #93	1 Single door 319A, CORRIDOR TO CLASSROOM	90° RH
Item #94	1 Single door 320A, CORRIDOR TO CLASSROOM	90° LH
Item #95	1 Single door 321A, CORRIDOR TO CLASSROOM	90° RH
Item #96	1 Single door 321B, CLASSROOM TO CLASSROOM	90° RH
Item #97	1 Single door 322A, CORRIDOR TO CLASSROOM	90° RH

950 x 2150 x 45 - WD DR x HM FR

87	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
29	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
29	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
29	Wall Door Stop	Ives WS401/402CCV US26D	US26D

Heading #32 (Group: MECH RM)

Item #98 — 1 Single door 146AA, PRIMARY LITERACY ROOM FROM MACHINE ROOM — 90° RHR

1050 x 2150 x 45 - HM DR x HM FR - ULMYLX.75

3	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
1	Lockset	Schlage ND80P6D RHO 626 CMK GMK	626
1	Surface Closer	LCN 4040XP SCUSH	689
1	Kick Plate	CBH CBH 903 200 X 1000 C32D	US32D
1	Wall Door Stop	Ives WS401/402CVX	626
1	Gasketing	Zero 365AA 42"	AA
1	Gasketing	Zero WS 485AA 48 x 84	AA

Heading #33 (Group: 59)

Item #99 — 1 Multi-door opening 149A, CORRIDOR To/From CORRIDOR — 90° RH/RHR/LHR

1200, 1200, 1200 x 2150 x 45 - HM DR x HM FR

9	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
1	Dead Lock	Schlage B662 P6 626 IS-LOC OS-LOC CMK GMK @ SGL RH	626
2	Exit Device	Von Duprin CD-98-EO-4' 626 @PR RHR/LHR	626
2	Cylinder	Schlage 20-001 114 XQ11-949 36-083 GMK @PR RHR/LHR	626
1	Push Bar	Von Duprin 350 -4' 628 @ SGL RH	628
2	Surface Closer	LCN 4040XP EDA 689	689
2	Mounting Bracket	LCN 4040XP-18G	689
1	Electronic Closer	LCN 4040SE STDTRK 689 PUSH SIDE 45 24V @ CENTRE DR LEAF	689
3	Kick Plate	CBH CBH 903 200 X 1150 C32D	US32D
2	Electro-Magnetic Holder	LCN SEM 7810-514 X 3" EXTENSION 689	689
2	Electro-Magnetic Holder	LCN SEM 7850 TRI VOLT 689	689
1	Miscellaneous Item	LCN 4040SE-3210 689	689
2	Miscellaneous Hardware	UNK MULLION BY FRAME SUPPLIER	

ELECTRICAL CONTRACTOR TO INTERFACE 2-WALL MTD EMHO AND 1 DR CLOSER EMHO WITH F/A PANEL.
ELECTRICAL CONTRACTOR TO PROVIDE WIRING AT 2 WALL MTD LOCATIONS & TO HEADER OF FRAME AT CETRE DR LEAF.

Heading #34 (Group: CLASS RM ADO)

Item #100	1 Single door 150A, CORRIDOR TO LIFESKILLS CALSSROOM	90° LH
Item #101	1 Single door 155A, CORRIDOR TO LIFESKILLS CALSSROOM	90° RH

1050 x 2150 x 45 - WD DR x HM FR

6	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
2	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
2	Electric Strike	Von Duprin 6211- FSE Shim CON-630	630
2	Electronic Closer	GYRO-TECH AUTO OPERATOR 8710 X DR WIDTH HEADER CA 628	
2	Kick Plate	CBH CBH 903 200 X 1000 C32D	US32D
2	Wall Door Stop	Ives WS401/402CVX	626
4	Actuator	Camden CM-60/4	
4	Escutcheon	Camden CM-89S	
2	Advanced Logic Relay	Camden CX-33	
2	Miscellaneous Hardware	MISC WIRING / RISER DIAGRAM	

THIS HARDWARE SUPPLIER SECTION 08710 TO SUPPLY AND INSTALL AUTO OPERATOR.

DIV 16 ELECTRICAL CONTRACTOR TO PROVIDE 120VAC TO FRAME HEADER AND SUPPLY & INSTALL ALL LVW IN CONDUIT TO ALL ACTUATORS AND ELECTRICAL COMPONENTS LISTED IN THE HARDWARE SCHEDULE. REFER TO WIRING /RISER DIAGRAM SUPPLIED BY HARDWARE SUPPLIER

Heading #35 (Group: CLASS RM EMHO)

Item #102	1 Single door 151A, LIFESKILLS CLASSROOM TO KITCHENETTE	90° LH
Item #103	1 Single door 151B, LIFESKILLS CLASSROOM TO KITCHENETTE	90° RH

1050 x 2150 x 45 - HM DR x HM FR - ULMYLX.75

6	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
2	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
2	Surface Closer	LCN 4040XP EDA ST-3068	689
2	Kick Plate	CBH CBH 903 200 X 1000 C32D	US32D
2	Electro-Magnetic Holder	LCN SEM 7810-514 X 3" EXTENSION 689	689
2	Electro-Magnetic Holder	LCN SEM 7850 TRI VOLT 689	689
2	Gasketing	Zero 188SBK PSA -18'	BK
2	Gasketing	Zero SWEEP 8192AA 48	AA

DIV 26 TO INTERFACE EMHO WITH F/A PANEL

Heading #36 (Group: WR ADO 19)

Item #104 — 1 Single door 152A, KITCHENETTE TO UTR — 90° LH

1000 x 2150 x 45 - HM DR x HM FR - ULMYLX.75

INSTALL WR SET UP AS FAIL SECURE AS OPEING IS 45 MIN LISTED.

3	Standard Hinge	Ives 5BB1 5 x 4 " 652	652
1	Lockset	Schlage ND80P6D RHO 626 CMK GMK	626
1	Electric Strike	Von Duprin 6211- FSE Shim CON-630	630
1	Electronic Closer	GYRO-TECH AUTO OPERATOR 8710 PULL SIDE MTD X DR WIDTH HEADER CA	
2	Kick Plate	CBH CBH 903 200 X 950 C32D MTD BOTH SIDES	US32D
1	Wall Door Stop	Ives WS401/402CVX	626
1	Key Switch	Camden CM-160/22 INSTALL ADO HEADER	
1	Miscellaneous Hardware	Schlage CON-6W	
1	WR Kit	Camden CX-WC13AXFM -PS	
1	Miscellaneous Hardware	Camden EMERG WR KIT CX-WEC10K2	
1	Miscellaneous Hardware	MISC WIRING / RISER DIAGRAM	

THIS HARDWARE SUPPLIER SECTION 08710 TO SUPPLY AND INSTALL AUTO OPERATOR.

DIV 16 ELECTRICAL CONTRACTOR TO PROVIDE 120VAC TO FRAME HEADER AND SUPPLY & INSTALL ALL LVW IN CONDUIT TO ALL ACTUATORS AND ELECTRICAL COMPONENTS LISTED IN THE HARDWARE SCHEDULE. REFER TO WIRING /RISER DIAGRAM SUPPLIED BY HARDWARE SUPPLIER.

Heading #37 (Group: SENSORY)

Item #105 — 1 Single door 154A, KITCHENETTE FROM SENSORY — 90° LHR

1050 x 2150 x 45 - HM DR x HM FR - ULMYLX.75

3	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
1	Latchset	Schlage ND10S RHO	626
1	Surface Closer	LCN 4040XP SCUSH	689
2	Kick Plate	CBH CBH 903 200 X 1000 C32D MTD BOTH SIDES	US32D

Heading #38 (Group: 63 DBL)

Item #106 — 1 Pair of doors 157A, STAIR A FROM CORRIDOR — 180°,90° LHRA/RHRA

1000, 1000 x 2150 x 45 - HM DR x HM FR - ULMYLX.75

6	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
2	Exit Device	Von Duprin BE98L-F O6 4' -499F US26D	626/626
2	Surface Closer	LCN 4040XP EDA 689	689
2	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D
2	Wall Door Stop	Ives WS401/402CVX	626
2	Gasketing	Zero 188SBK PSA -18'	BK
2	Gasketing	Zero SWEEP 8192AA 48	AA
1	Miscellaneous Hardware	UNK MULLION BY FRAME SUPPLIER	

Heading #39 (Group: O157B)

Item #107 — 1 Pair of doors 157B, EXTERIOR FROM STAIR A — 110°,90° LHRA/RHRA

1000, 1000 x 2150 x 57 - AL DR x AL FR

2	Continuous Hinge	Ives 112XY-83" US28	US28
2	Exit Device	Von Duprin CD-33A-EO-4'-626- 57-- INS-2	626
2	Cylinder	Schlage 20-001 114 XQ11-949 36-083 GMK	626
1	Electric Strike	Von Duprin 6300- CON 24VAC -630	630
2	Door Pull	Gallery GSH 4012-2 C32D 57	US32D
2	Surface Closer	LCN 4040XP EDA ST-3068	689
2	Overhead Door Stop	Glynn-Johnson 104S US32D	US32D
2	Threshold	Zero 625A 48"	A
1	Weatherstripping	UNK WEATHER STRP BY DOOR AND FRAME SUPPLIER	
2	Gasketing	Zero SWEEP 8192AA 48	AA
2	Miscellaneous Item	LCN 4040XP-18PA 689	689
2	Miscellaneous Item	Schlage E.S. 679-05HM BY SECURITY CONTRACTOR	BLK
1	Miscellaneous Hardware	UNK CARD READER BY SERURITY CONTRACTOR	
1	Miscellaneous Hardware	UNK MULLION BY FRAME SUPPLIER	

Heading #40 (Group: ELEV)

Item #108 1 Elevation 158A
Item #109 1 Elevation 202A
Item #110 1 Elevation 302A

__ x __ x __ - HM DR x HM FR

ELEVATOR DR.
HARDWARE COMPLETE BY ELEV DR SUPPLIER.

Heading #41 (Group: CLASS RM CL)

Item #111 1 Single door 159A, CORRIDOR TO KITCHENETTE 90° RH

950 x 2150 x 45 - HM DR x HM FR - ULMYLX.75

3	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
1	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
1	Surface Closer	LCN 4040XP EDA 689	689
1	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
1	Wall Door Stop	Ives WS401/402CCV US26D	US26D
1	Gasketing	Zero 188SBK PSA -18'	BK

Heading #42 (Group: 08)

Item #112 1 Single door 160A, CORRIDOR TO W/R 90° RH

950 x 2150 x 45 - HM DR x HM FR

3	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
1	Lockset	Schlage L9456P 06B 626 RH L283-722 CMK GMK	626
1	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
1	Wall Door Stop	Ives WS401/402CVX	626

Heading #43 (Group: CLASS RM CL)

Item #113 — 1 Single door 161A, CORRIDOR FROM MUSIC ROOM — 90° LHR

950 x 2150 x 45 - WD DR x HM FR - ULMYLX.33

3	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
1	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
1	Surface Closer	LCN 4040XP EDA 689	689
1	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
1	Wall Door Stop	Ives WS401/402CCV US26D	US26D
1	Gasketing	Zero 188SBK PSA -18'	BK

Heading #44 (Group: 10)

Item #114 — 1 Single door 162AA, MUSIC ROOM TO PRACTICE RM — 90° RH

Item #115 — 1 Single door 162BA, MUSIC ROOM TO PRACTICE RM — 90° LH

950 x 2150 x 45 - HM DR x HM FR

6	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
2	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
2	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
2	Overhead Door Stop	Glynn-Johnson 904S 652	US32D
2	Gasketing	Zero 365AA 42"	AA
2	Gasketing	Zero WS 485AA 48 x 84	AA

Heading #45 (Group: 04)

Item #116 — 1 Pair of doors 163A, GYMNASIUM TO GYM STORAGE — 90° RHA

1000, 1000 x 2150 x 45 - HM DR x HM FR

6	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
2	Flush Bolt	Ives FB458	626
1	Dead Lock	Schlage B663P GMK	626
1	Door Pull	Canadian Builders Hdw CBH 353 4 X 6 C32D INSTALL PUSH SIDE	630
2	Door Pull	CBH CBH 7030-1 C32D TB No. 1 45	US32D
1	Pair Accessory	Ives DP2	626
1	Surface Closer	LCN 4040XP REG AL ACT LEAF	AL
2	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D
2	Wall Door Stop	Ives WS401/402CVX	626
1	Weatherstripping	K.N. Crowder W-8SP x 2150mm	
1	Miscellaneous Item	CBH CBH 353 4 X 6 C32D	US32D

Heading #46 (Group: 01)

Item #117 — 1 Pair of doors 164A, CORRIDOR FROM GYMNASIUM — 90° LHRA/RHRA

1000, 1000 x 2150 x 45 - HM DR x HM FR - ULMYLX.33

6	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
1	Removable Mullion	Von Duprin KR9954	689
2	Exit Device	Von Duprin 98-L-F 06 4' -499F US26D L	626/626
1	Cylinder	Schlage 20-001 36-083 GMK	626
2	Cylinder	Schlage 20-021 Open 626	626
2	Surface Closer	LCN 4040XP EDA ST-3068	689
2	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D
2	Wall Door Stop	Ives WS401/402CCV US26D	US26D
1	Gasketing	Zero 188SBK PSA -22'	BK
1	Gasketing	Zero ASTRAGAL 328AA 2PC X 84	AA

Heading #47 (Group: 02)

Item #118 — 1 Pair of doors 164B, EXTERIOR FROM GYNASIUM — 110° LHRA/RHRA

1000, 1000 x 2150 x 57 - AL DR x AL FR

2	Continuous Hinge	Ives 112XY-83" US28	US28
1	Removable Mullion	Von Duprin KR4954	689
2	Exit Device	Von Duprin CD-33A-EO-4'-626- 57-- INS-2	626
2	Cylinder	Schlage 20-001 114 XQ11-949 36-083 GMK	626
1	Cylinder	Schlage 20-001-1 1/4 " L583-477 626 CMK GMK	626
2	Door Pull	Gallery GSH 4012-2 C32D 57	US32D
2	Surface Closer	LCN 4040XP SHCUSH	689
1	Threshold	Zero 625A 96	A
1	Weatherstripping	UNK WEATHER STRP BY DOOR AND FRAME SUPPLIER	
1	Gasketing	Zero ASTRAGAL 328AA 2PC X 84	AA
2	Gasketing	Zero SWEEP 8192AA 48	AA
2	Miscellaneous Item	LCN 4040XP-18PA 689	689
2	Miscellaneous Item	LCN 4040XP-61 689	689
2	Miscellaneous Item	Schlage E.S. 679-05HM BY SECURITY CONTRACTOR	BLK

Heading #48 (Group: O164C)

Item #119 — 1 Pair of doors 164C, EXTERIOR FROM GYNASIUM — 110° LHRA/RHRA

1000, 1000 x 2150 x 57 - AL DR x AL FR

2	Continuous Hinge	Ives 112XY-83" US28	US28
2	Exit Device	Von Duprin CD-33A-EO-4'-626- 57-- INS-2	626
2	Cylinder	Schlage 20-001 114 XQ11-949 36-083 GMK	626
2	Door Pull	Gallery GSH 4012-2 C32D 57	US32D
2	Surface Closer	LCN 4040XP SHCUSH	689
2	Threshold	Zero 625A 48"	A
1	Weatherstripping	UNK WEATHER STRP BY DOOR AND FRAME SUPPLIER	
2	Gasketing	Zero SWEEP 8192AA 48	AA
2	Miscellaneous Item	LCN 4040XP-18PA 689	689
2	Miscellaneous Item	LCN 4040XP-61 689	689
2	Miscellaneous Item	Schlage E.S. 679-05HM BY SECURITY CONTRACTOR	BLK
1	Miscellaneous Hardware	UNK MULLION BY FRAME SUPPLIER	

Heading #49 (Group: O164AA)

Item #120 — 1 Single door 164AA, GYMNASIUM FROM METAL STORAGE — 100° RHR

1000 x 2150 x 45 - HM DR x HM FR

3	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
1	Dead Lock	Schlage B663P GMK	626
1	Door Pull	Canadian Builders Hdw CBH 353 4 X 6 C32D	630
1	Push Plate	CBH CBH 923 C32D 5" x 20"	US32D
1	Surface Closer	LCN 4040XP SHCUSH	689
1	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D

Heading #50 (Group: 06)

Item #121 — 1 Single door 165A, GYMNASIUM TO BOYS CHANGE RM — 90° RH

Item #122 — 1 Single door 166A, GYMNASIUM TO GIRLS CHANGE RM — 90° LH

950 x 2150 x 45 - HM DR x HM FR

6	Standard Hinge	Ives 5BB1HW 4.5 " x 4 .5 " 652	652
2	Dead Lock	Schlage B663P GMK	626
2	Door Pull	Canadian Builders Hdw CBH 353 4 X 6 C32D	630
2	Door Pull	CBH CBH 7030-1 C32D TB No. 1 45	US32D
2	Surface Closer	LCN 4040XP EDA 689	689
2	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
2	Wall Door Stop	Ives WS401/402CVX	626

Heading #51 (Group: INSTRUCTOR)

Item #123 — 1 Single door 167A, GYMNASIUM TO INSTRUCTOR OFFICE — 90° RH

950 x 2150 x 45 - HM DR x HM FR

3	Standard Hinge	Ives 5BB1HW 4.5 " x 4 .5 " 652	652
1	Dead Lock	Schlage B660P 626 CMK GMK	626
1	Door Pull	Canadian Builders Hdw CBH 353 4 X 6 C32D	630
1	Door Pull	CBH CBH 7030-1 C32D TB No. 1 45	US32D
1	Surface Closer	LCN 4040XP EDA 689	689
1	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
1	Wall Door Stop	Ives WS401/402CVX	626

Heading #52 (Group: 41-D)

Item #124 — 1 Pair of doors 101C, VESTIBULE FROM LOBBY — 90° LHRA/RHRA

1000, 1000 x 2150 x 45 - HM DR x HM FR

DR 101D ADO INSTALL ON RHR LEAF.

6	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
2	Push Bar	Von Duprin 350 -4' 628	628
1	Surface Closer	LCN 4040XP EDA ST-3068	689
1	Electronic Closer	GYRO-TECH AUTO OPERATOR 8710 X DR WIDTH HEADER CA 628 RHR LEAF	
2	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D
2	Overhead Door Stop	Glynn-Johnson 105S US32D	US32D
1	Miscellaneous Item	LCN 4040XP-18PA 689	689
1	Key Switch	Camden CM-160/22 INSTALL ADO HEADER	
2	Actuator	Camden CM-60/4	
2	Escutcheon	Camden CM-89S	
1	Miscellaneous Hardware	MISC WIRING / RISER DIAGRAM	

THIS HARDWARE SUPPLIER SECTION 08710 TO SUPPLY AND INSTALL AUTO OPERATOR.

DIV 16 ELECTRICAL CONTRACTOR TO PROVIDE 120VAC TO FRAME HEADER AND SUPPLY & INSTALL ALL LVW IN CONDUIT TO ALL ACTUATORS AND ELECTRICAL COMPONENTS LISTED IN THE HARDWARE SCHEDULE.

Heading #53 (Group: 0128B-D)

Item #125 1 Pair of doors 127AB, EXTERIOR FROM VESTIBULE 110° LHRA/RHRA

1000, 1000 x 2150 x 57 - AL DR x AL FR

REM HARDWARE MULLION

2	Continuous Hinge	Ives 112XY-83" US28	US28
1	Removable Mullion	Von Duprin KR4954	689
1	Exit Device	Von Duprin CD-33A-EO-4'-626- 57-- INS-2	626
1	Exit Device	Von Duprin CD-33A-NL-OP-4' -626- 57--388/626- INS-2	626/626
		RHR LEAF	
2	Cylinder	Schlage 20-001 114 XQ11-949 36-083 GMK	626
1	Cylinder	Schlage 20-013 Open 626 158	626
1	Cylinder	Schlage 20-021 Open 626	626
1	Electric Strike	Von Duprin 6300- CON 24VAC -630	630
		RHR LEAF	
2	Door Pull	Gallery GSH 1180-2 C32D 57	US32D
1	Surface Closer	LCN 4021 REG AL	AL
		LHR LEAF	
1	Mounting Bracket	LCN 4020-18G	689
1	Electronic Closer	GYRO-TECH AUTO OPERATOR 8710 X DR WIDTH HEADER CA 628	
		RHR LEAF	
2	Overhead Door Stop	Glynn-Johnson 104S US32D	US32D
2	Threshold	Zero 625A 48"	A
1	Weatherstripping	UNK WEATHER STRP BY DOOR AND FRAME SUPPLIER	
2	Gasketing	Zero SWEEP 8192AA 48	AA
2	Miscellaneous Item	Schlage E.S. 679-05HM BY SECURITY CONTRACTOR	BLK
1	Key Switch	Camden CM-160/22 INSTALL ADO HEADER	
2	Actuator	Camden CM-60/4	
2	Escutcheon	Camden CM-89S	
1	Advanced Logic Relay	Camden CX-33	
1	Miscellaneous Hardware	LCN WEATHER RING8310-802	PLA

THIS HARDWARE SUPPLIER SECTION 08710 TO SUPPLY AND INSTALL AUTO OPERATOR.

DIV 16 ELECTRICAL CONTRACTOR TO PROVIDE 120VAC TO FRAME HEADER AND SUPPLY & INSTALL ALL LVW IN CONDUIT TO ALL ACTUATORS AND ELECTRICAL COMPONENTS LISTED IN THE HARDWARE SCHEDULE.
INTEGRATION OF SECURITY INTERCOM WITH ADO BY DIV 26

Heading #54 (Group: O401A)

Item #126 1 Pair of doors 401A, EXTERIOR FROM VESTIBULE 100° LHRA/RHRA

1000, 1000 x 2150 x 57 - AL DR x AL FR

CARD READER & VIDEO INTERCOM BY SECURITY COMPANY

2	Continuous Hinge	Ives 112XY-83" US28	US28
1	Exit Device	Von Duprin CD-33A-EO-4'-626- 57-- INS-2	626
1	Exit Device	Von Duprin CD-33A-NL-OP-4' -626- 57--388/626- INS-2	626/626
		LHR	
2	Cylinder	Schlage 20-001 114 XQ11-949 36-083 GMK	626
1	Cylinder	Schlage 20-021 Open 626	626
1	Electric Strike	Von Duprin 6300- CON 24VAC -630	630
		LHR LEAF	
2	Door Pull	Gallery GSH 1180-2 C32D 57	US32D
1	Surface Closer	LCN 4021 REG AL	AL
		RHR	
1	Mounting Bracket	LCN 4020-18G	689
1	Electronic Closer	GYRO-TECH AUTO OPERATOR 8710 X DR WIDTH HEADER CA 628	
		LHR	
2	Overhead Door Stop	Glynn-Johnson 104S US32D	US32D
2	Threshold	Zero 625A 48"	A
1	Weatherstripping	UNK WEATHER STRP BY DOOR AND FRAME SUPPLIER	
2	Gasketing	Zero SWEEP 8192AA 48	AA
2	Miscellaneous Item	Schlage E.S. 679-05HM BY SECURITY CONTRACTOR	BLK
1	Key Switch	Camden CM-160/22 INSTALL ADO HEADER	
2	Actuator	Camden CM-60/4	
2	Escutcheon	Camden CM-89S	
1	Advanced Logic Relay	Camden CX-33	
1	Miscellaneous Hardware	UNK DOOR CONTACT FOR AUDIBLE ALARM BY OTHERS	
1	Miscellaneous Hardware	UNK MULLION BY FRAME SUPPLIER	
1	Miscellaneous Hardware	LCN WEATHER RING8310-802	PLA

THIS HARDWARE SUPPLIER SECTION 08710 TO SUPPLY AND INSTALL AUTO OPERATOR.

DIV 16 ELECTRICAL CONTRACTOR TO PROVIDE 120VAC TO FRAME HEADER AND SUPPLY & INSTALL ALL LVW IN CONDUIT TO ALL ACTUATORS AND ELECTRICAL COMPONENTS LISTED IN THE HARDWARE SCHEDULE.
INTEGRATION OF SECURITY INTERCOM WITH ADO BY DIV 26

Heading #55 (Group: 41-ES)

Item #127 | 1 Pair of doors 401B, VESTIBULE FROM CORRIDOR | 100° LHRA/RHRA

1000, 1000 x 2150 x 45 - HM DR x HM FR

.

6	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
1	Removable Mullion	Von Duprin KR4854-BLANK -96 --689- 154	689
2	Exit Device	Von Duprin 98L US26D -06 -4' US26D	626/626
1	Cylinder	Schlage 20-001-1 1/4 " L583-477 626 CMK GMK	626
2	Cylinder	Schlage 20-021 Open 626	626
1	Electric Strike	Von Duprin 6300- CON 24VAC -630 LHR	630
1	Surface Closer	LCN 4040XP EDA ST-3068	689
1	Electronic Closer	GYRO-TECH AUTO OPERATOR 8710 X DR WIDTH HEADER CA 628 LHR	
2	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D
2	Overhead Door Stop	Glynn-Johnson 105S US32D	US32D
1	Miscellaneous Item	LCN 4040XP-18PA 689	689
1	Miscellaneous Hardware	UNK CARD READER BY SERURITY CONTRACTOR	
2	Actuator	Camden CM-60/4	
2	Escutcheon	Camden CM-89S	
1	Miscellaneous Hardware	MISC WIRING / RISER DIAGRAM	

THIS HARDWARE SUPPLIER SECTION 08710 TO SUPPLY AND INSTALL AUTO OPERATOR.

DIV 16 ELECTRICAL CONTRACTOR TO PROVIDE 120VAC TO FRAME HEADER AND SUPPLY & INSTALL ALL LVW IN CONDUIT TO ALL ACTUATORS AND ELECTRICAL COMPONENTS LISTED IN THE HARDWARE SCHEDULE.

Heading #56 (Group: O401C)

Item #128 — 1 Pair of doors 401C, VESTIBULE FROM CORRIDOR — 100° LHRA/RHRA

1000, 1000 x 2150 x 45 - HM DR x HM FR

6	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
1	Removable Mullion	Von Duprin KR4854-BLANK -96 --689- 154	689
2	Exit Device	Von Duprin 98L US26D -06 -4' US26D	626/626
1	Cylinder	Schlage 20-001-1 1/4 " L583-477 626 CMK GMK	626
2	Cylinder	Schlage 20-021 Open 626	626
1	Electric Strike	Von Duprin 6300- CON 24VAC -630 LHR	630
1	Surface Closer	LCN 4040XP EDA 689	689
1	Electronic Closer	GYRO-TECH AUTO OPERATOR 8710 X DR WIDTH HEADER CA 628 LHR	
2	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D
2	Overhead Door Stop	Glynn-Johnson 105S US32D	US32D
1	Miscellaneous Item	LCN 4040XP-18PA 689	689
1	Miscellaneous Hardware	UNK CARD READER BY SERURITY CONTRACTOR	
1	Key Switch	Camden CM-160/22 INSTALL ADO HEADER	
2	Actuator	Camden CM-60/4	
2	Escutcheon	Camden CM-89S	
1	Advanced Logic Relay	Camden CX-33	
1	Miscellaneous Hardware	MISC WIRING / RISER DIAGRAM	

THIS HARDWARE SUPPLIER SECTION 08710 TO SUPPLY AND INSTALL AUTO OPERATOR.

DIV 16 ELECTRICAL CONTRACTOR TO PROVIDE 120VAC TO FRAME HEADER AND SUPPLY & INSTALL ALL LVW IN CONDUIT TO ALL ACTUATORS AND ELECTRICAL COMPONENTS LISTED IN THE HARDWARE SCHEDULE.

Heading #57 (Group: CLASS RM FG)

Item #129 — 1 Single door 402A, CORRIDOR TO OFFICE — 90° LH
Item #130 — 1 Single door 405A, CORRIDOR TO INFANT — 90° RH
Item #131 — 1 Single door 406A, CORRIDOR TO TODDLER — 90° LH
Item #132 — 1 Single door 411A, CORRIDOR TO TODDLER — 90° RH
Item #133 — 1 Single door 412A, CORRIDOR TO PRE-SCHOOL — 90° RH
Item #134 — 1 Single door 416A, CORRIDOR FROM PRE-SCHOOL — 90° RH

950 x 2150 x 45 - WD DR x HM FR

18	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
6	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
6	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
6	Wall Door Stop	Ives WS401/402CCV US26D	US26D
6	Miscellaneous Item	Zero 51A-180 72"	A
6	Miscellaneous Item	Zero 951A 72"	A

Heading #58 (Group: 403A)

Item #135 — 1 Single door 403A, INFANT TO W/R — 90° RH

950 x 2150 x 45 - WD DR x HM FR

DUTCH DOOR

4	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
1	Flush Bolt	Ives FB458	626
1	Latchset	Schlage ND10S RHO	626
1	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
1	Overhead Door Stop	Glynn-Johnson 904H 652	652
		INSTALL TOP LEAF	
1	Wall Door Stop	Ives WS401/402CVX	626
1	Miscellaneous Item	Zero 51A-180 72"	A
1	Miscellaneous Item	Zero 951A 72"	A

Heading #59 (Group: WR ADO FG)

Item #136 — 1 Single door 407A, CORRIDOR FROM B/F W/R — 90° LHR

950 x 2150 x 45 - HM DR x HM FR

INSTALL WR SET UP AS FAIL SAFE

3	Standard Hinge	Ives 5BB1 5 x 4 " 652	652
1	Lockset	Schlage ND80P6D RHO 626 CMK GMK	626
1	Electric Strike	Von Duprin 6211 FS CON 24 VAC/VDC	630
1	Electronic Closer	GYRO-TECH AUTO OPERATOR 8710 X DR WIDTH HEADER CA 628	
2	Kick Plate	CBH CBH 903 300 X 900 C32D	US32D
1	Overhead Door Stop	Glynn-Johnson 104S US32D	US32D
1	Miscellaneous Item	Zero 51A-180 72"	A
1	Miscellaneous Item	Zero 951A 72"	A
1	Key Switch	Camden CM-160/22 INSTALL ADO HEADER	
1	WR Kit	Camden CX-WC13AXFM -PS	
1	Miscellaneous Hardware	MISC WIRING / RISER DIAGRAM	

THIS HARDWARE SUPPLIER SECTION 08710 TO SUPPLY AND INSTALL AUTO OPERATOR.

DIV 16 ELECTRICAL CONTRACTOR TO PROVIDE 120VAC TO FRAME HEADER AND SUPPLY & INSTALL ALL LVW IN CONDUIT TO ALL ACTUATORS AND ELECTRICAL COMPONENTS LISTED IN THE HARDWARE SCHEDULE. REFER TO WIRING /RISER DIAGRAM SUPPLIED BY HARDWARE SUPPLIER.

Heading #60 (Group: 20)

Item #137 — 1 Single door 408A, TODDLER TO W/R — 90° LH

Item #138 — 1 Single door 409A, TODDLER TO W/R — 90° RH

Item #139 — 1 Single door 413A, PRE-SCHOOL TO W/R — 90° LH

Item #140 — 1 Single door 414A, PRE-SCHOOL TO W/R — 90° LH

950 x 2150 x 45 - WD DR x HM FR

HALF DOOR

8	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
4	Latchset	Schlage ND10S RHO	626
4	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
4	Wall Door Stop	Ives WS401/402CVX	626
4	Miscellaneous Item	Zero 51A-180 48"	A
4	Miscellaneous Item	Zero 951A 48"	A

Heading #61 (Group: STORAGE WS OHS)

Item #141	1 Single door 410A, TODDLER FROM COT STORAGE	90° LHR
Item #142	1 Single door 410B, TODDLER FROM COT STORAGE	90° RHR
Item #143	1 Single door 415A, PRE-SCHOOL FROM COT STORAGE	90° LHR
Item #144	1 Single door 415B, PRE-SCHOOL FROM COT STORAGE	90° RHR

950 x 2150 x 45 - HM DR x HM FR

12	Standard Hinge	Ives 5BB1 4.5 X 4 NRP 652	652
4	Lockset	Schlage ND80P6D RHO 626 CMK GMK	626
4	Kick Plate	CBH CBH 903 300 X 900 C32D	US32D
4	Overhead Door Stop	Glynn-Johnson 904H 652	652
4	Miscellaneous Item	Zero 51A-180 72"	A
4	Miscellaneous Item	Zero 951A 72"	A

Heading #62 (Group: CLASS RM FG)

Item #145	1 Single door 417A, CORRIDOR TO STAFF	90° LH

950 x 2150 x 45 - HM DR x HM FR

3	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
1	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
1	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
1	Wall Door Stop	Ives WS401/402CCV US26D	US26D
1	Miscellaneous Item	Zero 51A-180 72"	A
1	Miscellaneous Item	Zero 951A 72"	A

Heading #63 (Group: LAUNDRY)

Item #146	1 Single door 418A, CORRIDOR FROM LAUNDRY	90° LHR

950 x 2150 x 45 - HM DR x HM FR

3	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
1	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
1	Surface Closer	LCN 1461 EDA AL	AL
1	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
1	Overhead Door Stop	Glynn-Johnson 104S US32D	US32D
1	Gasketing	Zero 188SBK PSA -18'	BK
1	Miscellaneous Item	Zero 51A-180 72"	A
1	Miscellaneous Item	Zero 951A 72"	A

Heading #64 (Group: KITCHEN)

Item #147 — 1 Single door 419A, CORRIDOR TO KITCHEN — 90° RH

950 x 2150 x 45 - HM DR x HM FR

3	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
1	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
1	Surface Closer	LCN 1461 EDA AL	AL
1	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
1	Overhead Door Stop	Glynn-Johnson 904S 652	US32D
1	Miscellaneous Item	Zero 51A-180 72"	A
1	Miscellaneous Item	Zero 951A 72"	A

Heading #65 (Group: 211A-1067)

Item #148 — 1 Single door 421A, CORRIDOR FROM UTILITY — 90° LHR

1050 x 2150 x 45 - HM DR x HM FR - ULMYLX.75

3	Standard Hinge	Ives 5BB1 5 x 4 " 652	652
1	Lockset	Schlage ND80P6D RHO 626 CMK GMK	626
1	Surface Closer	LCN 4040XP SCUSH	689
1	Kick Plate	CBH CBH 903 200 X 1000 C32D	US32D
1	Gasketing	Zero 188SBK PSA -18'	BK
1	Miscellaneous Item	Zero 51A-180 72"	A
1	Miscellaneous Item	Zero 951A 72"	A

Heading #66 (Group: O4BB2)

Item #149 — 1 Pair of doors 422B, VESTIBULE FROM CORRIDOR — 90° LHRA/RHRA

1000, 1000 x 2150 x 45 - HM DR x HM FR

CARD READER & VIDEO INTERCOM BY SECURITY COMPANY.
INSTALL ADO ON LHR LEAF

6	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 630	630
2	Door Pull	Gallery GSH 1180-2 C32D 45	US32D
2	Push Bar	Von Duprin 350 -4' 628	628
1	Surface Closer	LCN 4040XP EDA 689	689
1	Electronic Closer	GYRO-TECH AUTO OPERATOR 8710 X DR WIDTH HEADER CA 628 LHR	
2	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D
2	Overhead Door Stop	Glynn-Johnson 105S US32D	US32D
1	Key Switch	Camden CM-160/22 INSTALL ADO HEADER	
2	Actuator	Camden CM-60/4	
2	Escutcheon	Camden CM-89S	
1	Miscellaneous Hardware	UNK MULLION BY FRAME SUPPLIER	

THIS HARDWARE SUPPLIER SECTION 08710 TO SUPPLY AND INSTALL AUTO OPERATOR.

DIV 16 ELECTRICAL CONTRACTOR TO PROVIDE 120VAC TO FRAME HEADER AND SUPPLY & INSTALL ALL LVW IN CONDUIT TO ALL ACTUATORS AND ELECTRICAL COMPONENTS LISTED IN THE HARDWARE SCHEDULE.
INTEGRATION OF SECURITY INTERCOM WITH ADO BY DIV 26

Heading #67 (Group: O423A)

Item #150 — 1 Pair of doors 423A, STAIR C FROM CORRIDOR — 90°,180° LHRA/RHRA

1000, 1000 x 2150 x 45 - HM DR x HM FR - ULMYLX.75

THIS DOOR IS NOT AN EXIT FROM CORR 420.
DOORS LOCKED ON BOTH SIDES.

6	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
2	Lockset	Schlage ND66 P6 RHO 626 CMK GMK	626
2	Surface Closer	LCN 4040XP EDA ST-3068	689
2	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D
2	Wall Door Stop	Ives WS401/402CVX	626
2	Gasketing	Zero 188SBK PSA -18'	BK
2	Gasketing	Zero SWEEP 8192AA 48	AA
2	Miscellaneous Item	LCN 4040XP-18PA 689	689
1	Miscellaneous Hardware	UNK MULLION BY FRAME SUPPLIER	

Heading #68 (Group: O423B)

Item #151 — 1 Pair of doors 423B, EXTERIOR FROM STAIR C — 110°,90° LHRA/RHRA

1000, 1000 x 2150 x 57 - AL DR x AL FR

2	Continuous Hinge	Ives 112XY-83" US28	US28
2	Exit Device	Von Duprin CD-33A-EO-4'-626- 57-- INS-2	626
2	Cylinder	Schlage 20-001 114 XQ11-949 36-083 GMK	626
2	Door Pull	Gallery GSH 1180-2 C32D 57	US32D
2	Surface Closer	LCN 4021 REG AL	AL
2	Mounting Bracket	LCN 4020-18G	689
2	Overhead Door Stop	Glynn-Johnson 104S US32D	US32D
2	Threshold	Zero 625A 48"	A
1	Weatherstripping	UNK WEATHER STRP BY DOOR AND FRAME SUPPLIER	
2	Gasketing	Zero SWEEP 8192AA 48	AA
2	Miscellaneous Item	Schlage E.S. 679-05HM BY SECURITY CONTRACTOR	BLK
1	Miscellaneous Hardware	UNK MULLION BY FRAME SUPPLIER	

Heading #69 (Group: 64)

Item #152 — 1 Pair of doors 201A, STAIR A FROM CORRIDOR — 180°,90° LHRA/RHRA
Item #153 — 1 Pair of doors 220A, STAIR B FROM CORRIDOR — 180°,90° LHRA/RHRA
Item #154 — 1 Pair of doors 250A, STAIR C FROM CORRIDOR — 180°,90° LHRA/RHRA
Item #155 — 1 Pair of doors 301A, STAIR A FROM CORRIDOR — 180°,90° LHRA/RHRA

1000, 1000 x 2150 x 45 - HM DR x HM FR - ULMYLX.75

24	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
8	Exit Device	Von Duprin 98L-F US26D -06 -4' US26D	626/626
8	Cylinder	Schlage 20-021 Open 626	626
8	Surface Closer	LCN 4040XP EDA 689	689
8	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D
8	Electro-Magnetic Holder	LCN SEM 7810-514 X 3" EXTENSION 689	689
8	Electro-Magnetic Holder	LCN SEM 7850 TRI VOLT 689	689
8	Gasketing	Zero 188SBK PSA -18'	BK
8	Gasketing	Zero SWEEP 8192AA 48	AA
4	Miscellaneous Hardware	UNK MULLION BY FRAME SUPPLIER	

Heading #70 (Group: 30)

Item #156	1 Single door 204A, CORRIDOR TO SEMINAR ROOM	90° LH
Item #157	1 Single door 211A, CORRIDOR TO RESOURCE ROOM	90° RH
Item #158	1 Single door 221A, CORRIDOR TO RESOURCE ROOM	90° RH
Item #159	1 Single door 308A, CORRIDOR TO RESOURCE	90° RH

950 x 2150 x 45 - WD DR x HM FR

12	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
4	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
4	Surface Closer	LCN 1461 689 - REG MTD 45	689
4	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
4	Wall Door Stop	Ives WS401/402CVX	626

Heading #71 (Group: STORAGE WS 1000)

Item #160	1 Single door 205A, CORRIDOR TO HUB	90° LH

1000 x 2150 x 45 - HM DR x HM FR

3	Standard Hinge	Ives 5BB1 5 x 4 " 652	652
1	Lockset	Schlage ND80P6D RHO 626 CMK GMK	626
1	Surface Closer	LCN 1461 689 - REG MTD 45	689
1	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D
1	Wall Door Stop	Ives WS401/402CCV US26D	US26D

Heading #72 (Group: STORAGE)

Item #161	1 Single door 206A, CORRIDOR TO COPIER	90° LH

950 x 2150 x 45 - WD DR x HM FR

3	Standard Hinge	Ives 5BB1 5 x 4 " 652	652
1	Lockset	Schlage ND80P6D RHO 626 CMK GMK	626
1	Surface Closer	LCN 1461 689 - REG MTD 45	689
1	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
1	Wall Door Stop	Ives WS401/402CCV US26D	US26D

Heading #73 (Group: STORAGE OHS ONLY)

Item #162	1 Single door 207A, LIBRARY FROM LAPTOP STORAGE	90° LHR

950 x 2150 x 45 - WD DR x HM FR

3	Standard Hinge	Ives 5BB1 4.5 X 4 NRP 652	652
1	Lockset	Schlage ND80P6D RHO 626 CMK GMK	626
1	Kick Plate	CBH CBH 903 300 X 900 C32D	US32D
1	Overhead Door Stop	Glynn-Johnson 904S 652	US32D

Heading #74 (Group: CLASS RM OHS)

Item #163	1 Single door 210AA, CO-LAB TO SEMINAR ROOM	90° LH
Item #164	1 Single door 211B, SPECIAL EDUCATION CLASSROOM TO RESOURCE ROOM	90° RH
Item #165	1 Single door 308B, CLASSROOM TO RESOURCE	90° RH
Item #166	1 Single door 317A, CORRIDOR TO SCIENCE	90° LH
Item #167	1 Single door 317B, CORRIDOR TO SCIENCE	90° RH

950 x 2150 x 45 - WD DR x HM FR

15	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
5	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
5	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
5	Overhead Door Stop	Glynn-Johnson 904S 652	US32D

Heading #75 (Group: CLASS RM WS 5")

Item #168	1 Single door 212A, CORRIDOR TO SPECIAL EDUCATION CLASSROOM	90° LH
Item #169	1 Single door 312A, CORRIDOR TO APPLICATIONS	90° LH
Item #170	1 Single door 312B, CORRIDOR TO APPLICATIONS	90° RH
Item #171	1 Single door 313A, CORRIDOR TO ART	90° LH

1050 x 2150 x 45 - WD DR x HM FR

12	Standard Hinge	Ives 5BB1 5 x 4 " 652	652
4	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
4	Kick Plate	CBH CBH 903 200 X 1000 C32D	US32D
4	Wall Door Stop	Ives WS401/402CCV US26D	US26D

Heading #76 (Group: CLASS TO CLASS)

Item #172	1 Single door 214B, CLASSROOM TO CLASSROOM	90° LH
Item #173	1 Single door 216B, CLASSROOM TO CLASSROOM	90° LH
Item #174	1 Single door 223B, CLASSROOM TO CLASSROOM	90° RH
Item #175	1 Single door 225B, CLASSROOM TO CLASSROOM	90° RH
Item #176	1 Single door 252B, CLASSROOM TO CLASSROOM	90° RH
Item #177	1 Single door 254B, CLASSROOM TO CLASSROOM	90° RH
Item #178	1 Single door 256B, CLASSROOM TO CLASSROOM	90° RH
Item #179	1 Single door 310B, CLASSROOM TO CLASSROOM	90° LH
Item #180	1 Single door 319B, CLASSROOM TO CLASSROOM	90° RH

950 x 2150 x 45 - WD DR x HM FR

27	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
9	Lockset	Schlage ND66 P6 RHO 626 CMK GMK	626
9	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
9	Overhead Door Stop	Glynn-Johnson 904S 652	US32D

Heading #77 (Group: QUIET RM)

Item #181	1 Single door 229A, CORRIDOR FROM QUIET RM	90° LHR
Item #182	1 Single door 231A, CORRIDOR FROM QUIET RM	90° LHR
Item #183	1 Single door 240A, CORRIDOR TO QUIET RM	90° LH
Item #184	1 Single door 245A, CORRIDOR TO QUIET RM	90° LH
Item #185	1 Single door 248A, CORRIDOR TO QUIET RM	90° RH
Item #186	1 Single door 329A, CORRIDOR FROM QUIET RM	90° LHR
Item #187	1 Single door 331A, CORRIDOR FROM QUIET RM	90° LHR

950 x 2397 x 45 - AL DR x AL FR

28	Standard Hinge	Ives 5BB1 4.5 x 4 " 652	652
7	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
7	Overhead Door Stop	Glynn-Johnson 104S US32D	US32D
7	Gasketing	Zero SWEEP 8192AA 48	AA

Heading #78 (Group: WR ADO)

Item #188	1 Single door 232A, CORRIDOR TO B/F W/R	90° LH
Item #189	1 Single door 323A, CORRIDOR TO B/F W/R	90° LH

950 x 2150 x 45 - HM DR x HM FR

INSTALL WR SET UP AS FAIL SAFE .

6	Standard Hinge	Ives 5BB1 5 x 4 " 652	652
2	Lockset	Schlage ND80P6D RHO 626 CMK GMK	626
2	Electric Strike	Von Duprin 6211 FS CON 24 VAC/VDC	630
2	Electronic Closer	GYRO-TECH AUTO OPERATOR 8710 PULL SIDE MTD X DR WIDTH HEADER CA	
4	Kick Plate	CBH CBH 903 200 X 900 C32D MTD BOTH SIDES	US32D
2	Wall Door Stop	Ives WS401/402CVX	626
2	Key Switch	Camden CM-160/22 INSTALL ADO HEADER	
2	Miscellaneous Hardware	Schlage CON-6W	
2	WR Kit	Camden CX-WC13AXFM -PS	
2	Miscellaneous Hardware	MISC WIRING / RISER DIAGRAM	

THIS HARDWARE SUPPLIER SECTION 08710 TO SUPPLY AND INSTALL AUTO OPERATOR.

DIV 16 ELECTRICAL CONTRACTOR TO PROVIDE 120VAC TO FRAME HEADER AND SUPPLY & INSTALL ALL LVW IN CONDUIT TO ALL ACTUATORS AND ELECTRICAL COMPONENTS LISTED IN THE HARDWARE SCHEDULE. REFER TO WIRING /RISER DIAGRAM SUPPLIED BY HARDWARE SUPPLIER.

Heading #79 (Group: 151A-1067)

Item #190	1 Single door 236A, CORRIDOR FROM CUST	90° RHR
Item #191	1 Single door 327A, CORRIDOR FROM CUST	90° RHR

1000 x 2150 x 45 - HM DR x HM FR

6	Standard Hinge	Ives 5BB1 5 x 4 " 652	652
2	Lockset	Schlage ND80P6D RHO 626 CMK GMK	626
2	Surface Closer	LCN 1461 S CUSH AL	AL
2	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D

Heading #80 (Group: MECH RM 1100)

Item #192	1 Single door 237A, CORRIDOR TO MECHANICAL	90° LH
Item #193	1 Single door 237B, CORRIDOR TO MECHANICAL	90° RH

1100 x 2150 x 45 - HM DR x HM FR - ULMYLX.75

6	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
2	Lockset	Schlage ND80P6D RHO 626 CMK GMK	626
2	Surface Closer	LCN 4040XP REG AL	AL
2	Kick Plate	CBH CBH 903 200 X 1050 C32D	US32D
2	Wall Door Stop	Ives WS401/402CVX	626
2	Gasketing	Zero 365AA 44" (1100DR)	AA
2	Gasketing	Zero WS 485AA 48 x 84	AA

Heading #81 (Group: 58)

Item #194	1 Single door 301B, STAIR A TO ROOF	90° RH

1000 x 2150 x 45 - HM DR x HM FR

3	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 630	630
1	Lockset	Schlage L9466 P6 06B 626 RH GMK	626
1	Surface Closer	LCN 4040XP SCUSH	689
1	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D
1	Threshold	Zero 625A 48"	A
1	Gasketing	Zero HD SEAL 429AA 48 x 0	AA
2	Gasketing	Zero JS 485AA 84	AA
1	Gasketing	Zero SWEEP 8192AA 48	AA
1	Miscellaneous Item	Schlage E.S. 679-05HM BY SECURITY CONTRACTOR	BLK

Heading #82 (Group: CLASS RM CL OHS)

Item #195	1 Single door 305A, CORRIDOR TO LIBRARY MEZZANINE/SEMINAR	90° LH

950 x 2150 x 45 - HM DR x AL FR - ULMYLX.75

3	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
1	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
1	Surface Closer	LCN 4040XP EDA 689	689
1	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
1	Overhead Door Stop	Glynn-Johnson 104S US32D	US32D

Heading #83 (Group: CLASS RM CL OHS)

Item #196 — 1 Single door 307AA, CO-LAB TO SEMINAR ROOM — 90° LH

950 x 2150 x 45 - WD DR x HM FR

3	Standard Hinge	Ives 5BB1HW 5 X 4.5 NRP 652	652
1	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
1	Surface Closer	LCN 4040XP EDA 689	689
1	Kick Plate	CBH CBH 903 200 X 900 C32D	US32D
1	Overhead Door Stop	Glynn-Johnson 104S US32D	US32D

Heading #84 (Group: STORAGE CL CUSH 1000)

Item #197 — 1 Single door 312AA, APPLICATIONS FROM DUST EXTRACTOR — 90° LHR

1000 x 2150 x 45 - HM DR x HM FR

3	Standard Hinge	Ives 5BB1 5 x 4 " 652	652
1	Lockset	Schlage ND80P6D RHO 626 CMK GMK	626
1	Surface Closer	LCN 4040XP SCUSH	689
1	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D
1	Gasketing	Zero 188SBK PSA -18'	BK

Heading #85 (Group: CLASS RM WS 5")

Item #198 — 1 Single door 313AA, ART TO ART STOR — 90° RH

1050 x 2150 x 45 - HM DR x HM FR

3	Standard Hinge	Ives 5BB1 5 x 4 " 652	652
1	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
1	Kick Plate	CBH CBH 903 200 X 1000 C32D	US32D
1	Wall Door Stop	Ives WS401/402CCV US26D	US26D

Heading #86 (Group: CLASS RM WS 5")

Item #199 — 1 Pair of doors 316A, STAIR B FROM CORRIDOR — 180°,90° LHRA/RHRA

1000, 1000 x 2150 x 45 - HM DR x HM FR - ULMYLX.75

6	Standard Hinge	Ives 5BB1 5 x 4 " 652	652
2	Lockset	Schlage ND70P6D RHO 626 CMK GMK	626
2	Kick Plate	CBH CBH 903 200 X 1000 C32D	US32D
2	Wall Door Stop	Ives WS401/402CCV US26D	US26D

Heading #87 (Group: STORAGE CL CUSH)

Item #200 — 1 Single door 332A, CORRIDOR FROM ELECT — 90° RHR

1000 x 2150 x 45 - HM DR x HM FR

3	Standard Hinge	Ives 5BB1 5 x 4 " 652	652
1	Lockset	Schlage ND80P6D RHO 626 CMK GMK	626
1	Surface Closer	LCN 4040XP SCUSH	689
1	Kick Plate	CBH CBH 903 200 X 950 C32D	US32D
1	Gasketing	Zero 188SBK PSA -18'	BK

Heading #88 (Group: TC-CLOSET)

Item #201 — 1 Elevation TC-CLOSET, TEACHERS CLOSET

__ x __ x __ - WD DR x WD FR

NO TEACHER CLOSET LOCKS REQUIRED.



BEST
dormakaba Group

9K Series

Heavy Duty Cylindrical Locks – Levers

by BEST



BEST: Setting the Standard for Security

Functions

Description		Outside Lever		Inside Lever	
Function & Diag.(ANSI No.)	Latch operated by	Locked by	Unlocked by	Locked by	Unlocked by
Single keyed					
Entrance (AB) F109 	Rotating the inside lever Rotating the outside lever– only when the inside push button is out, Turning the key in the outside lever	Pushing the inside button Pushing and turning the inside button. Turning the button keeps the outside lever locked until the button is turned back	Turning the key in the outside lever, (only when the button is not turned) Rotating the inside lever, (only when the button is not turned). Closing the door (only when the button is not turned)	Cannot be locked	Always unlocked
Storeroom (D) F86 	Turning the key in the outside lever Rotating the inside lever	Always fixed	Cannot be unlocked	Cannot be locked	Always unlocked
Service Station (E) F92 	Rotating the inside lever Rotating the outside lever only when the inside push button is out Turning the key in the outside lever	Pushing the inside button Pushing and turning the inside button. Turning the button keeps the outside lever locked until the button is turned back	Turning the key in the outside lever Rotating the inside lever Closing the door-only when the button is not turned Turning back the slotted button	Cannot be locked	Always unlocked
Hotel Guest Room (H) F93 (Indicator included) 	Rotating the inside lever Turning the key in the outside lever-only when the inside push button is out Removing the core with a control key and using a special emergency key Pushing the inside button projects an "occupied" indicator in the outside lever and blocks all operating keys.	Always fixed	Key block feature is released by: Rotating the inside lever Closing the door	Cannot be locked	Always unlocked
Hotel Guest Room (HJ) (No indicator) 	Rotating the inside lever Turning the key in the outside lever-only when the inside push button is out Removing the core with a control key and using a special emergency key Pushing the inside button blocks all operating keys, but no "occupied" indicator is projected.	Always fixed	Key block feature is released by: Rotating the inside lever Closing the door	Cannot be locked	Always unlocked
Classroom (R) F84 	Rotating the inside lever Turning the key in the outside lever Rotating the outside lever when not locked by key	Turning the key in the outside lever	Turning the key in the outside lever	Cannot be locked	Always unlocked
Dormitory (T) F90 	Rotating the inside lever Rotating the outside lever when not locked by key or push button	Turning the key in the outside lever, Pushing the button on the inside lever	Turning the key in the outside lever Rotating the inside lever (only when locked by push button) Closing the door (only when locked by push button)	Cannot be locked	Always unlocked
Entrance/Office (UA) 	Rotating the inside lever Rotating the outside lever–only when the inside push button is out Turning the key in the outside lever	Pushing the inside button Pushing and turning the inside button. Turning the button keeps the outside lever locked until the button is turned back	Turning the key in the outside lever, (only when the button is not turned) Rotating the inside lever, (only when the button is not turned).	Cannot be locked	Always unlocked
Double keyed					
Corridor (C) F88 	Rotating the inside lever, Rotating the outside lever when not locked by key Turning the key in the outside lever	Turning the key in the inside lever	Turning the key in the inside lever	Cannot be locked	Always unlocked

*ATTENTION: Locksets that secure both sides of the door are controlled by building codes and the Life Safety Code. In an emergency exit situation, failure to quickly unlock the inside knob could be hazardous or even fatal.

CORMAX™ Patented Keying System

BEST® CORMAX™ is the premier patented keying system offered by BEST. CORMAX will meet your needs for security, key control, and convenience. A simple solution with no compromising allowed. CORMAX is the upgrade path for existing BEST Standard, Premium, and MX8 customers; and it is an essential element of non-residential access control as security administrators strive to eliminate the unauthorized duplication of keys.


CORMAX™
Patented Keying System

CORMAX offers the following features and benefits:

- A long-term US utility patent that guarantees the extended useful life of the system through 2027.
- A second, independent locking mechanism that utilizes a patented set of built-in side pins to provide higher security.
- Several levels of geographical exclusivity, including national exclusivity, are available via the patented side pin feature.
- CORMAX cores and keys are available exclusively through BEST sales offices. Key blanks are only sold to individuals authorized by the customer to ensure key blanks do not end up in the possession of unauthorized personnel either inside or outside the customer's facility.
- CORMAX cores are certified to meet the security, safety, and reliability requirements of BHMA A156.5 Grade 1.
- Picking and drilling resistance options are available if higher levels of security are desired.
- Complete factory masterkeying service offered, and at no charge with purchase of BEST locksets and PHI exit devices.
- Keyways are organized in families of four keyways each, with double-milled and quad-milled key levels to facilitate the design of masterkey systems in multi-building campuses.
- BEST CORMAX cores are compatible with all existing BEST interchangeable core housings, eliminating the need for new or modified locksets.

Deadlocking Latches & Strikes

8KL3 Deadlocking Latch



Bolt throw: 9/16"
Backset: 2 3/4"
Front: 2 1/4" x 1 1/8" beveled
Tube: To fit 1" diameter hole in door edge
To order:(with unit) designate "9K3" on How to Order (page 3).
To order: (without unit) designate "8KL3-SL" (Spring Latch) or DL (Deadlocking Latch) and finish.

8KL4 Deadlocking Latch



Bolt throw: 9/16"
Backset: 3 3/4"
Front: 2 1/4" x 1 1/8" beveled
Tube: To fit 1" diameter hole in door edge
To order:(with unit) designate "9K4" on How to Order (page 3).
To order: (without unit) designate "8KL4-SL" (Spring Latch) or DL (Deadlocking Latch) and finish.

8KL5 Deadlocking Latch



Bolt throw: 9/16"
Backset: 5"
Front: 2 1/4" x 1 1/8" beveled
Tube: To fit 1" diameter hole in door edge
To order:(with unit) designate "9K5" on How to Order (page 3).
To order: (without unit) designate "8KL5-SL" (Spring Latch) or DL (Deadlocking Latch) and finish.

8KS3–7/8 Flat Strike



Dimension: Conforms to ANSI A115.2 for 1 3/4" doors (4 7/8" x 1 7/8" flat)
To order: (with unit) designate "S3-7/8" on How to Order (page 3).
To order: (without unit) designate 8KS3- 7/8 and finish.

8KS3 Strike



Dimension: Conforms to ANSI A115.2 for 1 3/4" doors (4 7/8" x 1 1/4" with curved lip).
To order: (with unit) designate "S3" on How to Order (page 3).
To order: (without unit) designate 8KS3 and finish.

8KS2 Strike (Supplied Standard)



Dimension: Conforms to ANSI A115.2 for 1 3/8" doors (2 3/4" x 1 1/8" with curved lip and box)
To order: (with unit) designate "STK" on How to Order (page 3).
To order: (without unit) designate 8KS2 and finish.

CX-33: ADVANCED LOGIC RELAY



CX-33 is a 'state of the art' door controller designed for 'universal' operation in virtually any automatic door application. This compact unit is small enough to fit inside most door operator cases. It provides a large 3 segment LED and simple push buttons for the easiest programming, and supports illuminated signage in restroom applications. It also leads the market with a range of exclusive operating features, including time duration in airlock applications and protection of automatic door operators when utilizing magnetic locks.

Features

- 15 operating modes with sub-modes
- Easily sequence multiple inputs with multiple maintain and hold outputs
- New V3.2 Features Include:
  - Lock Down Mode
  - Delayed Relay Activation
  - Selectable N.O or N.C. Inputs
- Large 3 segment (blue) LED display
- Outstanding power filtering and surge protection
- Selectable time delays with delay on input activation
- Larger terminal strips
- 12V to 24V AC/DC
- 3 year warranty

MODEL	
CX-33	Advanced Logic Relay

Specifications

Voltage:	12V to 24V AC/DC
Current Draw:	105mA Typical, 320mA Max
Response Time:	0.5 Seconds
Display:	Blue Multi-Segment LED
Input:	4 x Dry 1 x Wet: min. 5V AC/DC N/O or N/C Selectable
Output:	3 x Form C (SPDT)
Contact Rating:	3A @ 30 VDC
Temp Range:	-22°F to +185°F (-30°C to +85°C)
Time Delay:	Hold 1 timer: 0-50 Seconds Delay 1 Timer: 0-15 Seconds Hold 2 timer: 0-50 Seconds Delay 2 timer: 0-60 Seconds Hold 3 Timer: 0-50 Seconds Delay on Activate: 0-10 Seconds
Dimensions:	2"H x 6"W x 7/8"D (51mm x 152mm x 22mm)

CX-33PS: ADVANCED LOGIC RELAY, POWER SUPPLY AND CABINET



*The industry leading **CX-33** Advanced Logic Relay is available in a metal cabinet that centralizes all door control system components; a 12/24 VDC power supply module, and color coded termination blocks for quick and easy installation.*

Features

- Rugged and compact metal cabinet
- Pre-wired with large terminal block for easy access
- Removable door with option for cabinet lock
- Five convenient conduit knockouts; one per side
- 12/24V DC power supply, 2 Amp. (UL listed)
- Available as part of Camden Restroom Control Kits (See pages 34-37).
- Short circuit and thermal overload protection
- 3 year warranty

MODEL	
CX-33PS	Advanced Logic Relay, 2 Amp, Power Supply Cabinet and Transformer
Option	
'L'	Add suffix '**L**' to model number for Cabinet Lock

Specifications

Voltage:	16V to 28V AC/DC
Output:	12V or 24 VDC
Current:	2 Amps
Temp Range:	32°F to +120°F (0°C to +49°C)
Dimensions:	11-1/16" H x 7-7/8"W x 2-13/16"D 281mm x 200mm x 72mm)

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RELAY CONTROL SELECTION CHART

DESCRIPTION	 CX-33	 CX-EMF-2	 CX-12PLUS	 CX-SA1	NOTES
MODES					
No. of Applications / Modes	15	7	8	2	
Make/Break relay (switching network)	Yes	No	Yes	Yes	Most common application
Apartment/Condo Interfone connection	Yes	No	Yes	No	Eliminates need for separate isolating relay
Bi-directional door sequencer	Yes	Yes	Yes	No	Control of 2 doors
Restroom applications (#) (dedicated output for signage)	Yes (*2)	Yes (3*)	Yes (*2)	No	*Includes both normally unlocked and locked washroom applications
Latching relay modes	Yes	Yes	Yes	Yes	A.K.A - Impulse, sequence, or alternate action
ATM Vestibule control	No	Yes	No	No	Exterior door control on banks, etc.
Dedicated Airlock modes (# of doors)	Yes (2)	Yes (5)	No	No	Prevents more than 1 door open at a time
2 Door Mantrap	No	Yes	No	No	True security mantrap
New! Lock-Down Mode	Yes	No	No	No	Applications include schools
New! Delayed Egress mode	Yes	No	No	No	For warehouse rear emergency exits
SPECIFICATIONS					
No. of Adjustable Time Delays (Type)	6 (digital)	5 (analog)	3 (analog)	3 (analog)	Digital ensures greater accuracy. Larger number of timers.
Adjustable delay-on-activate feature	Yes	No	No	No	Also called a "nuisance delay"
Quantity and Type of Inputs	5 (1 Wet, & 4 Dry)	8 (7 Dry, & 1 Digital)	4 (2 Wet, & 2 Dry)	3 (1 Wet, & 2 Dry)	Larger number of inputs
User Selectable N/O or N/C Inputs	Yes	No	No	No	Camden exclusive feature
Simultaneous selectable momentary, maintained and latching inputs	Yes	Yes	No	Yes	Allows for most flexibility
Number of outputs and Relay rating	3 Form 'C' @ 3 Amps each	5 Form 'C' @ 3 Amps each	2 Form 'C' @ 3 Amps each	2 Form 'C' @ 2 Amps each	Capable of switching larger loads such as magnetic locks
12 – 24 V AC/DC Input Power	Yes	Yes	Yes	Yes	Very stable, forgiving and reliable
Case / Protection	Clear Plastic	Grey Plastic	Paper Wrap	Paper Wrap	
Dimensions	6" x 2" x 7/8"	6-7/8" x 2-7/8" x 7/8"	3-1/4" x 2-1/4" x 5/8"	4-1/8" x 3-1/2" x 5/8"	

CX-WC: BARRIER FREE RESTROOM CONTROL KITS

Listed Components
Compliant

MODELS	
CX-WC13AXFM	**FLUSH MOUNT COMBO ILLUMINATED PUSH PLATE SYSTEM** (1) **CX-33** Advanced Logic Relay (1) **CM-2520/4854SE1** Combo switch, 2" x 4" narrow 'PUSH TO OPEN' & 'PUSH TO LOCK', Flush mount AURA™ illuminated enclosure and sign (1) **CM-45/454SE1** 4-1/2" Square (concealed screws) push plate, with sounder, illuminated RED/GREEN/BLUE flush mount CM-55i box; Double sided. 'DOOR LOCKED WHEN 'RED' / 'UNLOCKED WHEN GREEN' AND 'OCCUPIED WHEN RED' / 'VACANT WHEN GREEN'; 'WHEELCHAIR' symbol and 'PUSH TO OPEN', blue (1) **CX-MDA** Magnetic contact, surface, SPST, white Add suffix 'F' for French and 'FE' for bilingual
CX-WC13AXSM-PS	**SURFACE MOUNT COMBO ILLUMINATED PUSH PLATE SYSTEM** (1) **CX-33PS** Advanced Logic Relay, 2 Amp Power Supply, Cabinet and Transformer (1) **CM-2520/4854SE1** Combo switch, 2" x 4" narrow 'PUSH TO OPEN' & 'PUSH TO LOCK', Surface mount AURA™ illuminated enclosure and sign (1) **CM-45/454SE1** 4-1/2" Push plate switch, wheelchair & 'PUSH TO OPEN' with Surface mount AURA™ illuminated enclosure and sign (1) **CX-ED2079** Grade 2 ANSI electric strike with 3 faceplates (1) **CX-MDA** Magnetic contact, surface, SPST, white Add suffix 'F' for French and 'FE' for bilingual
CX-WC13AXFM-PS	**FLUSH MOUNT COMBO ILLUMINATED PUSH PLATE SYSTEM** (1) **CX-33PS** Advanced Logic Relay, 2 Amp Power Supply, Cabinet and Transformer (1) **CM-2520/4855SE1** Combo switch, 2" x 4" narrow 'PUSH TO OPEN' & 'PUSH TO LOCK', Flush mount AURA™ illuminated enclosure and sign (1) **CM-45/455SE1** 4-1/2" Push plate switch, wheelchair & 'PUSH TO OPEN' with Flush mount AURA™ illuminated enclosure and sign (1) **CX-ED2079** Grade 2 ANSI electric strike with 3 faceplates (1) **CX-MDA** Magnetic contact, surface, SPST, white Add suffix 'F' for French and 'FE' for bilingual
CX-WC14AXSM	**SURFACE MOUNT TWO DOOR RESTROOM SYSTEM** (1) **CX-EMF2** Multi-Function Relay Controller (2) **CM-2520/4854SE1** Combo switch, 2" x 4" narrow 'PUSH TO OPEN' & 'PUSH TO LOCK', Surface mount AURA™ illuminated enclosure and sign (2) **CM-45/454SE1** 4-1/2" Push plate switch, wheelchair & 'PUSH TO OPEN' with Surface mount AURA™ illuminated enclosure and signs (2) **CX-MDA** Magnetic contact, surface, SPST, white Add suffix 'F' for French and 'FE' for bilingual
CX-WC14AXFM	**FLUSH MOUNT TWO DOOR RESTROOM SYSTEM** (1) **CX-EMF2** Multi-Function Relay Controller (2) **CM-2520/4854SE1** Combo switch, 2" x 4" narrow 'PUSH TO OPEN' & 'PUSH TO LOCK', Flush mount AURA™ illuminated enclosure and sign (2) **CM-45/454SE1** 4-1/2" Push plate switch, wheelchair & 'PUSH TO OPEN' with Flush mount AURA™ illuminated enclosure and signs (2) **CX-MDA** Magnetic contact, surface, SPST, white Add suffix 'F' for French and 'FE' for bilingual

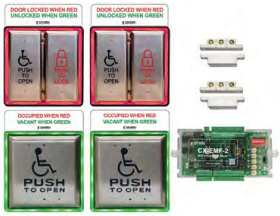


CX-WC13AXFM

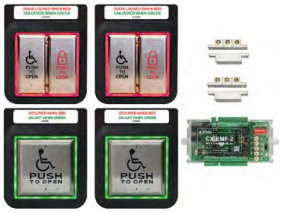


CX-WC13AXSM-PS


CX-WC13AXFM-PS



CX-WC14AXSM



CX-WC14AXFM

CX-WC: BARRIER FREE RESTROOM CONTROL KITS

MODELS	
CX-WC17	**COLUMN™ SWITCH RESTROOM SYSTEM KIT** (2) **CM-7536/4** 'Push to Open' Switches (1) **CM-7536/8B** 'Push to Lock' (Red) Switch (2) **CM-AF503** LED Annunciators (with 'Occupied' and 'Locked' Message Labels) (1) **CX-33** Controller (1) **CX-MDA** Surface Magnetic Contacts Add suffix 'F' for French and 'FE' for bilingual
CX-WC17VR-PS	**COLUMN™ SWITCH RESTROOM SYSTEM KIT WITH POWER SUPPLY & HANDS-FREE SENSORS** (2) **CM-7536VR/4** 'Push to Open' Column™ Switches and Signs (1) **CM-7536VR/8B** 'Push to Lock' (Red) Column™ Switch and Sign (1) **CX-33PS** Controller and Power Supply Cabinet (1) **CX-ED2079** Grade 2 Electric Strike (1) **CX-MDA** Surface Magnetic Contacts Add suffix 'F' for French and 'FE' for bilingual



CX-WC17



CX-WC17VR-PS

CX-WEC SERIES: EMERGENCY CALL SYSTEMS FOR UNIVERSAL RESTROOMS

Listed Components

ADA Compliant

***CX-WEC Series** are equipment packages designed to meet the latest building code requirements for universal restrooms. Emergency Call Systems may be installed in restrooms without an automatic door operator, or with Camden CX-WC Series barrier-free restroom kits (with operator).*

Specifications

Current Draw: CX-WEC Series: 165mA

MODELS	
CX-WEC10	**UNIVERSAL EMERGENCY CALL KIT** (1) **CM-450R/12** Mushroom Push button, single gang, stainless steel faceplate, push/pull, 'PRESS FOR EMERGENCY ASSISTANCE' (1) **CM-AF501SO** Single gang LED annunciator with adjustable sounder 'ASSISTANCE REQUESTED' (1) **CM-AF141SO** Single Gang LED Dome Light with sounder (1) **CM-SE21A** English, solid white sign, 'IN THE EVENT OF AN EMERGENCY PUSH EMERGENCY BUTTON AND AUDIBLE AND VISUAL SIGNAL WILL ACTIVATE'; For use without automatic door operator, or with CX-WC 10, 11, 12, 13 & 14 barrier-free restroom control kit. Add suffix 'F' for French and 'FE' for bilingual
CX-WEC10K2	**UNIVERSAL EMERGENCY CALL SYSTEM KIT, WITH WHITE DOME LIGHT** (1) **CM-AF540SO** Double gang, push/pull mushroom push button, red, 'Assistance Required', with LED annunciator & adjustable sounder, 'Assistance Requested' (1) **CM-AF141SO** Single Gang LED Dome Light with sounder (1) **CM-SE21A** English, solid white sign, 'IN THE EVENT OF AN EMERGENCY PUSH EMERGENCY BUTTON AND AUDIBLE AND VISUAL SIGNAL WILL ACTIVATE' Add suffix 'F' for French and 'FE' for bilingual



CX-WEC10



CX-WEC10K2

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Submittal Date: May 1/24, Nov 3/25, Nov 14/25, Nov 18/25, Nov 19/25

CM-40, CM-41 & CM-60 SERIES: ROUND PUSH PLATE SWITCHES

KINETIC BY CAMDEN VERSIONS AVAILABLE

UL Listed Components ADA Compliant

CM-40, CM-41 and CM-60 *Series 'All-Active' push plate switches are heavy-duty, ADA-compliant door controls. Faceplates are stainless steel or solid brass, and the assembly is designed for easy installation. The CM-41 4-1/2" square stainless steel backplate is large enough to cover a poorly installed electrical box. Also fits Camden 4-1/2" square surface boxes.*


CM-40/2



CM-41/3



CM-60/4

Features

- Durable stainless steel or brass construction
- 4 stud switch design and rubber dampers for quieter operation
- All-Active design requires minimal actuation force
- Weather resistant boot included
- Large variety of graphics options
- Available in a range of architectural finishes
- 3 year 'Camden Tough' warranty with '2 for 1' replacement

Specifications

Voltage:	12/24V AC/DC
Contact Rating:	15A @ 30 VDC
Contact Type:	SPDT Form 'C'
Mounting:	**CM-40/41:** Single Gang **CM-60:** Single/Double Gang or 4 x 4
Switch Type:	Momentary
Std. Finish:	US32 / 630
Dimensions:	**CM-40:** 4-1/2" Diameter x 1-3/4"D (114mm x 44mm) **CM-41:** 4-1/2"H x 4-1/2"W x 1-3/4"D (114mm x 114mm x 44mm) **CM-60:** 6" Diameter x 1-1/8"D (152mm x 28.6mm)

ROUND SWITCHES

CM-40	4-1/2" Round push plate switch, brushed stainless steel finish
CM-41	4-1/2" Round push plate switch, with square back plate, brushed stainless steel finish
CM-60	6" Round push plate switch, brushed stainless steel finish

NO-BATTERY KINETIC BY CAMDEN™ WIRELESS ROUND SWITCHES with built-in transmitter. Receiver required.

CM-40K	4-1/2" Round push plate switch, brushed stainless steel finish
CM-41K	4-1/2" Round push plate switch, with square back plate, brushed stainless steel finish
CM-60K	6" Round push plate switch, brushed stainless steel finish

OPTIONS (Add suffix to model above)

Faceplate Graphic Options


CM-xx/1


CM-xx/2


CM-xx/A2


CM-xx/2AL


CM-xx/2AR



CM-xx/3



CM-xx/3F



CM-xx/4



CM-xx/A4



CM-xx/4AL



CM-xx/4AR



CM-xx/4F



CM-xx/8



CM-xx/8B



CM-xx/8F



CM-xx/8D

Architectural Finishes		Water Tight Option	Contact Option
CM-xxx-AB Antique Brass	CM-xxx-OB Oil Rub Bronze	CM-xxx-WT Boot & watertight coating	CM-xxx-DP DPDT switch instead of SPDT
CM-xxx-SB Satin Brass	CM-xxx-PB Polished Brass		

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CM-49, 79, 59S AND 89S: SURFACE AND FLUSH MOUNT ESCUTCHEONS (FOR ROUND PUSH PLATE SWITCHES)

*Camden offers a range of **flame and vandal resistant** low profile escutcheons for mounting 4-1/2" and 6" round push plate switches. ABS escutcheons feature a patented 2-piece design and may be ordered as complete 'kits' or individual parts. Stainless steel escutcheons feature one piece heavy gauge construction.*

Features

- Exclusive 2 piece ABS escutcheons can be surface mounted or mounted on in-wall single gang, double gang or 4" square electrical boxes
- Heavy gauge stainless steel escutcheons provide an attractive, rugged look
- ABS models are designed for use with Lazerpoint RF™ 915 Mhz. wireless wall switch transmitters

FOR 4-1/2" ROUND SWITCH - STAINLESS STEEL ESCUTCHEON	
CM-59S	Surface, Round, Standard Depth. Heavy gauge stainless steel, 7-3/4" x 1-1/18"D
FOR 4-1/2" ROUND SWITCH - ABS SPACESHIP ESCUTCHEON	
CM-49	Surface/Flush Mount Kit, includes **CM-49A, CM- 49B, CM-49C & CM-49G,** 8-3/4" x 2"D
CM-49A	Flush enclosure only (fits single gang box), 7" x 13/16"D
CM-49AK	Flush Mount Kit, includes **CM-49A, CM-49C & CM-49G,** (fits single, double and 4 x 4 boxes), 7" x 13/16"D
CM-49B	Surface mount enclosure only (must be used with **CM-49A**), 8-3/4" x 1"D
CM-49C	Adapter plate for mounting on double gang or 4" Square box, 4" x 1/16"D
CM-49G	Gasket for **CM-49A** OR **CM-49B**, 6-1/4" x 1/8"D
FOR 6" ROUND SWITCH - STAINLESS STEEL ESCUTCHEON	
CM-89S	Surface, round standard depth. Heavy gauge stainless steel, 9-5/8" x 1-1/2"D
FOR 6" ROUND SWITCH - ABS SPACESHIP ESCUTCHEON	
CM-79	Surface/Flush Mount Kit, includes **CM-79A, CM-79B, CM-49C & CM-79G,** 9-5/8" x 2"D
CM-79A	Flush enclosure only (fits single gang box), 8" x 3/4"D
CM-79AK	Flush Mount Kit, includes **CM-79A, CM-49C & CM-79G,** (fits single, double and 4 x 4 boxes), 8" x 3/4"D
CM-79B	Surface mount enclosure only (must be used with **CM-79A**), 9-5/8" x 1-1/8"D
CM-79G	Gasket for **CM-79A or CM-79B**, 7-1/4" x 1/8"D



CM-59S



CM-49A *CM-49B*
(Shown with TX-9 Transmitter)



CM-89S



CM-79A *CM-79B*
(Shown with TX-9 Transmitter)

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CM-160 / 170 / 180 SERIES: KEY SWITCHES

***Key switches** for automatic doors are designed for mounting on the door operator cabinet or door frame, and are available in a range of 2 or 3 position momentary or maintained models. The key cylinder and 2 keys are included.*

Features

- Black lamacoid (plastic) or stainless steel faceplates
- Key removable in all maintained positions
- 2, 3, 4 position maintained and 2 position momentary models
- All switches are keyed alike

MODELS

CM-160	Key switch with plastic lamacoid (mini) faceplate
CM-170	Key switch with stainless steel (narrow stile) faceplate
CM-180	Key switch with stainless steel (single gang) faceplate

OPTIONS (Add suffix to model above)

Faceplate Graphics

MOMENTARY	MAINTAINED	MAINTAINED	MAINTAINED	MAINTAINED
OFF / OPEN	OFF / AUTO	OFF / AUTO / HOLD OPEN	OFF / DAY / NIGHT	EXIT / AUTO / OFF / HOLD OPEN
CX-xx/20	*CX-xx/21*	*CX-xx/22*	*CX-xx/23*	*CX-xx/24*

Extra Keys

CM-A126	(2) Extra keys for CM-160, 170 and 180 series key switches

Listed Components



CM-160/23



CM-170/21



CM-180/23

Specifications

Voltage:	12/24 VDC
Contact Rating:	4A @ 28 VDC
Switch Life:	100,000 cycles
Dimensions:	**CM-160:** 3"H x 1-11/16"W x 1-3/8"D (76mm x 42mm x 35mm) **CM-170:** 4-1/2"H x 1-3/4"W x 1-3/8"D (114mm x 44mm x 35mm) **CM-180:** 4-1/2"H x 2-3/4" W x 1-3/8" D (114mm x 70mm x 35mm)

CM-190 SERIES: TOGGLE SWITCH

***CM-190 Series** maintained toggle switches are designed to control automatic door operators, featuring a choice of faceplates, for mounting on the operator cabinet/wall.*

Features

- Mini metal faceplate designed to install on door operator cabinet or door frame
- 2 or 3 position maintained operation
- Single gang faceplate for mounting on standard electrical box
- Heavy duty 6 Amp. contacts

MODELS

CM-190	Mini aluminum faceplate
CM-195	Single gang stainless steel faceplate

OPTIONS (Add suffix to model above)

Faceplate Graphics

ON / OFF	*CX-xx/30*
AUTOMATIC / OFF / OFF / HOLD OPEN	*CX-xx/31*

Listed Components



CM-190/30



CM-195/31

Specifications

Voltage:	12/24 VDC
Contact Rating:	6A @ 30 VDC
Switch Life:	50,000 cycles
Temp Range:	-4°F - 185°F (-20°C - 85°C)
Dimensions:	**CM-190:** 2-5/8" H x 1-1/2" W x 2"D (59mm x 38mm x 51mm) **CM-195:** 4-1/2" H x 2-3/4" W x 2"D (114mm x 70mm x 51mm)

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Oakville, L6H 5V1
Oakville #5 P.S. HDSB
Submittal Date: May 1/24, Nov 3/25, Nov 14/25, Nov 18/25, Nov 19/25

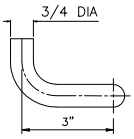
GSH 1180 - (1, 2, 3 OR 4) 12" C/C

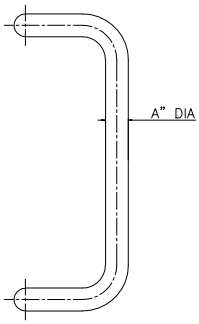


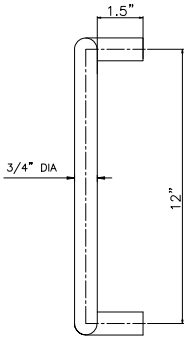
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- Wrought Brass, Bronze, Aluminum and Stainless Steel
- Fasteners for 1 3/4" Door provided
- C3, C4, C9, C10, C10B, C14, C15, C26, C26D, C28 and C32D
- 1=3/4" DIA
- 2=1" DIA
- 3=1-1/4" DIA
- 4=1-1/2" DIA







676 Petrolia Road, Toronto, ON, Canada M3J 2V2
Tel: 416.667.9593 Fax: 416.667.0806
Email: info@galleryspecialty.com

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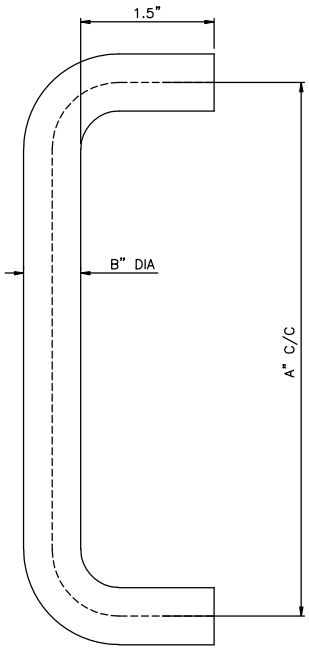
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GSH 4007 7"-4009 9"-4012 12" (1, 2, 3 OR 4)

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90 Series surface overhead door holders/stops



90 Series heavy-duty

Glynn-Johnson 90 Series holders and stops are the most rugged models available for heavy-duty applications. The channel is surface-mounted to the door, most often with sex bolts, and the jamb bracket is surface mounted to the jamb, requiring minimal door and frame preparation.

These versatile units can be used in conjunction with most surface-applied door closers. The provided templates allow for variable mounting positions, ranging from 85º to 110º hold-open/stop angle. These templates are designed for installation in almost all types of doors, including doors with conventional butt-type hinges or specialty hinges.

Four models:

- 90H Series hold-open model
- 90S Series stop-only model
- 90F Series friction hold-open model
- 90SE Series special stop-only model

Five sizes:

- Simple
- Standardized
- Each model is available in five sizes

Three options:

- J—Angle jamb bracket
- SHIM—Blade stop shim kits
- SOC—Pin-in-socket security screw package

Unmatched convenience:

- Non-handed
- Improved compatibility with door closers
- Single-acting doors
- Interior/exterior applications
- Durable
- Easy to install
- Improved corrosion resistance
- Function conversion kits available

Materials and finishes

In 300 Series stainless steel, brass and steel substrates, these models are available in the largest selection of finishes in the industry. Stainless steel models offer the highest resistance to corrosion. Available in the following finishes:

Finish	Description
US3	Polished brass
US4	Satin brass
US10	Satin bronze
US10B	Oil rubbed bronze
US32	Polished stainless steel
US32D	Satin stainless steel
SP4	Powder coat brass
SP10	Powder coat bronze
SP28	Powder coat aluminum
SP313	Powder coat dark bronze
SPBLK	Powder coat black
652	Chrome-like coating

Models

Glynn-Johnson 90 Series door holders and stops provide long-lasting protection for doors, frames and hardware. All models incorporate a heavy-duty channel/slide-arm design and offset jamb bracket. This unique design allows for simple field modification of functions, should user requirements change.

90H Series hold-open

(Suffix H) Hold-open models provide a convenient method of holding the door open at a predetermined position for short or long periods of time, permitting an unobstructed traffic flow through the opening. The hold-open function can easily be turned on or off by simply rotating the serrated knob on the bottom of the channel. This knob engages the hold-open mechanism, allowing the door to be held open at a predetermined position ranging from 85º to 110º. When the knob is flipped over, it acts as a stop and shock absorber.

The tension on the hold-open mechanism can be adjusted using a phillips screwdriver to offset air currents or other exterior conditions. The hold-open tension adjustment is located on the top of the slider in the channel.

100 Series concealed overhead door holders/stops



100 Series heavy-duty

Glynn-Johnson offers a complete line of overhead door holders and stops, accommodating virtually all openings with solutions for even the most complex door control problems. These concealed holders and stops provide the most attractive and reliable heavy-duty door control available.

Glynn-Johnson 100 Series holders and stops provide the most reliable and versatile concealed overhead door control. They are designed for installation on virtually all types of doors mounted on conventional type butt hinges, pivots, continuous hinges, swing clear hinges and numerous other specialty hinges. When used in conjunction with many surface-applied door closers, 100 Series holders and stops provide the most effective control for entrance doors and vestibule doors of all types, as well as heavy or often used interior doors. Templates provided allow for variable mounting positions, ranging from 85° - 110° of opening.

Five models:

- 100H Series hold-open model
- 100HP Series internal hold-open model
- 100F Series friction hold-open model
- 100S Series stop-only model
- 100SE Series special stop-only model

Six sizes:

- Each model comes in six sizes.
- Simple
- Standardized

Three options:

- ADJ—Adjustable jamb bracket
- CJ—Jamb Bracket for use with LCN 5030 closer
- SOC—Pin-in-socket security screw package

Unmatched convenience:

- Non-handed
- Improved compatibility with door closers
- Single/double-acting doors
- Interior/exterior applications
- Reduced door prep
- Durable
- Improved corrosion resistance
- Function conversion kits are available

Materials and finishes

In heavy gauge brass or 300 Series stainless steel, these models offer the broadest range of finishes in the industry, complementing any design and offering the highest resistance to corrosion. Available in the following finishes:

Finishes	Description
US3	Polished brass
US4	Satin brass
US10	Satin bronze
US10B	Oil rubbed bronze
US32	Polished stainless steel
US32D	Satin stainless steel
SP4	Powder coat brass
SP10	Powder coat bronze
SP28	Powder coat aluminum
SP313	Powder coat dark bronze
SPBLK	Powder coat black

Models

These models provide a wide range of optional features, and are ideal for use on entrance and vestibule doors, large doors, doors opened frequently, or doors subject to abuse. These models are also furnished with an offset-style jamb bracket.

Designed for heavy-duty applications, 100 Series models will provide long-lasting protection to doors, frames, hinges, related hardware and surrounding walls or obstructions.

100H Series hold-open

(Suffix H) The hold-open function should be used where it is desired to hold a door open at a predetermined position for short or long periods of time, permitting an unobstructed traffic flow through the opening.

These models are both selective and adjustable, featuring the most reliable hold-open mechanism available. They feature a control knob which protrudes from the face of the door and turns the hold-open function on or off. Set in the inactive position, the unit acts as a stop and shock absorber. The tension on the hold-open mechanism can be adjusted using an allen wrench to offset air currents or other exterior conditions. The hold-open tension adjustment is located in the bottom of the track in the top of the door.



5BB1 5 Knuckle, ball bearing full mortise hinge

- Recommended for medium weight doors (<150 lbs)
- Recommended for medium frequency usage (<400 cycles per day)
- Made with two ball bearing assemblies
- Recommended for use with a door closer
- Packed with fasteners for hollow metal and wood doors
  12-24 x 1/2 UFPHMS, 12 x 1 1/4 FPHWS
  10-24 x 1/2 UFPHMS, 10 x 1 FPHWS (3.5x3.5 hinge size only)

Certifications

- Certified to ANSI/BHMA A156.1 for performance standards
- Meets ANSI/BHMA 156.7 for template hinge dimensions
- UL Classified for windstorm rated assemblies - R37965
- UL Listed, 3 hour fire doors

Material substrate

- Made from brass, 1040 steel, or 304 series stainless steel

Options

- NRP.....Non-removable pin
- HT.....Hospital tip
- SH.....Security stud - comes standard with NRP
- RC-1/4, RC-5/8...Rounded corners
- SEC .....Security fasteners - pin-in-socket
- TW4 .....Four wire
- TW4M .....Four wire with monitor
- TW8 .....Eight wire
- TW8M*.....Eight wire with monitor
- TW12.....Twelve wire
- MON*.....Monitor (not available on 4X4)

Dimensions

Height x Width	Size (mm)	Gauge
3.5 x 3.5	89 x 89	0.123
4 x 4	102 x 102	0.130
4.5 x 4	114 x 102	0.134
4.5 x 4.5	114 x 114	0.134
5 x 4.5	127 x 114	0.146
5 x 5	127 x 127	0.146

Refer to General Hinge Information page to determine proper hinge for application

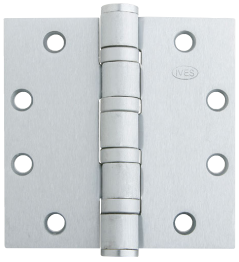
5BB1 Finishes

BHMA	Description	Substrate	Finish
600	Primer paint	Steel	USP
605	Bright brass	Brass	US3
606	Satin brass	Brass	US4
612	Satin bronze	Brass	US10
613	Oil rubbed bronze	Brass	US10B
614	Oxidized bronze	Brass	US10A
616	Blackened bronze	Brass	US11
619	Satin nickel	Brass	US15
622	Matte black	Brass	B-BLK
625	Bright chrome	Brass	US26
626	Satin chrome	Brass	US26D
643e/716	Aged bronze	Brass	B-643e/716
629	Bright stainless	Stainless steel	US32
630	Satin stainless	Stainless steel	US32D
631	Matte black	Steel	F-BLK
632	Bright brass	Steel	US3
633	Satin brass	Steel	US4
639	Satin bronze	Steel	US10
640	Oil rubbed bronze	Steel	US10B
641	Oxidized bronze	Steel	US10A
643	Blackened bronze	Steel	US11
646	Satin nickel	Steel	US15
651	Bright chrome	Steel	US26
652	Satin chrome	Steel	US26D
643e/716	Aged bronze	Steel	F-643e/716

For other colors, consult factory.

*TW and MON options are not available on 3.5X3.5.

CDH
Commercial Doors & Hardware Ltd.
2150 Winston Park Drive, Unit 16
Oakville, L6H 5V1
Oakville #5 P.S. HDSB
Submittal Date: May 1/24, Nov 3/25, Nov 14/25, Nov 18/25, Nov 19/25



5BB1HW 5 Knuckle, ball bearing, heavy weight full mortise hinge

- Recommended for heavier weight doors (>150 lbs)
- Recommended for high frequency usage (400 cycles per day)
- Made with four ball bearing assemblies
- Recommended for use with a door closer
- Packed with fasteners for hollow metal and wood doors
  12-24 x 1/2 UFPHMS, 12 x 1 1/4 FPHWS

Certifications

- Certified to ANSI/BHMA A156.1 for performance standards
- Meets ANSI/BHMA 156.7 for template hinge dimensions
- UL Classified for windstorm rated assemblies - R37965
- UL Listed, 3 hour fire doors

Material substrate

- Made from brass, 1040 steel, or 304 series stainless steel

Options

- NRP .....Non-removable pin
- HT.....Hospital tip
- SH.....Security stud - comes standard with NRP
- RC-1/4, RC-5/8...Rounded corners
- SEC .....Security fasteners - pin-in-socket
- TW4 .....Four wire
- TW4M .....Four wire with monitor
- TW8 .....Eight wire
- TW8M .....Eight wire with monitor
- TW12.....Twelve wire
- MON .....Monitor

Dimensions

Height x Width	Size (mm)	Gauge
4.5 x 4	114 x 102	0.180
4.5 x 4.5	114 x 114	0.180
5 x 4.5	127 x 114	0.190
5 x 5	127 x 127	0.190

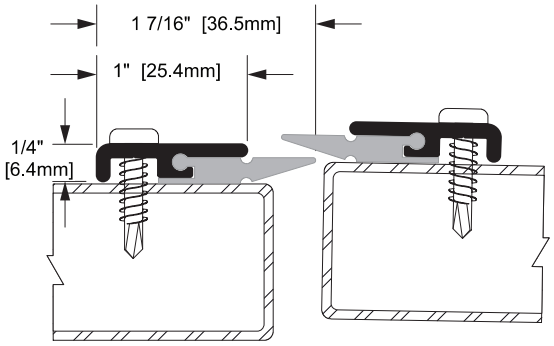
Refer to General Hinge Information page to determine proper hinge for application

5BB1HW Finishes

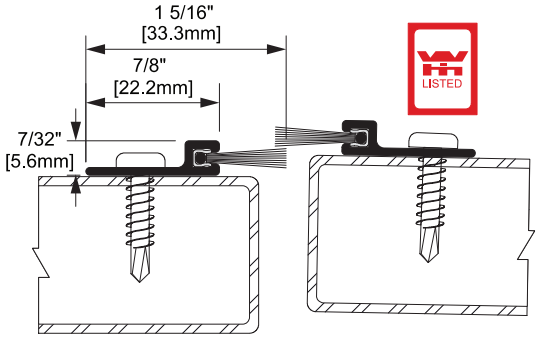
BHMA	Description	Substrate	Finish
600	Primer paint	Steel	USP
605	Bright brass	Brass	US3
606	Satin brass	Brass	US4
612	Satin bronze	Brass	US10
613	Oil rubbed bronze	Brass	US10B
614	Oxidized bronze	Brass	US10A
616	Blackened bronze	Brass	US11
619	Satin nickel	Brass	US15
622	Matte black	Brass	B-BLK
625	Bright chrome	Brass	US26
626	Satin chrome	Brass	US26D
643e/716	Aged bronze	Brass	B-643e/716
629	Bright stainless	Stainless steel	US32
630	Satin stainless	Stainless steel	US32D
631	Matte black	Steel	F-BLK
632	Bright brass	Steel	US3
633	Satin brass	Steel	US4
639	Satin bronze	Steel	US10
640	Oil rubbed bronze	Steel	US10B
641	Oxidized bronze	Steel	US10A
643	Blackened bronze	Steel	US11
646	Satin nickel	Steel	US15
651	Bright chrome	Steel	US26
652	Satin chrome	Steel	US26D
643e/716	Aged bronze	Steel	F-643e/716

For other colors, consult factory.

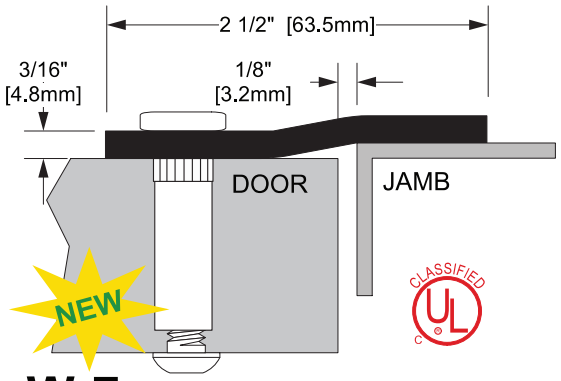
ASTRAGALS



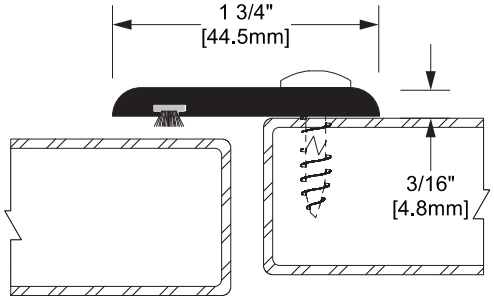
W-5 CLEAR ANODIZED ALUMINUM AND VINYL



W-25 CLEAR ANODIZED ALUMINUM AND NYLON BRUSH



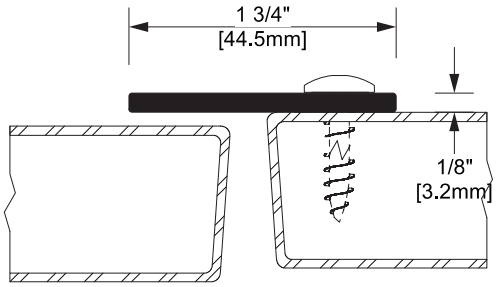
W-7 SECURITY ASTRAGAL
PRIMED C.R. STEEL c/w SECURITY SLEEVE



W-8 EXTRUDED ALUMINUM

W-8P EXTRUDED ALUMINUM WITH PILE

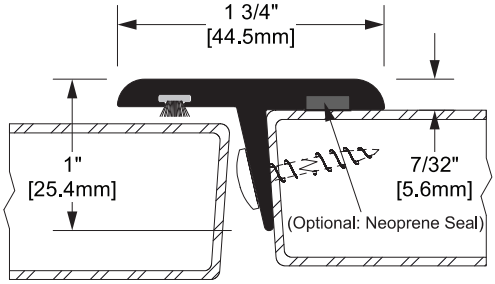
W-8SL EXTRUDED ALUMINUM WITH SILICONE



W-8S C.R. STEEL WITH CONDITIONED EDGES

W-8SP AS ABOVE, PRIMED FINISH

W-8SS STAINLESS STEEL, SEE PG. 20



W-9 EXTRUDED ALUMINUM WITH PILE

W-9S EXTRUDED ALUMINUM WITH SILICONE

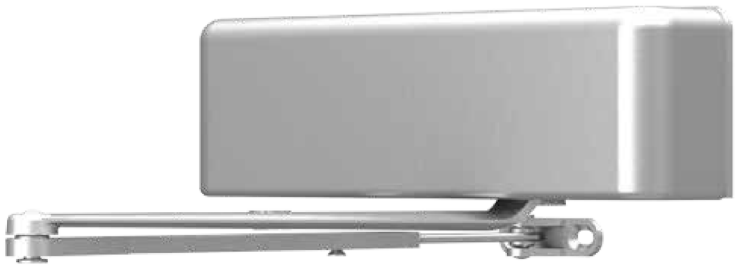
CDH
Commercial Doors & Hardware Ltd.
2150 Winston Park Drive, Unit 16
Oakville, L6H 5V1

Oakville #5 P.S. HDSB

Submittal Date: May 1/24, Nov 3/25, Nov 14/25, Nov 18/25, Nov 19/25

4020 Series

Features

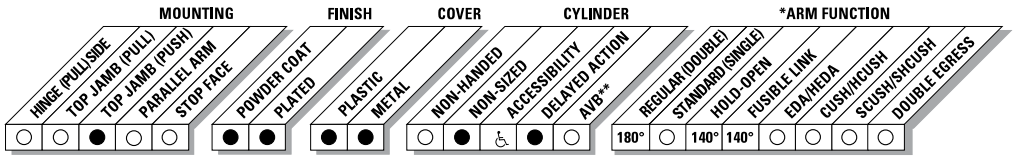


The 4020 is LCN's best performing heavy duty closer designed specifically for institutional and other rugged high traffic applications.

Certifications	Grade 1 - ANSI A156.4, UL 10C, ADA, 100 Hour Salt Spray, Meets BAA - Buy American Act
Body Construction	■ Cast Iron Body ■ Full Complement Bearing ■ 1-1/2″ Diameter Piston ■ 11/16″ Diameter Double Heat Treated Pinion Journal
Fluid	All Weather Fluid
Handing	Handed
Templating	Peel-n-Stick templates - 2-1-2″ x 6″ Mounting Hole Pattern
Size	Adjustable 1-5 or Sized 6
Warranty	30 years

Cover	■ Plastic, Standard ■ Metal, Optional
Fasteners	Self Reaming and Tapping Screws (SRT)
Mounting	Top Jamb (Push Side)
Arms	Regular arm
Finishes/Colors/ Powder Coat	■ Aluminum (689) ■ Statuary Bronze (690) ■ Light Bronze (691) ■ Black (693) ■ Dark Bronze (695) ■ Brass (696) ■ Custom colors optional ■ Optional SRI primer - powder coat only ■ Optional plated finishes

Special Templates | Customized installation templates or products may be available to solve unusual applications. Contact LCN Product Support for assistance.



● AVAILABLE
○ NOT AVAILABLE

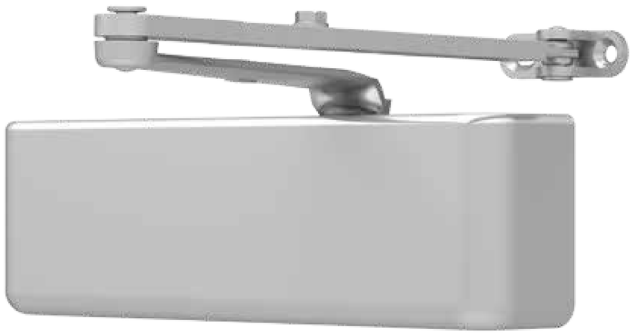
♿ *Closer available with less than 5.0 lbs. opening force on 36″ door.*
* *Maximum opening/hold-open point with standard template.*
** *Advanced Variable Backcheck.*

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4040XP Series

Features

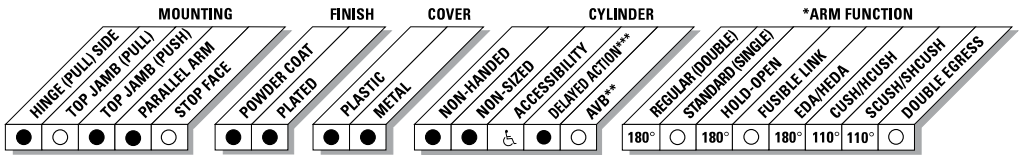


The 4040XP is LCN's most durable and flexible heavy duty closer designed for institutional and other demanding high traffic applications.

Certifications	Grade 1 - ANSI A156.4, UL 10C, ADA, 100 Hour Salt Spray, Meets BAA - Buy American Act
Body Construction	■ Cast Iron Body ■ Full Complement Bearings ■ 1-1/2″ Diameter Piston ■ 3/4″ Diameter Double Heat Treated Pinion Journal
Fluid	All Weather Liquid X Fluid
Handing	Non-Handed
Templating	Peel-n-Stick templates - 2-1/4″ x 5″ Mounting Hole Pattern
Size	Adjustable Spring Size 1-6, includes Patented Green Dial
Warranty	30 years

Cover	■ Plastic, Standard ■ Metal, Optional
Fasteners	Self Reaming and Tapping Screws (SRT)
Mounting	Hinge (Pull Side), Top Jamb (Push Side), Parallel Arm (Push Side)
Arms	Regular Arm
Finishes/Colors/ Powder Coat	■ Aluminum (689) ■ Statuary Bronze (690) ■ Light Bronze (691) ■ Black (693) ■ Dark Bronze (695) ■ Brass (696) ■ Custom colors optional
	■ Optional SRI primer - powder coat only ■ Optional plated finishes

Special Templates | Customized installation templates or products may be available to solve unusual applications. Contact LCN Product Support for assistance.



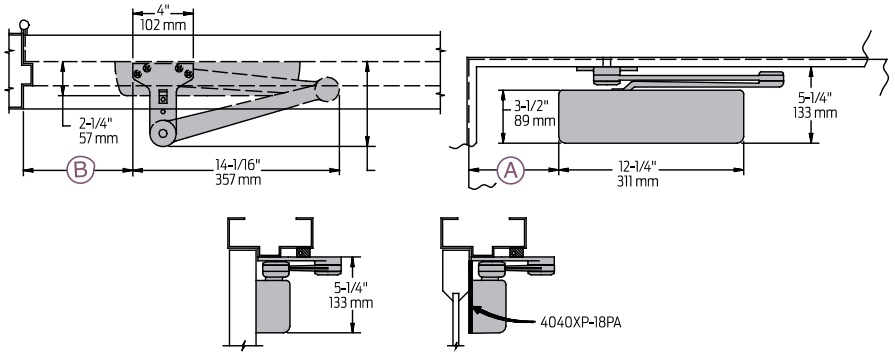
● AVAILABLE
○ NOT AVAILABLE

Closer available with less than 5.0 lbs. opening force on 36″ door.
* *Maximum opening/hold-open point with standard template.*
** *Advanced Variable Backcheck.*
*** *Delay feature incorporates standard 4040 cylinder (not XP).*

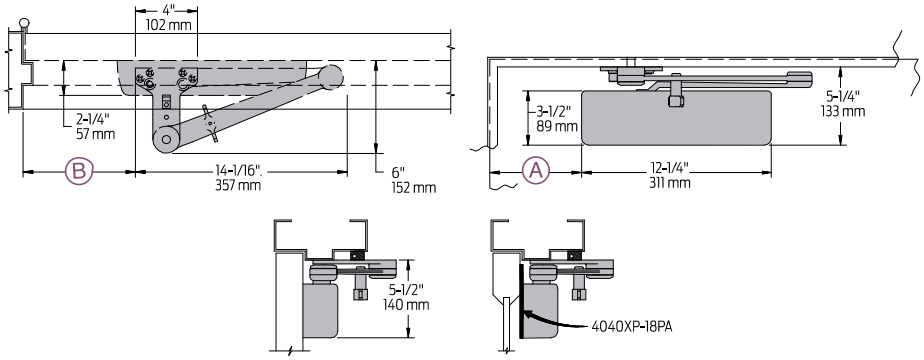
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2150 Winston Park Drive, Unit 16
Oakville, L6H 5V1

Oakville #5 P.S. HDSB
Submittal Date: May 1/24, Nov 3/25, Nov 14/25, Nov 18/25, Nov 19/25

EDA mount



CUSH mount



Clearance	4040XP-62EDA is 5-1/2″ (140 mm) from door face. 6″ (152 mm) for CUSH	
Head Frame	Flush or rabetted requires CUSH FLUSH PANEL ADAPTER, 4040XP-419	
CUSH ARM	Requires SHOE SUPPORT, 4040XP-30 for fifth screw anchorage for narrow frames	
Delayed Action	▪ Incorporates standard 4041 cylinder, without XP cylinder. ▪ Delays closing from maximum opening to ; 115˚ with 180˚ template, 95˚ with 110˚ template, 85˚ with 100˚ template, 75˚ with 90˚ template. Delay time adjustable up to approximately 1 minute.	
Maximum Opening	EDA arm can be templated for points at:	CUSH arms can be templated for opening/hold-open point at:
	110º: A = 6-3/8″ (162 mm) B = 7-3/4″ (197 mm)	85º: A = 7-15/16″ (202 mm) B = 9-1/8″ (232 mm)
	or 180º: A = 2-7/8″ (73 mm) B = 4-1/4″ (108 mm)	90º: A = 7-3/16″ (183 mm) B = 8-1/2″ (216 mm)
	Hold-open points up to maximum opening with HEDA arm	100º: A = 6-1/16″ (154 mm) B = 7-1/4″ (184 mm)
		or 110º: A = 5-1/16″ (129 mm) B = 6-3/8″ (162 mm)

Notes:

· 4040XP Series closers ordered with EDA or CUSH arms include 4040XP-201 FIFTH HOLE SPACER to support the shoe

· Spring Cush stop points are approximately 5˚ more than templated stop point

· Hold open at templated stop points

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Arms



4040XP-3077
Regular Arm

- Non-handed
- Mounts pull side or top jamb with shallow reveal P4041 closer includes PA SHOE, 4040XP-62PA required for parallel arm mounting



4040XP-3077L
Long Arm

- Non-handed
- Includes LONG ROD AND SHOE, 4040XP-79LR for top jamb mount
- Optional



4040XP-3077ELR
Extra Long Arm

- Non-handed
- Includes EXTRA LONG ROD AND SHOE, 4040XP-79ELR for top jamb mount with deep reveal
- Optional



4040XP-3049
Hold-Open Arm

- Non-handed
- Mounts pull side or top jamb with shallow reveal, hold-open adjustable shoe
- 4040XP closer includes 4040XP-62PA shoe required for parallel arm mounting
- Optional



4040XP-3049L
Long Hold-Open Arm

- Non-handed
- Includes LONG HEAD AND TUBE, 4040XP-3048L for top jamb mount
- Optional



4040XP-3077EDA
Extra Duty Arm

- Non-handed
- Features forged, solid steel main and forearm for potentially abusive installations
- Optional



4040XP-3049EDA
Hold-Open Extra Duty Arm

- Handed
- Parallel arm features forged, solid steel main and forearm for potentially abusive installations
- Hold-open function is adjusted at the shoe
- Optional



4040XP-3077EDA/62G
Extra Duty Arm with 62G

- Non-handed
- Features forged, solid steel main and forearm for potentially abusive installations
- 62G shoe provides additional blade stop clearance
- Optional



4040XP-3049EDA/62G
Hold-Open Extra Duty Arm with 62G

- Handed
- Features forged, solid steel main and forearm for potentially abusive installations
- 62G shoe provides additional blade stop clearance. Hold-open function is adjusted at the shoe
- Optional



4040XP-3077CNS
Cush-N-Stop® Arm

- Non-handed
- Features solid forged steel main arm and forearm with stop in soffit shoe.
- Optional



4040XP-3049CNS
HCUSH Arm

- Non-handed
- Hold-open function with templated stop/hold-open points
- Handle controls hold-open function
- Optional



4040XP-3077SCNS
Spring CUSH Arm

- Non-handed
- For abusive applications features solid forged steel main arm and forearm with spring loaded stop in the soffit shoe
- Optional



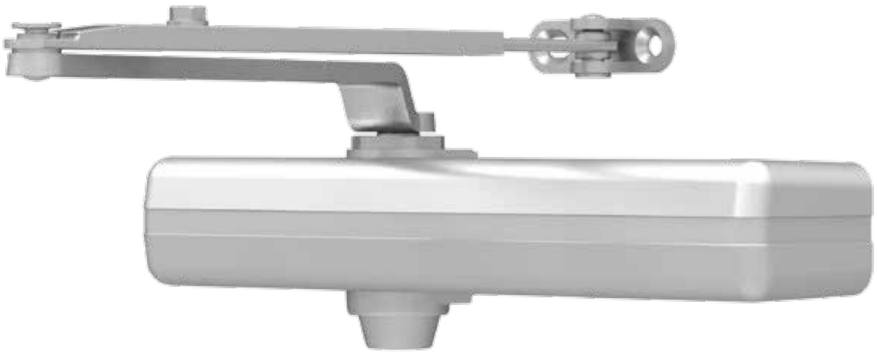
4040XP-3049SCNS
Spring HCUSH Arm

- Non-handed
- For abusive applications features solid forged steel main arm and forearm with spring loaded stop in the soffit shoe
- Handle controls hold-open function
- Optional

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1460 Series

Features

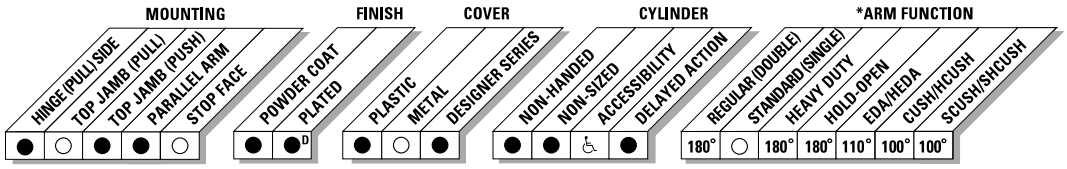


Designed for maximum versatility, the 1460, available with multiple cover options, can be used for both commercial and institutional applications. This fully universal closer offers a wide variety of options and fast and accurate installation.

Certifications	Grade 1 - ANSI A156.4, UL 10C, ADA, 100 Hour Salt Spray, Meets BAA - Buy American Act
Body Construction	■ Cast Iron Body ■ Full Complement Bearing ■ 1-1/4″ Diameter Piston ■ 3/4″ Diameter Single Heat Treated Pinion Journal
Fluid	All Weather Fluid
Handing	Non-Handed
Templating	Peel-n-Stick templates - 1″ x 7-1/2″ Mounting Hole Pattern
Size	Adjustable Spring Size 1-6. Includes Patented Green Dial
Warranty	30 years

Cover	■ Slim Line Plastic, Standard ■ Full Plastic and Metal Designer Series, Optional
Fasteners	Self Reaming and Tapping Screws (SRT)
Mounting	Hinge (Pull Side), Top Jamb (Push Side), Parallel Arm (Push Side)
Arms	Standard regular pull side, and top jamb
Finishes/Colors/ Powder Coat	■ Aluminum (689) ■ Statuary Bronze (690) ■ Light Bronze (691) ■ Black (693) ■ Dark Bronze (695) ■ Brass (696) ■ Custom colors optional ■ Optional SRI primer - powder coat only ■ Optional plated finishes

Special Templates | Customized installation templates or products may be available to solve unusual applications. Contact LCN Product Support for assistance.



● AVAILABLE
○ NOT AVAILABLE

♿ *Closer available with less than 5.0 lbs. opening force on 36″ door.*
* *Maximum opening/hold-open point with standard template.*
D = For designer series only.

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Arms



1460-3077
Regular Arm

- Non-handed
- Mounts hinge side or top jamb
- P1460 closer includes PA SHOE, 1460-62PA required for parallel arm mounting



1460-3077L
Long Arm

- Non-handed
- Includes LONG ROD AND SHOE, 1460-79LR for top jamb mount with deep reveals
- Optional



1460-3077HD
Heavy Duty Regular Arm

- Non-handed
- Mounts hinge side, top jamb or parallel arm
- Optional



1460-3077HDL
Heavy Duty Long Arm

- Non-handed
- Includes long rod and shoe, 1460-79LR for top jamb mounts with deep reveals
- Optional



1460-3049
Hold-Open Arm

- Non-handed
- Mounts hinge side, top jamb or parallel arm (62PA required)
- Hold-open adjustable at shoe
- Optional



1460-3049L
Long Hold-Open Arm

- Non-handed
- Includes LONG HEAD AND TUBE, 1460-3048L for top jamb mount with deep reveals
- Optional



1460-3077EDA
Extra Duty Arm

- Non-handed
- Features solid forged steel main and forearm for potentially abusive installations
- Optional 1460-3077EDA/62G for blade stop clearance



1460-3077EDA/62G
Extra Duty Arm w/ 62G

- Non-handed
- Features solid forged steel main and forearm for potentially abusive installations



1460-3049EDA
Hold-Open Extra Duty Arm

- Handed arm
- Provides hold-open function adjustable at shoe
- Optional



1460-3077CNS
Cush-N-Stop® Arm

- Non-handed
- Features solid forged steel main arm and forearm with stop in soffit shoe
- Optional



1460-3049CNS
HCUSH Arm

- Non-handed
- Provides hold-open function with templated stop/hold-open points
- Handle controls hold-open function
- Optional



1460-3077SCNS
Spring CUSH Arm

- Non-handed
- For abusive applications features solid forged steel main arm and forearm with spring loaded stop in the soffit shoe
- Optional

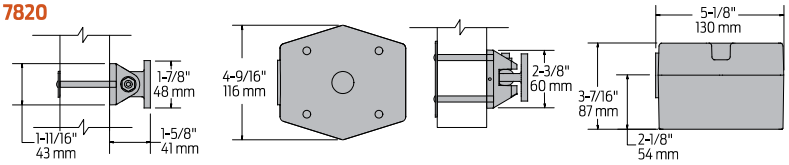


1460-3049SHCNS
Spring HCUSH Arm

- Non-handed
- For abusive applications features solid forged steel main arm and forearm with spring loaded stop in the soffit shoe. Handle controls hold-open function
- Optional

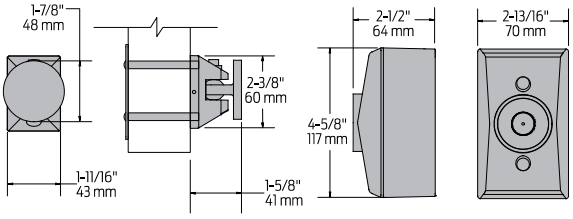
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7820



Mounting	Floor mounted
Total Projection	6-3/4″ (171 mm)

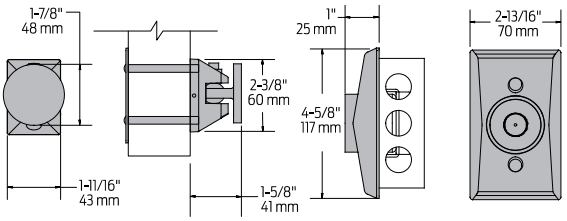
7830



Mounting	Surface wall mounted
Total Projection	4-1/8″ (105 mm)

- Suitable for use in pocket door installations

7840

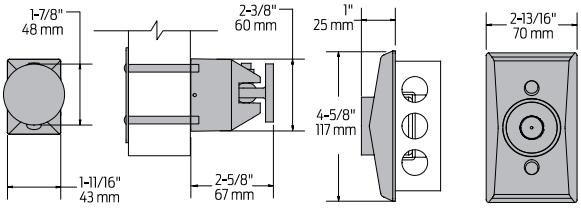


Mounting	■ Low profile recessed wall mount ■ 2″ (51 mm) x 4″ (102 mm) x 1-1/2″ (38 mm)
Total Projection	2-5/8″ (67 mm)

- Suitable for use in pocket door installations

Note:
Outlet box not included.

7850



Mounting	■ Standard profile recessed wall mount ■ 2″ (51 mm) x 4″ (102 mm) x 1-1/2″ (38 mm)
Total Projection	3-5/8″ (92 mm)

- Suitable for use in pocket door installations

Note:
Outlet box not included.

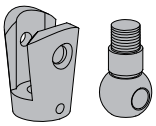
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Extensions



SEM7810-514
Coupler Assembly Kit

- Required for each door needing extension(s)
- Kit includes coupler link and ball pivot (alone serves as a 1-1/2″ extension)



SEM7810-E050
Extension - 1/2″

- Metal
- Standard



SEM7810-E075
Extension - 3/4″

- Metal
- Standard



Extension, SEM7810-E100
Extension - 1″

- Metal
- Standard



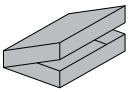
SEM7810-E200
Extension - 2″

- Metal
- Standard



Extension, SEM7810-E400
Extension - 4″

- Metal
- Standard



SEM7810-517
Extension kit

Extension kit includes:

- 10 ..... 7810SEM-E050
- 10 ..... 7810SEM-E075
- 10 ..... 7810SEM-E100
- 5 ..... 7810SEM-E200
- 20 ..... 7810SEM-514

Note: Using just the Coupler Assembly Kit (SEM7810-514) will create a 1-1/2″ link.
Extension Links are available in different lengths and can be combined together to achieve the desired length. Max. recommended length = 12″

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4040SE Series

Features

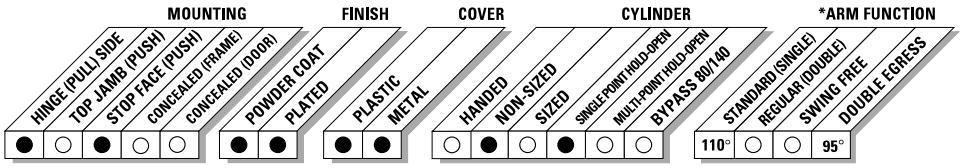


The 4040SE SENTRONIC® is a heavy duty, non-handed, nonsized closer/holder designed to provide single point hold-open for fire and smoke barrier doors. The door is held open until current interruption releases the holding mechanism and the door closes. Single lever (track) arm closer is specifically designed for interior doors. Choice of finishes, track functions, and installation accessories meet virtually all life safety requirements.

Certifications	Grade 1 - ANSI A156.15, UL 10C, ADA, 100 Hour Salt Spray, Meets BAA - Buy American Act, NFPA 101
Body Construction	■ Cast Iron Body ■ Full Complement Bearing ■ 1-1/2″ Diameter Piston ■ 3/4″ Diameter Double Heat Treated Pinion Journal
Fluid	All Weather Fluid
Handing	Non-Handed
Size	Adjustable Spring Size, up to 4
Warranty	2 years

Cover	■ Clip-on plastic, standard ■ Metal, optional
Fasteners	Wood and machine screw pack
Mounting	Hinge (Pull Side), Stop Face (Push Side)
Arms	Standard arm and SE track, standard Double egress arm and SEL track, optional
Finishes/Colors/ Powder Coat	■ Aluminum (689) ■ Statuary Bronze (690) ■ Light Bronze (691) ■ Black (693) ■ Dark Bronze (695) ■ Brass (696) ■ Custom colors optional ■ Optional SRI primer - powder coat only ■ Optional plated finishes
Wiring	Concealed or surface, interfaces with fire alarm systems

Special Templates | Customized installation templates or products may be available to solve unusual applications. Contact LCN Product Support for assistance.



● AVAILABLE
○ NOT AVAILABLE

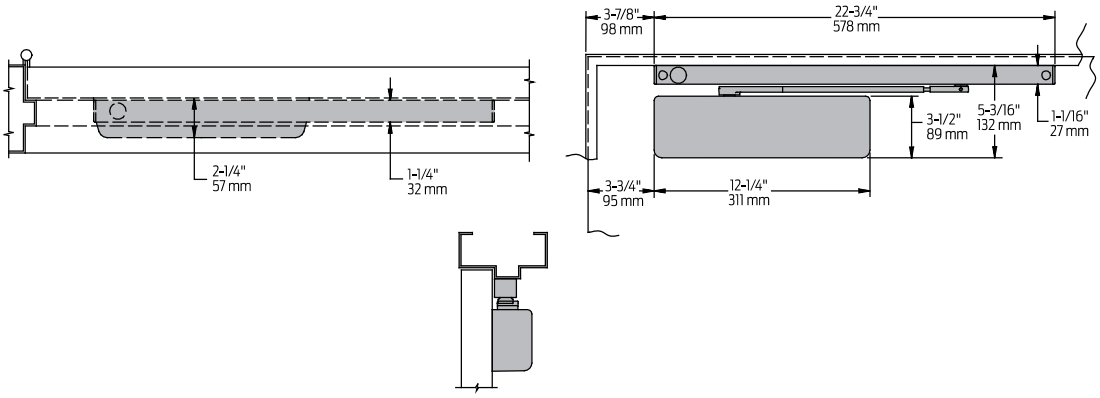
* Maximum opening/hold-open point with standard template. See individual closer series for degrees of opening per installation.

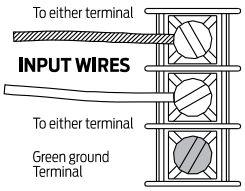
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Stop Face (Push Side) Mounting



Butt Hinges	Should not exceed 5″ (127 mm) in width
Auxiliary Stop	Recommended at hold-open point
Top Rail	■ Minimum 5-3/4″ (146 mm) ■ Installation with PLATE, 4040SE-18PA requires SPECIAL TEMPLATE and 2″ (51 mm) minimum top rail
Stop Width	1-1/4″ (32 mm) minimum
Door Width	■ 2′4″ (711 mm) minimum for single door with SE ■ 4′8″ (1422 mm) minimum for paired doors with SE
Maximum Opening	■ Templating allows 110° ■ Hold-open points between 85° and 110° in approximately 3° increments ■ SEL track provides hold-open points between 90° and 120°, in approximately 3° increments
SE, SEL Electrical Options	■ These track assemblies require a single power circuit for the holding solenoid ■ SE or SEL holding solenoid is either 24V or 120V input, please specify ■ An optional 4040SE-3210 or 8310-824 TRANSFORMER reduces 120V AC line voltage to 24V AC ■ Circuitry accepts either AC or DC input
Options	■ Long (SEL) track
SE Wiring Diagram	

Notes:
- *Information applies to 4040 SE closers unless otherwise specified*
- *Momentary on/off switch board assembly for testing door release also provides over-voltage protection. Field replaceable*
- *Functions as a full rack and pinion closer when hold-open is not engaged or current is interrupted*

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Switch



4040SE-3436
Test Switch

Installation Accessories



4040SE-18
Plate

- Required where top rail is less than 3-1/2″ (89 mm)
- Requires minimum 2″ (51 mm) top rail
- Installations require a SPECIAL TEMPLATE



4040SE-18PA
Plate

- Required where top rail is less than 5-3/4″ (146 mm)
- Requires minimum 2″ (51 mm) top rail
- Installations require a SPECIAL TEMPLATE



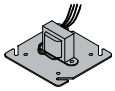
4040SE-81
Conduit Quick-Connector

- Two piece connector for use with 1/2″ conduit



4040SE-3034SE
Track Roller & Track Slider

- Quiet, low friction roller assembly
- Shoulder dimension "X" = 1/8″ (3 mm)
- Alloy metal slider for use in SE series tracks only



4040SE-3210
Transformer

- Reduces line voltage from 120V to 24V AC
- Mounted on cover for 4″ (102 mm) x 4″ x 2-1/8″ (54 mm) junction box (by others)

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Deadbolt designs

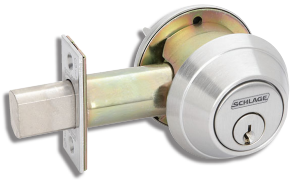
B600 Series

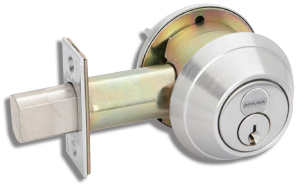
Schlage's toughest heavy duty Grade 1 commercial deadbolt.

Furnished with conventional cylinder standard.

Also available with full size interchangeable core cylinder or small format interchangeable core (SFIC) cylinder.

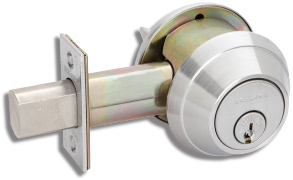
Requires 2 1/8" (54mm) prep. UL10B and UL 10C listing standard for auxiliary lock on A label fire doors. Not all functions available as fire rated auxiliary locks. See function charts for required cross bore dimensions.

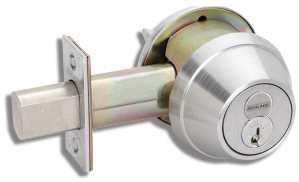




B700 Series

Same lock as B600 Series but furnished with Primus XP controlled access cylinder for patented key control, geographical exclusivity and resistance to picking and impressioning. Also available with Primus XP full size interchangeable core cylinder.

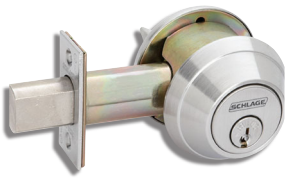




B800 Series

Same lock as B700 Series but Primus XP high security cylinder is UL437 listed to resist drilling and other forms of physical attack. Not available in interchangeable core.

All designs shown in 626 satin chrome

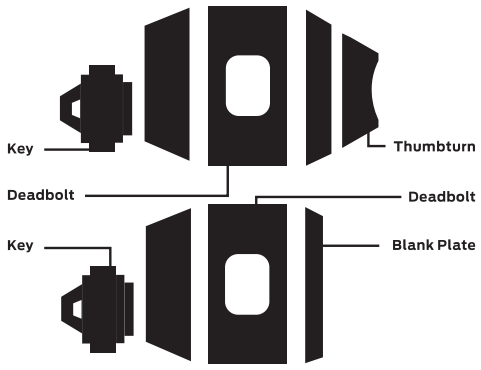




Thumbturn for B600, 700 and 800

Deadbolt functions

ANSI A156.36 bored deadbolt locks grade 1



Standard cylinder.

FSIC - full size interchangeable core option.

SFIC - small format interchangeable core option.

Complies with ADA accessibility guidelines.

***Caution:**
Double cylinder locks on any door are a life safety hazard in times of emergency and their use is not recommended. Installation should be in accordance with existing codes only.

ADA compliant:
Schlage Lock Company offers a wide selection of locks designed to meet the Americans with Disabilities Act.

Product information and specifications contained in this catalog are subject to change without notice. Please consult the factory.

B600 Series

Schlage	ANSI
B660P	**E0151**

Single cylinder deadbolt

- Deadbolt thrown or retracted by key outside or thumbturn inside

Outside Inside



Schlage	ANSI
B661P	**E0161**

One-way deadbolt

- Deadbolt thrown or retracted by key outside
- Blank plate with exposed screws inside

Outside Inside



B700 Series

Schlage	ANSI
B760P	**E0151**

Single cylinder deadbolt

- Deadbolt thrown or retracted by key outside or thumbturn inside

Outside Inside



Schlage	ANSI
B761P	**E0161**

One-way deadbolt

- Deadbolt thrown or retracted by key outside
- Blank plate with exposed screws inside

Outside Inside



B800 Series

Schlage	ANSI
B860P	**E0151**

Single cylinder deadbolt

- Deadbolt thrown or retracted by key outside or thumbturn inside

Outside Inside



Schlage	ANSI
B861P	**E0161**

One-way deadbolt

- Deadbolt thrown or retracted by key outside
- Blank plate with exposed screws inside

Outside Inside



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SCHLAGE
L Series
Grade 1 mortise locks
Mechanical
Wired electrified
Wireless electronic
Multi-point
Mechanical
Wired electrified
Wireless electronic

Mortise lock comparison

L mechanical



Applications

The Schlage L Series has long been the benchmark for mortise locks. Beyond strength and security – it offers tremendous flexibility to allow it to meet the needs of most every application.

The ability to suite across electronic, tubular, exit trim, and multi-point locks allows the Schlage L Series mortise lock to integrate seamlessly into any environment.

Key features

- Exceeds ANSI/BHMA Grade 1 operational and security standards
- Expansive list of configurations and options, including retrofit indicators
- 50 standard mechanical functions, custom functions also offered
- "The Original" universal lock case allows creation of 10 functions from a single lock body
- 14 finishes and 33 levers, two knobs, five roses and three escutcheon designs
- Supports standard, SFIC and FSIC cylinder formats
- Multiple key systems available – open, patented, restricted, geographic exclusive, UL 437

L wired electrified



Applications

The wired electrified L Series is ideal for new construction and high traffic areas where hardwired power ensures continuous operation and where electrified door prep, hinges and wiring can easily be incorporated into the building.

The electrified L Series is regularly used as part of an access control system for high security areas, or independently in areas that require a remote access switch.

Key features

All mechanical features plus:

- Auto-detect 12/24 VDC
- Selectable EL/EU
- 10 electrified functions
- Advanced features: RX, DPS, latchbolt monitor and deadbolt monitor for application flexibility
- Leading energy efficiency that eliminates "hot levers"
- Advanced motor-driven electrified functions – quieter, smoother, more secure operation

LE wireless electronic



Applications

The Schlage LE wireless mortise lock with ENGAGE™ technology is designed to affordably extend electronic access control deeper into the building beyond traditional perimeter and high security openings.

The LE is ideal for commercial real estate, K-12, higher education, assisted living, medical offices, or multi-family applications. Facilities can benefit from the enhanced security, efficiency, and convenience of upgrading to electronic credentials.

Key features

All mechanical features[1] plus:

- Six functions with LED indicator, deadbolt, and interior pushbutton options
- Sectional and escutcheon trim options
- 31 levers, 2 knobs and 9 finishes
- Integrated multi-technology card reader, door position sensor (DPS) and request to exit (RX)
- Built-in Bluetooth® enables wireless configuration from smart phones/tablets
- Built-in Wi-Fi® enables automatic daily updates sent directly from host software
- Capable of networked real-time communication with the ENGAGE Gateway and software alliances
- Up to 2 years of battery life

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The Standard Collection

The Standard Collection levers can be paired with exit devices and locks from our trusted Schlage and Von Duprin brands. And, they are built to the same exacting standards. Our Standard Collection levers offer a more traditional style that is appropriate for use in a number of commercial applications.

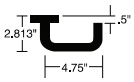
01



02



03



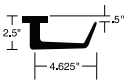


05



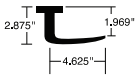


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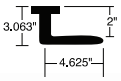


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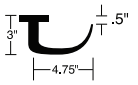


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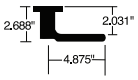


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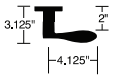


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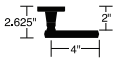


Accent



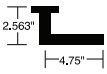


Asti





Latitude





Note: Levers shown with Schlage L Series mortise "A" rose. Knobs shown with rose that is unavailable in the L Series. Additional rose and escutcheon designs available.

Double cylinder non-deadbolt functions

Schlage	ANSI	Schlage	ANSI	Schlage	ANSI	Schlage	ANSI
L9060 **LV9060**	**F09**	**L9071** **LV9071**	**F32**	**L9077** **LV9077**	**–**	**L9082** **LV9082**	**F30**
Apartment entrance lock • Latchbolt retracted by knob/lever from either side unless outside is locked by key from inside • When locked, latchbolt retracted by outside key or inside knob/lever • Auxiliary latch deadlocks latchbolt when door is closed • Inside lever always free for immediate egress		**Classroom security lock** • Latchbolt retracted by knob/lever from either side unless outside is locked by key from either side • When locked, latchbolt retracted by outside key or inside knob/lever • Auxiliary latch deadlocks latchbolt when door is closed • Inside lever always free for immediate egress		**Classroom security holdback lock** • Latchbolt retracted by knob/lever from either side unless outside is locked by key from either side • When locked, latchbolt retracted by outside key or inside knob/lever • Auxiliary latch deadlocks latchbolt when door is closed • Rotate inside lever/knob and turn key 360° to enable holdback feature • Inside lever always free for immediate egress		**Institution lock*** • Latchbolt retracted by key from either side • Knob/lever on both sides always inoperative • Auxiliary latch deadlocks latchbolt when door is closed	

Double cylinder deadbolt functions

Schlage	ANSI	Schlage	ANSI	Schlage	ANSI
L9457 **LV9457**	**F33**	**L9458** **LV9458**	**F34**	**L9466**	**F14**
Classroom security lock with deadbolt • Latchbolt retracted by lever/knob from either side • Deadbolt actuated by either key • Throwing deadbolt locks outside lever/knob • Actuating inside lever/knob retracts both deadbolt and latchbolt and unlocks outside lever • Inside lever always free for immediate egress		**Classroom security lock w/ deadbolt and auxiliary latch** • Latchbolt retracted by knob/lever from either side • Deadbolt actuated by either key • When door is locked outside lever inoperative • Inside lever retracts deadbolt and latchbolt and unlocks outside lever • Auxiliary latch deadlocks latchbolt when door is closed • Inside lever always free for immediate egress		**Store/utility room lock with deadbolt*** • Latchbolt retracted by knob/lever from either side • Deadbolt actuated by either key	

* **Caution:** Double cylinder locks on residences and any door in any structure which is used for egress are a life safety hazard in times of emergency and their use is not recommended. Installation should be in accordance with existing codes only.

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ALLEGION



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The Schlage® ND Series cylindrical locks

Walter Schlage invented the cylindrical lock in 1920. Since then, Schlage Lock Company has consistently delivered innovation and continuous improvement. In that tradition, we are extremely proud to introduce the redesigned ND Series cylindrical lock.

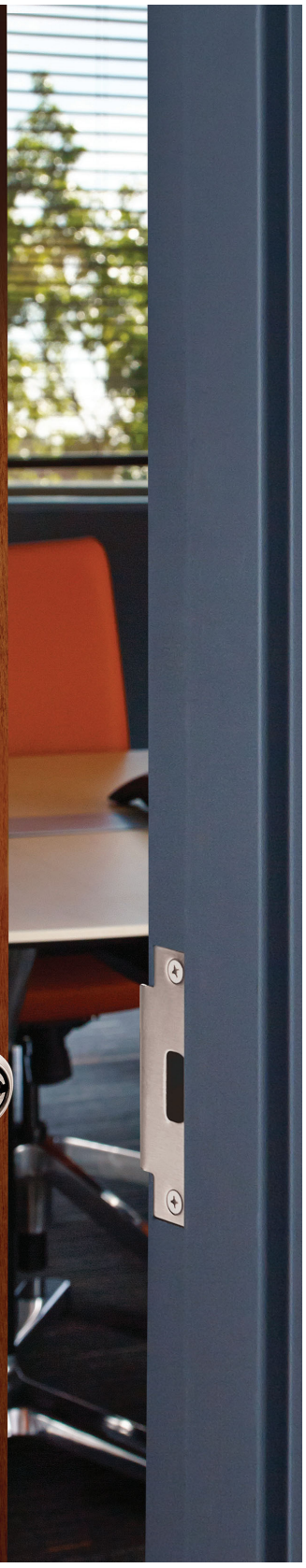
Most manufacturers' approach to locks ends with simply meeting industry standards like Grade 1. With the Schlage ND, Grade 1 is just the beginning.

Performance beyond Grade 1
The Schlage® ND family significantly exceeds BHMA Grade 1 requirements for cycle, lever torque, hammer blow, lever pull and other tests. This means confidence that the lock will last—whether the application calls for high abuse resistance or just operation over millions of cycles—without any degradation in performance.

Comprehensive offering for every opening
Mechanical, wired electrified and wireless electronic solutions allow a common aesthetic and consistent user experience throughout the building while lowering the total cost of ownership.

World-class design
A proven, easy to install product with extensive function, keying, trim and finish capabilities that work in nearly any applications.





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ND mechanical



Applications

The Schlage ND is extremely versatile and is regularly used in healthcare, education, government, office, retail and other commercial applications.

With 31 mechanical functions, the ND's range spans from the simple (non-locking passage) to complex (double-cylinder security) to specialized (school time-out lock).

Because the ND uses an ANSI 161 door prep, commonly used across cylindrical locks, it is ideal for both new construction and retrofit applications.

Key features

- Significantly exceeds ANSI/BHMA A156.2 requirements for Grade 1 cylindrical locks
- 31 mechanical functions (see adjacent columns for wired electrified and electronic options)
- Nine lever designs, two rose designs
- 10 available finishes
- Supports standard, SFIC and FSIC cylinder formats
- Multiple key systems available – open, patented, restricted, geographic exclusive, UL437
- Support for 10 non-Schlage cores (see cylinder section)

ND wired electrified



Applications

Wired electrified locks complement the mechanical offering and are typically incorporated into a wired access control system or used independently with a remote access switch (e.g. switch behind a receptionist desk).

The electrified ND is ideally used in:

- high traffic areas, where line power ensures continuous operation
- new construction, where electrified door prep, hinges and wiring can easily be incorporated into the building

Key features

All mechanical features plus:

- auto-detecting 12-24VDC input
- selectable EL/EU operation
- low 0.23 amp max current draw that allows multiple locks on a single power supply
- low 0.010 amp holding current that eliminates “hot levers” in electrically locked applications
- modular Request to Exit (RX) that can be added at any time
- inventory friendly–one lock supports 12-24V, EL or EU, with or without RX
- six electrified functions for application flexibility

NDE wireless electronic



Applications

Wireless electronic locks complete the offering by delivering all of the access control system hardware components required at the door in a single integrated design.

NDE wireless lock applications include:

- retrofit applications where electronic credentials can be used for improved visibility and control
- new construction to expand the scope of access control to interior openings
- low to medium traffic areas, where battery power delivers long life

Key features

All mechanical features[1] plus:

- Fits standard ANSI 161L mechanical door prep
- Installs in minutes with only a Phillips screwdriver
- Integrated card reader, door position sensor and Request to Exit (RX) switch
- Built-in Bluetooth® enables wireless configuration from smart phones and tablets
- Built-in Wi-Fi enables automatic updates to access rights
- Capable of networked real-time communication[2]
- Up to 2 years of battery life (4 AA)

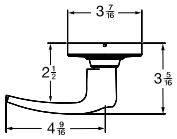
1 NDE wireless electronic lock available in seven lever designs, one rose design, and nine finishes only.
2 Requires ENGAGE™ Gateway and alliance access control software.

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Lever designs and finishes

Athens (ATH)[2]

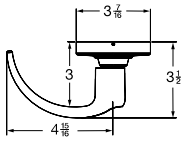




Mechanical | Wired electrified | Wireless electronic

Sparta (SPA)[1, 2]

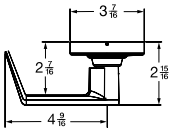




Mechanical | Wired electrified | Wireless electronic

Rhodes (RHO)[1, 2]

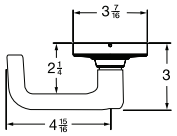




Mechanical | Wired electrified | NDE wireless electronic

Tubular (TLR)[1, 2]

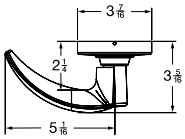




Mechanical | Wired electrified | Wireless electronic

Omega (OME)[1]

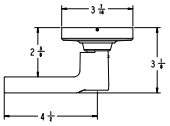




Mechanical | Wired electrified | Wireless electronic

Latitude (LAT)

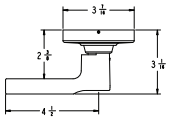




Mechanical | Wired electrified | Wireless electronic

Broadway (BRW)

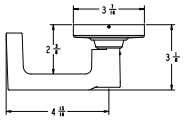




Mechanical | Wired electrified | Wireless electronic

Longitude (LON)

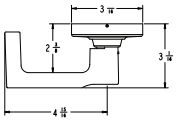




Mechanical | Wired electrified | Wireless electronic

Boardwalk (BWK)





Mechanical | Wired electrified | Wireless electronic

All levers comply with the Americans with Disabilities Act (ADA).

1 Boardwalk, Longitude, Omega, Rhodes, Sparta and Tubular levers comply with California State code for return within 1/2" of door face.

2 Athens, Rhodes, Sparta and Tubular levers support cylinders from other manufacturers, see cylinder section on page 24 for details.

Finish options									
Color	Bright brass	Satin brass	Satin bronze	Oil rubbed bronze	Satin nickel	Matte black	Bright chrome	Satin chrome	Aged bronze
ANSI/BHMA number	605	606	612	613	619	622	625	626/626AM	643e
US number	US3	US4	US10	US10B	US15	US19	US26	US26D	US11
Mechanical	■	■	■	■	■	■	■	■	■
Wired electrified	■	■	■	■	■	■	■	■	■
Wireless electronic	■	■	■	—	■	■	■	■	■

Product information and specifications contained in this catalog are subject to change without notice. Please consult the factory.

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ND Series mechanical lock

The ND mechanical lock, along with being Schlage's best selling mechanical lock, is the foundation for both the wired electrified and NDE wireless electronic lock. Not only did Schlage invent the cylindrical lock, but we continue to make it better with capabilities such as:

- Unparalleled strength - the lock prevents access even when subjected to torque loads up to 3,100 in-lbs (2.6x BHMA[1]), withstands pry bar attacks of 1,600 lbs (8x BHMA requirements[1]), and withstands 100 hammer blows (20x BHMA requirements[1,2])
- Exceptional durability - cycle tested to over 16M cycles (16x BHMA requirements[1]) with near zero droop or wobble - without the use of set screws or O-rings
- Improved feel - improved strength and durability are more than numbers, you can actually feel it in the lock
- Improved installation - installation is even easier than before (and withoutany set screws or O-rings)

All this is in addition to what you know and expect with the Schlage ND: 31 mechanical functions (plus wired electrified and wireless electronic) to meet the needs of any application; nine lever designs that suite with otherSchlage locks and Von Duprin exit devices; renowned sales, customer and technical support.





1 Beyond grade 1 performance for ND locks with Schlage cylinders only (standard, FSIC & SFIC). Performance with non-Schlage cylinders will exceed BHMA grade 1 requirements but may be less than the performance of products with Schlage cylinders.

2 Vertical impact testing stopped after 100 blows with no sign of failure or stress.

ND Series mechanical lock
Keyed function list

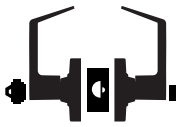
Schlage ANSI

ND50PD F82

Entrance/office lock

- Push-button locking.
- Push-button locks outside lever until it is unlocked with key or by turning inside lever.
- Inside lever always free for immediate egress.

Outside Inside



Schlage ANSI

ND53PD F109

Entrance lock

- Turn/push-button locking: Pushing and turning the button locks the outside lever, requiring use of a key until the button is manually unlocked.
- Push-button locking: Pushing button locks outside lever until unlocked by key or by turning the inside lever.
- Inside lever always free for immediate egress.

Outside Inside



Schlage ANSI

ND60PD F88

Vestibule lock

- Latch retracted by key from outside when outside lever is locked by key in inside lever.
- Inside lever always free for immediate egress.

Outside Inside



Schlage ANSI

ND66PD F91

Store lock†

- Key in either lever locks or unlocks both levers.

Outside Inside



Schlage ANSI

ND70PD F84

Classroom lock

- Outside lever locked and unlocked by key.
- Inside lever always free for immediate egress.

Outside Inside



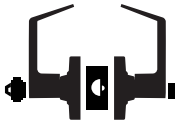
Schlage ANSI

ND73PD F90

Corridor lock

- Locked or unlocked by key from outside.
- Push-button locking from inside.
- Turn inside lever or close door to release button.
- When outside lever is locked by key it can only be unlocked by key.
- Inside lever always free for immediate egress.

Outside Inside



Schlage ANSI

ND75PD -

Classroom security lock

- Key in either lever locks or unlocks outside lever.
- Inside lever always free for immediate egress.

Outside Inside



Schlage ANSI

ND80PD F86

Storeroom lock

- Outside lever is fixed.
- Entrance by key only.
- Inside lever always free for immediate egress.

Outside Inside



Available with RX

Cylinders for exit devices, aluminum doors, etc.



Cylinders for Adams Rite MS 4500 and 4700 Series Lori 4500 Series and Corbin Russwin DL3000 Series

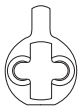
Number	Pins	Cylinder mechanism
26-072	6	Standard pin and tumbler
20-013	6	Standard pin and tumbler with 3/8" blocking ring
91-060	7	SL cylinder (restricted Everest 29 R and Everest B only)
20-706	6	Primus cylinder with 3/8" blocking ring
20-718	6	Primus lockout cylinder
20-506	6	Primus UL 437 listed high security cylinder with 3/8" blocking ring
20-518	6	Primus UL 437 listed lockout cylinder
20-706-XP	6	Primus XP cylinder with 3/8" blocking ring
91-758-XP	7	Primus XP SL cylinder (restricted Everest 29 R and Everest B only)
20-718-XP	6	Primus XP lockout cylinder
20-506-XP	6	Primus XP UL 437 listed high security cylinder with 3/8" blocking ring
20-518-XP	6	Primus XP UL 437 listed lockout cylinder

Notes:
- These cylinders include set screw pack B220-050 for Adams Rite locks.
- 1 1/8" length standard. Optional lengths available in 1/8" (4mm) increments up to 1 3/4" (44mm).
- Lockout keys must be ordered separately and lockout cylinders will not be master keyed by Schlage.

Cylinders for Adams Rite 4070 Series

Number	Pins	Cylinder mechanism
26-073	6	Standard pin and tumbler
91-061	7	SL cylinder (restricted Everest 29 R and Everest B only)
20-708	6	Primus
91-759-XP	6	Primus UL 437 listed high security
20-708-XP	6	Primus XP
91-759-XP	7	Primus XP SL cylinder (restricted Everest 29 R and Everest B only)
20-508-XP	6	Primus XP UL 437 listed high security

Note:
- 1 1/8" length standard. Optional lengths available in 1/8" (4mm) increments up to 1 3/4" (44mm).



B502-292
Cam for classic conventional prior to July 2010



L583-446
Modular cylinder lengths 1 1/8", 1 3/8" and 1 5/8"



L583-773
Modular SL cylinder length 1 1/8"



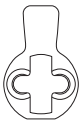
B502-944
Cam for Everest 29 and Primus XP prior to July 2010



L583-447
Modular cylinder lengths 1 1/4", 1 1/2" and 1 3/4"



L583-774
Modular SL cylinder length 1 1/4"



B502-380
Cam for classic conventional prior to July 2010



B520-743
Modular cylinder lengths 1 1/8", 1 3/8" and 1 5/8"



B520-788
Modular SL cylinder length 1 1/8"



B502-945
Cam for Everest 29 and Primus XP prior to July 2010



B520-744
Modular cylinder lengths 1 1/4", 1 1/2" and 1 3/4"

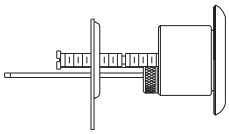


B520-789
Modular SL cylinder length 1 1/4"

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Cylinders for exit devices, aluminum door, etc.





Rim cylinders			
Number	Tailpiece	Pins	Cylinder mechanism
20-021 20-022	Vertical Horizontal	6	Standard pin and tumbler
91-074 91-075	Vertical Horizontal	7	SL cylinder (restricted Everest 29 R and Everest B only)
20-709 20-710	Vertical Horizontal	6	Primus
20-716	Horizontal	6	Primus lockout
20-509 20-510	Vertical Horizontal	6	Primus UL 437 listed high security
20-516	Horizontal	6	Primus UL 437 listed lockout
20-709-XP 20-710-XP	Vertical Horizontal	6	Primus XP
91-774-XP 91-775-XP	Vertical Horizontal	7	Primus XP SL cylinder (restricted Everest 29 R and Everest B only)
20-716-XP	Horizontal	6	Primus XP lockout
20-509-XP 20-510-XP	Vertical Horizontal	6	Primus XP UL 437 listed high security
20-516-XP	Horizontal	6	Primus XP UL 437 listed lockout

Notes
- 1 1/8" length standard. Optional lengths available in 1/8" (4mm) increments up to 1 3/4" (44mm).
- Lockout keys must be ordered separately and lockout cylinders will not be master keyed by Schlage.

Mortise and rim cylinder finish options

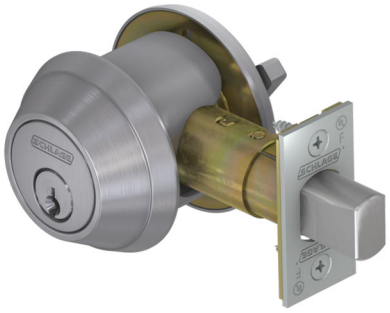


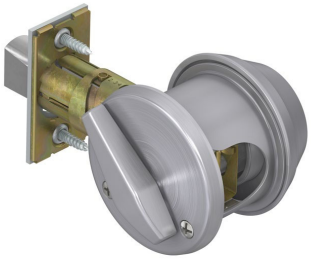
Bright brass (605)	Satin brass (606)	Antique brass (609)	Satin bronze (612)	Oil rubbed bronze (613)	Satin nickel (619)	Matte black (622)	Bright chrome (625)	Satin chrome (626)	Bright stainless steel (629)	Satin stainless steel (630)	Aged bronze (643e)
Faceplate	Faceplate and plug	Faceplate	Faceplate	Faceplate	Faceplate	Faceplate and plug	Faceplate	Faceplate and plug	Faceplate	Faceplate	Faceplate and plug

CDH
Commercial Doors & Hardware Ltd.
2150 Winston Park Drive, Unit 16
Oakville, L6H 5V1
Oakville #5 P.S. HDSB
Submittal Date: May 1/24, Nov 3/25, Nov 14/25, Nov 18/25, Nov 19/25

B600/700/800 Series

Grade 1 Deadbolts





OVERVIEW

Schlage® commercial grade 1 deadbolts are designed for security, durability and beauty. They feature a thick, anti-saw hardened steel bolt with anti-pry, anti-wrench and other protections to make it one tough lock. Optional single- or dual-sided lock status indicator trim features Schlage's patented 180-degree visibility. The large window size and red/white background messaging assures easy readability for even the color blind.

600 Series: Grade 1 deadbolt furnished with Conventional cylinder standard. Also available with Full Size Interchangeable Core (FSIC) or Small Format Interchangeable Core (SFIC).

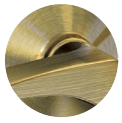
700 Series: Features the upgraded security of patented Primus RP in Classic Obverse keyways (FSIC or Conventional) or Primus XP in patented Everest 29 keyways (FSIC or Conventional including SL cylinders). Primus levels of security add an independent sidebar and finger pin locking mechanism for resistance to picking, bumping and impressioning.

800 Series: Utilizes a Conventional format Primus XP UL 437 high security cylinder which features added hardened steel drill pins to resist drilling and other forms of physical attack.

FINISHES

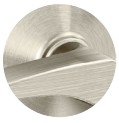

605
Bright Brass


606
Satin Brass


609
Antique Bronze

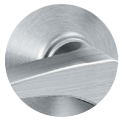

612
Satin Bronze

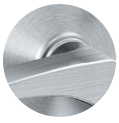

613
Oil Rubbed Bronze


619
Satin Nickel


622
Matte Black


625
Bright Chrome


626
Satin Chrome


626AM
Satin Chrome Antimicrobial


643e
Aged Bronze

e = an equivalent finish to the BHMA standard.

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INDICATORS

Inside Trims

Outside Trims



Thumbturn | Key cylinder | Coin turn | Key cylinder

Available Messages	LOCKED / UNLOCKED	OCCUPIED / VACANT
Inside trim	IS-LOC	IS-OCC
Outside trim	OS-LOC	OS-OCC
Inside trim (Française)	IS-LOCFR	IS-OCCFR
Outside trim (Française)	OS-LOCFR	OS-OCCFR

Note: Spanish language options available via RFQ.

DIMENSIONS

Standard Trim

Conventional Key Cylinder			
Thumbturn side		**Cylinder side**	
Rose diameter	2.57"	Trim ring diameter	2.54"
Projection	1.22"	Projection	0.85"

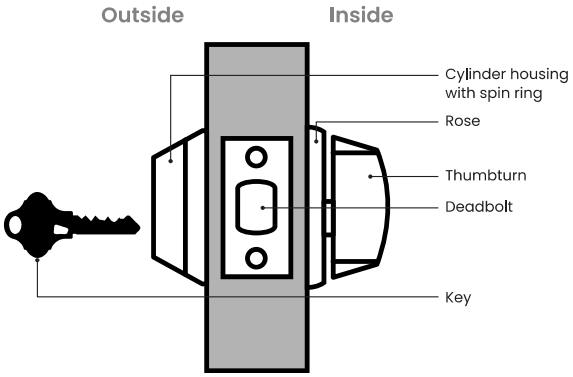
FSIC/SFIC Key Cylinder			
Thumbturn side		**Cylinder side**	
Rose diameter	2.57"	Trim ring diameter	2.54"
Projection	1.22"	Projection	1.12"

Indicator Trim

Conventional/FSIC/SFIC Key Cylinder			
Escutcheon		**Projection**	
Height	4.125"	Thumbturn side	1.32"
Width	2.54"	Cylinder side	1.28"

LOCK FUNCTIONS

Legend



Key



Inside lock status indicator available



Outside lock status indicator available

Product Identification Guide

B660

Lock series

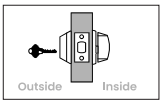
Function code

B600 = Basic and enhanced security
B700 = Primus upgraded security
B800 = Primus high security

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LOCK FUNCTIONS

Schlage **ANSI**
B660 **E0151**
B760
B860



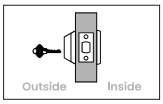
Single cylinder deadbolt



- Key cylinder outside; thumbturn inside
- Deadbolt thrown or retracted by key outside or thumbturn inside
- When installed with optional lock status indicator trim, in unlocked state message displays on white background; in locked state on red background

To order configured with indicator specify function and note indicator code as a special option.

Schlage **ANSI**
B661 **E0161**
B761
B861



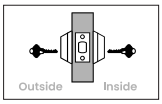
Cylinder x blank plate deadbolt



- Key cylinder outside; blank plate inside
- Deadbolt thrown or retracted by key outside
- When installed with optional lock status indicator trim, in unlocked state message displays on white background; in locked state on red background

To order configured with indicator specify function and note indicator code as a special option.

Schlage **ANSI**
B662 **E0141**
B762
B862



Double cylinder deadbolt

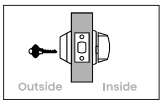


- Key cylinder both sides
- Deadbolt thrown or retracted by key from either side
- When installed with optional lock status indicator trim, in unlocked state message displays on white background; in locked state on red background

Caution: Double cylinder locks on any door, in any structure which is used for egress are a life safety hazard in times of emergency and their use is not recommended. Installation should be in accordance with existing codes only.

To order configured with indicator specify function and note indicator code as a special option.

Schlage **ANSI**
B663 **E0171**
B763
B863



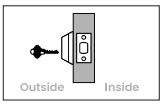
Classroom deadbolt



- Key cylinder outside; thumbturn inside
- Deadbolt thrown or retracted by key outside
- Thumbturn inside can only retract deadbolt
- When installed with optional lock status indicator trim, in unlocked state message displays on white background; in locked state on red background

To order configured with indicator specify function and note indicator code as a special option.

Schlage **ANSI**
B664 **E0101**
B764
B864



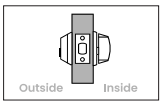
Cylinder only deadbolt

- Key cylinder outside; no inside trim
- Deadbolt thrown or retracted by key outside

Note: Available in Conventional cylinder format only.

Note: 1-1/2" bore only.

Schlage **ANSI**
B672 **-**



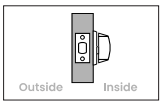
Door bolt with coin turn



- Coin turn outside; thumbturn inside
- Deadbolt thrown or retracted by thumbturn inside
- A flat screwdriver inserted in the coin turn outside can also retract deadbolt
- When installed with optional lock status indicator trim, in unlocked state message displays on white background; in locked state on red background

To order configured with indicator specify function and note indicator code as a special option.

Schlage **ANSI**
B680 **E0191**



Door bolt

- No outside trim; thumbturn inside
- Deadbolt thrown or retracted by thumbturn inside

Note: 1-1/2" bore only.

CDH

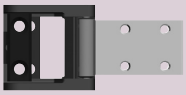
Commercial Doors & Hardware Ltd.
2150 Winston Park Drive, Unit 16
Oakville, L6H 5V1

Oakville #5 P.S. HDSB

Submittal Date: May 1/24, Nov 3/25, Nov 14/25, Nov 18/25, Nov 19/25

33A/35A Rim device





1439 Roller ships standard, optional strikes available



299 Strike needs to be specified for Hollow Metal Frames

33A and 35A for all types of single and double doors with mullion, UL listed for panic exit hardware. Devices are ANSI A156.3 – 2014 Grade 1. The 35A has a smooth mechanism case and the 33A has grooved case. The rim device is non-handed except when the SS (signal switch) option is used. See opposite page for available outside trim and device functions.

33A/35A fits door stiles as narrow as 1 3/4" (44mm). Newly designed device has a one piece center case cover.

Finishes – US3, US4, US10, US15 (35A Only) US26, US26D, US26D-AM,US28, 313 and 315.

Specifications

Device lengths	**3'** 2' 4" to 3' (711mm to 914 mm) Door size **4'** 2'10" to 4' (864 mm to 1219 mm) Door size
Device centerline from finished floor	39 13/16" (1011 mm) 39 11/16" (1008 mm) with Mullion
Center case dimensions	8 3/16" x 1 9/16" x 2 13/32" (208mm x 40mm x 62mm)
Mechanism case dimensions	2 1/4" x 2 1/4" (57mm x 57mm)
Projection	Pushbar Neutral – 3 13/16" (97 mm) Pushbar Depressed – 3 1/16" (78 mm)
Latch bolt	Deadlocking, 3/4" (19mm) throw
Fasteners & sex bolts (SNB)	Includes 1 3/4" (44mm) – 2 1/4" (57mm) wood & metal doors #425 SNB furnished standard for end case #325 SNB furnished standard for EO (exit only device)
Electric options	**ALK** Alarm kit **CX** Chexit delayed exit **EL** Electric latch retraction **HD-EL** Electric latch retraction with hex dogging **QEL** Quiet electric latch retraction **RX** Request to exit, WP-RX waterproof option **LX** Latchbolt monitoring **LX-RX** Request to exit / latchbolt monitoring **RX-LC, LX-LC, LX-RX-LC** Low current option for RX, LX, LX-RX **SS** Signal switch **CON** Allegion Connect
Mechanical options	**AX** Accessible device
Miscellaneous options	**GBK** Glass bead kit **PN** Pneumatic **SG** Safety glow **SEC** Security screws **SNB** Sex bolts
Dogging feature	**Hex Dogging standard** **CD** Cylinder dogging **LD** Less dogging
Strikes	**1439** – Dull black **Optional strikes**

QEL
Quiet electric latch retraction
- Bolt retraction via switch
- Converts exit door to push-pull operation

AX
Accessible device
- UL certified to meet new 5 lb. maximum operating force requirement
- Exceeds ANSI/ BHMA requirements

CX
Chexit delayed exit
- Meets NFPA 101 requirements
- Self-contained controls, locking, alarm

ALK
Alarm exit kit
- Unauthorized opening triggers 85-decibel horn
- Set in armed or disarmed mode by key

EL
Electric latch retraction
- Enables remote unlatching
- Alternative to manual dogging

RX
Pushpad monitor switch
- Signals use of an opening
- SPDT switch to monitor pushpad

E (E360L)
Electric lever trim
- Electrified remote locking/unlocking
- Fail safe & fail secure options available
- No key override

CON
Allegion Connectors
- Common connectors to connect various door hardware all the way to the power supply

PN
Pneumatic latch retraction
- For areas where electrical devices banned
- Special linkage for mechanical or pneumatic dogging

CD
Cylinder dogging
- Replaces hex key dogging
- Requires standard 1 1/4" mortise cylinder

Standard trim

	EO	DT	NL	NL-OP
	No outside trim Exit only	 **Dummy trim** Pull when dogged	 **Night latch** Key retracts latchbolt	 **Night latch** Key retracts latchbolt optional pull required
Product description	33A-EO 35A-EO	33A-DT 35A-DT	33A-NL 35A-NL	33A-NL-OP 35A-NL-OP
Trim description	—	386DT	386NL	388
Base size	—	7 15/32" x 1 5/8" (190x41mm)	7 15/32" x 1 5/8" (190x41mm)	7 1/2" x 1 11/16" (190x43mm)
Grip size	—	8 1/2" x 4 5/16" (216x110mm)	8 1/2" x 4 5/16" (216x110mm)	—
Projection	—	2 7/16" (62mm)	2 7/16" (62mm)	1" (25mm)
ANSI function	01	02	03	03
Cylinder type	—	—	Rim	Rim
Handing	—	—	Handed	—
Optional trim	—	x360L-DT x550DT x IVES 8190	—	x550DT x IVES 8190 10"

	L	L-BE	T	T-BE
	 **Lever** Key Locks and Unlocks	 **Lever Blank Escutcheon** Always Operable (No Cylinder)	 **Thumbturn** Key Locks and Unlocks	 **Thumbturn** Always Operable (No Cylinder)
Product description	33A-L 35A-L	33A-L-BE 35A-L-BE	33A-T 35A-T	33A-T-BE 35A-T-BE
Trim description	360L	360L-BE	360T	360T-BE
Base size	7 1/2" x 1 11/16" x 7/8" (190x43x22mm)	7 1/2" x 1 11/16" x 7/8" (190x43x22mm)	7 1/2" x 1 11/16" x 7/8" (190x43x22mm)	7 1/2" x 1 11/16" x 7/8" (190x43x22mm)
Grip size	—	—	—	—
Projection	3" (76mm)	3" (76mm)	1 13/16" (46mm)	1 13/16" (46mm)
ANSI function	08 or 09 field selectable	—	11 or 12 field selectable	—
Cylinder type	1 1/4" Mortise	—	1 1/4" Mortise	—
Handing	Handed/Reversible	Handed/Reversible	—	—
Optional trim	—	E360L-BE	—	E360T-BE

Note: 360L & 360T used on wood door require the 33A-WDA cover plate

Notes

CDH
Commercial Doors & Hardware Ltd.
2150 Winston Park Drive, Unit 16
Oakville, L6H 5V1

Oakville #5 P.S. HDSB

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ALLEGION



CDH

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98-F/99-F Rim exit device



98-F and 99-F Rim fire exit devices are certified to ANSI/BHMA A156.3 2014, Grade 1 and UL listed for fire exit hardware. See page 67 for detailed information on UL fire exit hardware label and door opening size information. The 98-F device has a smooth mechanism case and the 99-F device has a grooved case. The rim device is non-handed except when the following device options are used: -2 (double cylinder) or SS (signal switch).

Specifications

Device functions	Device ships EO/DT/N; Field selectable; For TP, K or L remove NL drive screw from device
Device lengths	3' 2'4" to 3' (711mm to 914mm) Door size 4' 2'10" to 4' (864mm to 1219mm) Door size
Device centerline from finished floor	39 13/16" (1011mm) 39 11/16" (1008mm) with mullion
Center case	8" x 2 3/4" x2 3/8" (203mm x 70mm x 60mm)
Mechanism case	2 1/4" x 2 1/4" (57mm x 57mm)
Projection	Pushbar neutral – 3 13/16" (97mm) Pushbar depressed – 3 1/16" (78mm)
Latch bolt	Deadlocking, 3/4" (19mm) throw
Finishes	605, 606, 612, 626/626AM, 628, 710, 711 and 643e (619 and 630 available with 98 Series only)
Fasteners and sex bolts (SNB)	Includes screw pack for 1 3/4" (44mm) and 2 1/4" (57mm) thick metal or wood doors; Optional 425 SNB available for metal doors; 425 and 825 SNB required on wood doors without SLM blocking (See page 64 for quantities)

Accessories



299F Strike
Ships standard, optional strikes available



499F Strike
With 9854/9954 mullion

Features and options

Electrified options

LX	Latch bolt monitor switch
RX	Request to exit
RX2	Double request to exit
E	Electric locking and unlocking trim
EL	Electric latch retraction
ESL	Emergency secure lockdown
QEL	Quiet electric latch retraction
SS	Signal switch
CX	Chexit delayed exit
ALK	Alarm exit kit
WP-RX	Waterproof request to exit
CON	Allegion Connect

Mechanical options

-2	Double cylinder
-2SI	Double cylinder with security indicator
AX	Accessible device
GBK	Glass bead kit
PN	Pneumatic latch retraction
QM	Quiet mechanical
SNB	Sex bolts
SEC	Security screws
SLM	Special laminate material blocking
WH	Weep holes
XP	Extra protection

Dogging option
No mechanical dogging;
QEL options available

Strikes
299F – Dull black, 499F with mullions

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Trim options

996 trim



Trim description					
Nomenclature	996EO	996L*	996L-NL*	996L-BE*	996L-DT
Trim function	Exit only plate	Lever	Lever-night latch	Lever-blank escutcheon	Lever-dummy trim
Function description	Exit only plate	Key locks and unlocks	Key retracts latch bolt	Always operable, no cylinder	Pull when dogged
ANSI function	01	08	03	14	02
Device compatibility					
98/99 Rim/Rim-F	■	■	■	■	■
XP98/XP99 Rim/Rim-F	■	■	■	■	■
98/9927/27-F	■	■	■	■	■
98/9947/47-F	■	■	■	■	■
98/9947WDC/WDC-F	■	■	■	■	■
98/9948/48-F	■	■	■	■	■
98/9949/49-F	■	■	■	■	■
98/9950WDC/50WDC-F	■	■	■	■	■
98/9952†	†	†	†	†	†
98/9957/57-F	■	■	■	■	■
98/9975/75-F	■	■	■	■	■
Dimensions					
Escutcheon plate size	2 3/4" x 10 3/4" x 27/32" (70 x 273 x 21mm)				
Pull center to center	—	—	—	—	—
Projection	—	2 7/8" (73mm)	2 7/8" (73mm)	2 7/8" (73mm)	2 7/8" (73mm)
Handing					
	—	Handed/reversible	Handed/reversible	Handed/reversible	Handed/reversible
Cylinder type					
Rim or vertical device	—	Rim	Rim	—	—
Mortise lock device	—	1 1/4" mortise	1 1/4" mortise	—	—

* Specify R/V if used for rim and vertical devices, M for mortise device. Example, 996L-R/V or 996L-M.

† Default trim is 252L /L-BE. Must be ordered as EO when paired with other trims (ordered separately).

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Mullions

Mullions

Removable steel mullions Mullions provide single door performance in double door openings with rim devices. Mullions are easily removed by loosening bottom set screw and removing top fitting cover. The top mullion fitting is attached to the frame and is concealed by the fitting cover.

Steel mullions are 2" (51mm) wide and 3" (76mm) deep, with a wall thickness of 1/8" (3mm).

Mullions are shipped with mounting screws and prepared for strikes. Strikes are not included except where indicated.

Steel mullions are available in SP28 and SP313 finishes. Consult factory for other powder coat finish options.

KR – Keyed removable steel mullions make removal faster and easier by a single operation of the mortise cylinder. Once mullion is removed, large equipment or furniture can freely pass through the opening. The unit will self lock when re-installed, without use of the cylinder key. Uses a 1 1/4" mortise cylinder with a straight cam (Schlage cam reference L583-477). Cylinders are sold separately. Prefix mullion model with "KR".

Removable aluminum mullions are 1 1/16" (27mm) wide on face closest to the door and 2 3/8" (60mm) at the widest point. The depth is 3 1/8" (79mm) with a wall thickness of 1/8" (3mm).

Aluminum mullions are available in 606, 612, 628, 710 and 622/711 finishes. Consult factory for other powder coat finish options.

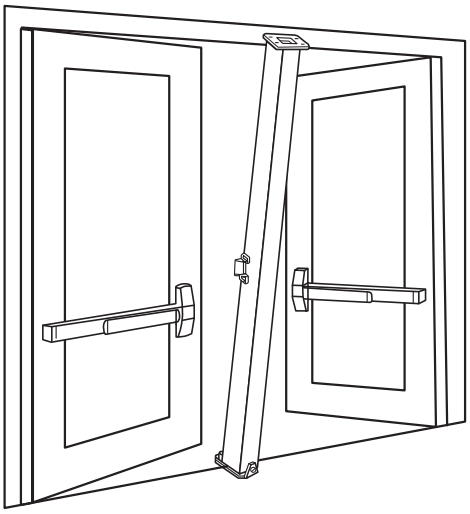
Stock Hollow Metal Applications for devices mounted to cover ANSI 161 cutouts are higher than the standard mullion strike location. Consult the factory for special strike preparation or order a blank mullion. See below.

Blank Mullions are furnished without strike preparation. They are used to mount devices at a strike height different from the standard mullion preparation.

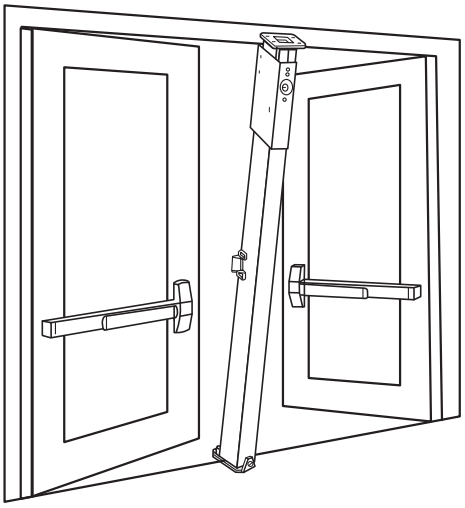
To order, specify:

1. For keyed removable option on steel mullions, prefix model number with "KR"
2. Model number.
3. Height of opening
4. Finish
5. Handing if required.
6. Centerline deviation (refer to device template for standard centerline).
7. Strikes, when required, should be ordered with device.

Removable mullions



Keyed removable steel mullions



Mullions

Steel mullions

1654 Prepared for two 1606 strikes. **If 1606 strikes are not specified on the order, two per mullion will be added. Additional charges apply.**

4954 Prepared for 264 or 299 strikes. For use with all Von Duprin Panic rim devices. **Note: specify strike choice with device.**

9954 Prepared for and must be used with two 268 strikes (88-F device), or two 499F (22-F, 33/35, 98-F, 99F devices). UL fire labeled mullion for up to 3 hour opening using Von Duprin fire exit rim devices. This mullion is not easily removed due to special fittings.

22-F and 88-F devices are rated up to 8' x 8" (2438mm x 2438mm).

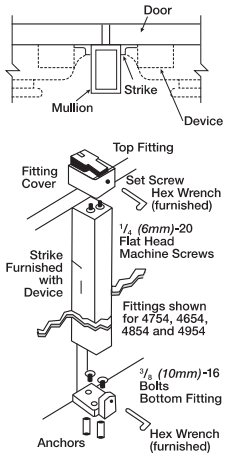
33A-F and 35A-F devices are rated up to 10'0" (3048 mm).

98-F and 99-F devices are rated up to 10'0" (3048mm).

9954-XP Prepared for two 954 strikes, for XP device.

HH9954 Heavy-duty mullion for use in impact-rated hurricane assembly.

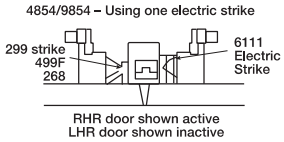
Note: If 268 or 499F strikes are not specified on the order, two per mullion will be added. Additional charges apply.



4754 Prepared for two 4263 monitor strikes.

4854 Prepared for one 299 and one 6111 electric strike. Indicate handing for electric strike.

9854 Prepared for one 268 or 499F strike and one 6111 electric strike. Indicate handing for electric strike. UL fire labelled mullion for up to 3 hour openings up to 8' x 8' (2438mm x 2438mm) using Von Duprin Fire Exit Rim Devices



Aluminum mullions

5654 Prepared for two 264 or 299 strikes. Includes one set of 154 stabilizers.

5654-XP Prepared for two 909 strikes, for XP device.

5754 Prepared and furnished with one 1408 double door strike. Includes one 154 stabilizer set. Note: specify devices "less strike".

Note: All furnished with weatherstrip edging.

Sizes for mullions

1654, 4954, 4754, 4854, 5654, 5754 9854, 9954

7' 2" (2184mm)	7' 3" (2210mm)
*8' 2" (2489mm)	8' 3" (2475mm)
*10' 2" (3099mm)	10' 3" (3124mm)

KR1654, KR4954, KR4754, KR4854	**KR9854**, KR9954*****
7' 6" (2286mm)	7' 5" (2261mm)
8' 6" (2591mm)	*8' 5" (2565mm)
10' 6" (3200mm)	*10' 5" (3175mm)

* Only qualifying applications will be provided with UL Label.
** Fire rated same as 9854
*** Fire rated same as 9954



Angle plate is used with narrow transom frames. The plate attaches to the transom extending the surface area needed to mount the mullion. Must be ordered separately. Specify finish.

154 Stabilizer is a two-piece interlocking set. One piece mounts on the mullion with the top mounting hole 5 3/16" (148mm) below the centerline of the strike; the other piece mounts on the door. Shims are provided to adjust for misalignment between the door and mullion.



The set maintains integrity between the door and mullion to prevent vandalism and to ensure contact between the device and strike as the doors expand and contract with temperature changes.

Furnished standard on aluminum mullions; optional for steel mullions.

MT54 Storage kit is a set of floor and wall brackets that provide convenient storage of the keyed removable mullion when removed from the opening.

To order, specify

1. Model MT54.

2. Finish SP28, SP313, or SPBLK

6200 Series strikes for mortise or cylindrical devices

Overview
Von Duprin electric strikes are known for their reliability, durability and security. The 6200 Series is designed to withstand abuse. Its heavy-duty stainless steel construction is fully UL1034 and UL10C listed.

6200 Series electric strikes are designed for use with a variety of mortise or cylindrical locksets. It interfaces with the latch mechanism of the exit device. The 6200 Series movable lip (keeper) allows a door to open, even when the latch bolt is extended. This feature, called remote release provides added benefits such as increased convenience and efficiency. The 6200 Series also provides added security and traffic control.

6200 Series electric strikes can be used for retrofit applications or new construction. To assure the proper selection of an electric strike on new applications, lockset compatibility charts are shown below. When using a lockset not listed or when retrofitting a strike to an existing application, please contact Von Duprin Technical Support for application assistance.

Features and benefits

- Non handed design provides greater flexibility
- Strike box is adjustable to compensate for misalignment of the door or frame
- Two piece plug connectors are furnished for ease of installation and for removal during strike servicing
- UL1034 Burglary-Resistant and UL10C Electric Strike for Fire Door
- Six finishes available to suite with existing hardware
- Durable stainless steel construction
- 24 VDC standard with 12 VDC and AC operation optional



6200 Series power requirements

Models	Voltage	Current	Duty	Amps	Ohms
All	12V	DC	Continuous	0.60	21
All	16V	DC	Continuous	0.40	38
All	24V	DC	Continuous	0.33	83
All	28V	DC	Continuous	0.25	111

Continuous duty = Energized 1 minute or more

Cylindrical lockset compatibility[1,2,3]

6211, 6211AL, 6211WF, 6212, 6213, 6214, 6215, 6221, 6222, 6223, 6224, 6224AL, 6225 and 6226 Strikes

Manufacturer	Cylindrical latchbolt projection
Baldwin	1/2" – 3/4" (13mm – 19mm)
Best	3/8" – 3/4" (10mm – 19mm)
Corbin	1/2" – 3/4" (13mm – 19mm)
Falcon	1/2" – 3/4" (13mm – 19mm)
Russwin	1/2" – 3/4" (13mm – 19mm)
Sargent	1/2" – 3/4" (13mm – 19mm)
Schlage	3/8" – 3/4" (10mm – 19mm)
Yale	1/2" – 3/4" (13mm – 19mm)

Mortise lockset compatibility[1,2,3]

6211, 6211AL, 6211WF, 6212, 6213, 6214, 6215, 6221, 6222, 6223, 6224, 6224AL, 6225 and 6226 Strikes

Manufacturer	Model number
Von Duprin	7500
Adams Rite	4510, 4710
Baldwin	6000
Best	24H, 30H
Corbin	9000
Falcon	M2300, M2500, M2600, M3300, M3500, M3600
Precision	Mortise
Russwin	Mortise
Sargent	7700, 8100, 9000
Schlage	L9000, K30, K40, K50, K60
Yale	7030, 7130, 8600, 8700

Mortise lockset compatibility[1,3]

6210

Manufacturer	Model number
Von Duprin	7500
Best	30H (not 45H/47H)
Corbin/Russwin	ML2200, 5000, 9000, CR2200 (not 2000)
Falcon	M100, M200, M300, M400, M500, M600
Sargent	7700, 8100 (not 7800/8200)
Schlage	L9000
Yale	8700 (not 8800)

1. Von Duprin cannot guarantee compatibility as other manufacturer's designs may change without notice.
2. Signalling may not function when using 3/8" (10mm) throw bolt. Deadlocking cannot be guaranteed with all locks.
3. When using a lockset not listed or when retrofitting a strike to an existing application, please contact Von Duprin Technical Support for assistance.

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Oakville #5 P.S. HDSB
Submittal Date: May 1/24, Nov 3/25, Nov 14/25, Nov 18/25, Nov 19/25

6300 Series surface mounted strike for rim exit devices

Overview
Von Duprin electric strikes are known for their reliability, durability and security. The 6300 Series is designed to withstand abuse. Its heavy-duty stainless steel construction is fully UL1034 and UL10C Listed.

6300 Series electric strikes are designed for use with a variety of rim devices. It interfaces with the latch mechanism of the exit device. The movable lip (keeper) allows a door to open even when the latch bolt is extended. This feature, called remote release, provides added benefits such as increased convenience and efficiency. The 6300 Series also provides added security and traffic control.

6300 Series electric strikes are ideal for aftermarket applications. It is easy to install without modifying or altering the door frame. To assure the proper selection of an electric strike on new applications, lockset compatibility charts are shown on the next page. When using a lockset not listed or when retrofitting a strike to an existing application, please contact Von Duprin technical support for application assistance.

The 6300 is fail-secure (FSE) only to achieve compliance with UL10C for fire-rated openings. In a fail-secure application, the door is normally locked. To unlock the door, power must be applied. The 6300 strike can be used with either 12VDC or 24VDC. There are 2 connectors that ship with it and the appropriate connector for either 12VDC or 24VDC will be used, based upon the available voltage at the opening.

Features and benefits

- Non-handed design provides greater flexibility
- Requires no alteration or cutting to existing frame
- UL1034 burglary-resistant and
- UL10C electric strike for fire door
- Stainless steel (satin) finish
- Durable stainless steel construction
- Field selectable voltage 12VDC or 24VDC
- Dynamic strength 70 ft-lbs
- Endurance 2,000,000 cycles

6300 Series power requirements

Model	Voltage	Current	Duty	Amps	Ohms
6300	12V	DC	Continuous	0.50	22
6300	24V	DC	Continuous	0.24	89



Rim exit device compatibility 6300 strikes

Manufacturer	Model Number
Von Duprin	VD 22/22-F Rim
Von Duprin	VD 33A/35A Rim*
Von Duprin	VD 55 Rim
Von Duprin	VD 88 Rim
Von Duprin	VD 98/99 and 98/99-F Rim
Falcon	Falcon 24/24-F Rim*
Falcon	Falcon 25/25-F Rim
Falcon	Falcon 19/19-F Rim
Falcon Doromatic	Falcon Doromatic 1590*
Falcon Doromatic	Falcon Doromatic 1790*
Falcon Doromatic	Falcon Doromatic 2090*

* Stile and frame condition may affect compatibility.

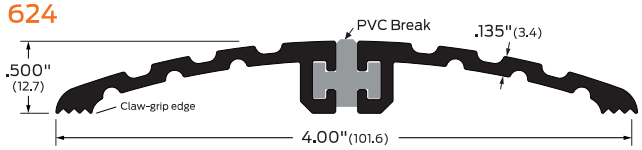
Model specifications

Model number	6300
Retrofits model	N/A
Latchbolt throw	3/4"
Face plate length	9"
Projection	3/4"
Lockset	Rim exit device
Number of doors	Single or pair with mullion
Door/frame type	Hollow metal, aluminum and wood
EB (entry buzzer)	Optional
Certifications	UL1034, UL10C, UL 294, CSFM
Application notes	Surface mounted electric strike ideal for aftermarket applications. Strike designed for use with Von Duprin 98/99, however it can be used with most rim exit devices.

Thresholds

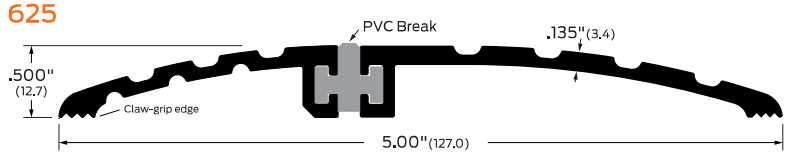
Thermal break thresholds

624



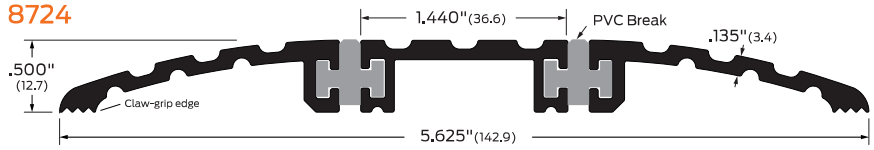
Finishes: A, BK, D, G
Options: E, EL, V3, EV3, ELV3
BHMA CERTIFIED
ANSI/BHMA:
624A, 624D, 624G, 624BK J32139
624A-E, 624D-E, 624G-D, 624BK-E J32239

625



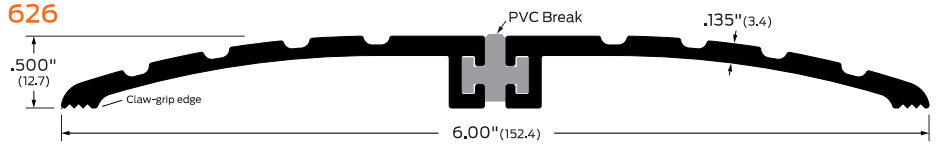
Finishes: A, BK, D, G
Options: E, EL, V3, EV3, ELV3
BHMA CERTIFIED
ANSI/BHMA:
625A, 625BK, 625D, 625G J32139
625A-E, 625BK-E, 625D-E, 625G-E J32239

8724



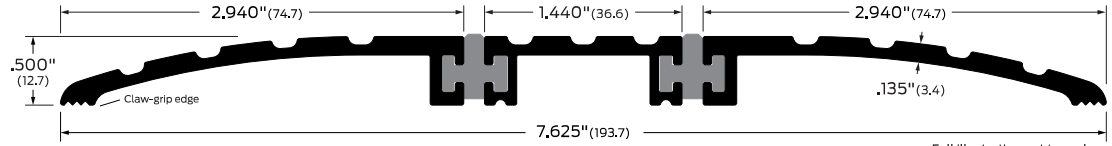
Finishes: A, BK, D, G
Options: E, EL, V3, EV3, ELV3
BHMA CERTIFIED
ANSI/BHMA:
8724A, 8724D, 8724G, 8724BK J32139
8724A-E, 8724D-E, 8724G-E, 8724BK-E J32239

626



Finishes: A, BK, D, G
Options: E, EL, V3, EV3, ELV3
BHMA CERTIFIED
ANSI/BHMA:
626A, 626D, 626G, 626BK J32139
626A-E, 626D-E, 626G-D, 626BK-E J32239

8726



Full illustration not to scale

Finishes: A, BK, D, G
Options: E, EL, V3, EV3, ELV3
BHMA CERTIFIED
ANSI/BHMA:
8726A, 8726D, 8726G, 8726BK J32139
8726A-E, 8726D-E, 8726G-E, 8726BK-E J32239

See Thresholds Accessories & options page for details.

Finishes:

A	Aluminum mill finish
BK	Aluminum black anodized
D	Aluminum dark bronze anodized
G	Aluminum gold anodized
B	Bronze, architectural mill finish
B-ORB	Oil-rubbed bronze

Options:

E	Epoxy abrasive tread
EL	Photoluminescent and abrasive epoxy tread
V3	Full body strength fill
EV3	Epoxy and full body strength fill
ELV3	Photoluminescent and abrasive epoxy tread, full body strength fill

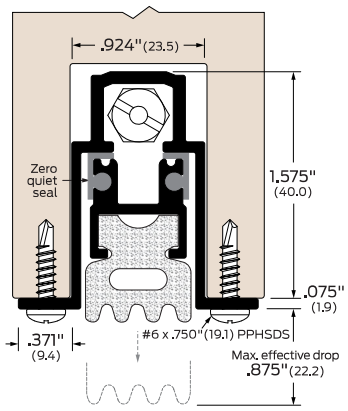
Note:

Special anchors available for mounting most thresholds on concrete surfaces.

Width dimensions for thresholds on this page are nominal. Slight variations may result from thermal break manufacturing.

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Oakville #5 P.S. HDSB
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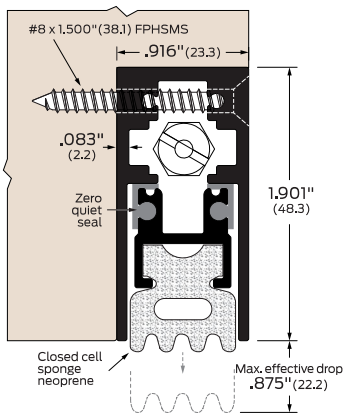
360



Finishes: AA
Options: LS, Z49 End Cap, PL, NH
ANSI/BHMA: 360AA R3C324

Mortised. Supplied with closed cell sponge neoprene. Note: Consult your local AHJ for maximum allowable door undercut.

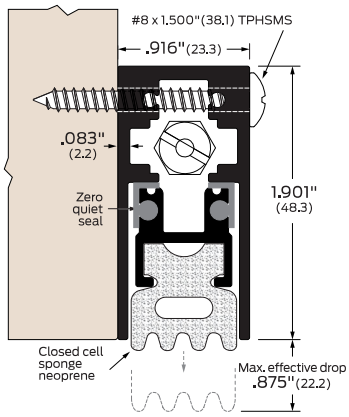
362



Finishes: AA, BK, D, G
Options: LS, PL, SEC,LK, NH
ANSI/BHMA: 362AA, 362BK, 362D, 362G R3B344

Semi-mortised applications. Supplied with closed cell sponge neoprene. Note: Consult your local AHJ for maximum allowable door undercut.

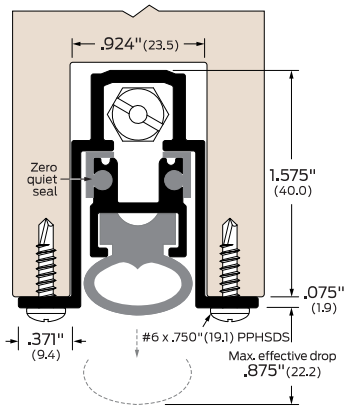
361



Finishes: AA, BK, D, G
Options: LS, PL, NH, LK, SEC
ANSI/BHMA: 361AA, 361BK, 361D, 361G R3C334

Surface-mounted applications. Supplied with closed cell sponge neoprene.

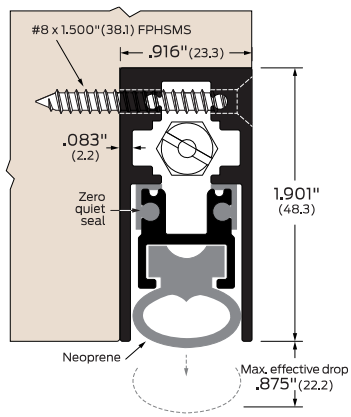
364



Finishes: AA
Options: LS, Z49 End Cap, PL, NH
ANSI/BHMA: 364AA R3B324

Mortised. Supplied with solid neoprene extrusion. Note: consult your local AHJ for maximum allowable door undercut.

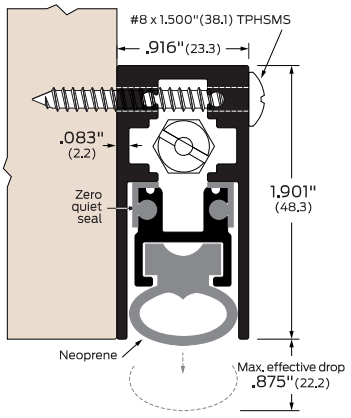
366



Finishes: AA, BK, D, G
Options: LS, PL, SEC, LK, NH
ANSI/BHMA: 366AA, 366BK, 366D, 366G R3B344

Semi-mortised applications. Supplied with solid neoprene extrusion. Note: Consult your local AHJ for maximum allowable door undercut.

365



Finishes: AA, BK, D, G
Options: LS, PL, SEC, LK, NH
ANSI/BHMA: 365AA, 365BK, 365D, 365G R3B334

Surface-mounted applications. Supplied with solid neoprene extrusion.

See ADB Accessories & options page for details.

Finishes:

AA	Aluminum clear anodized
BK	Aluminum black anodized
D	Aluminum dark bronze anodized
G	Aluminum gold anodized

Options:

LS	Light spring
FLO	Air flow/ sound block
Z49	Removable end cap
PL	Pull out
SEC	Torx security screws
LK	Locking key
NH	No holes

Note:

Maximum order length is 60" unless noted otherwise. Lengths up to 96" on some models available as engineering special order.

Lengths 10" - 18" available only with light spring drop mechanism. Not recommended for maximum drop greater than .500".

Except where noted, all models on this page are shipped in standard LH/RHR configuration with locking screw concealed (facing the door). Handing is reversible.

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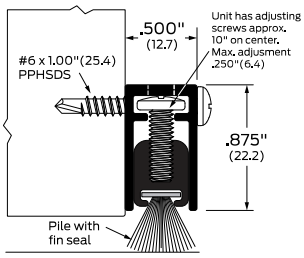
Oakville #5 P.S. HDSB

Submittal Date: May 1/24, Nov 3/25, Nov 14/25, Nov 18/25, Nov 19/25

Perimeter seals

Door sweeps

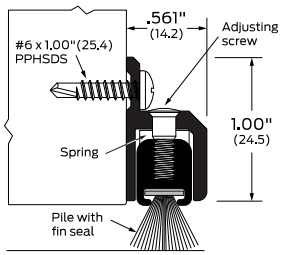
871



Finishes: AA, BK, D, G
Options: S, SEC
ANSI/BHMA: 871AA, 871BK, 871D, 871G R3F434

Adjustable

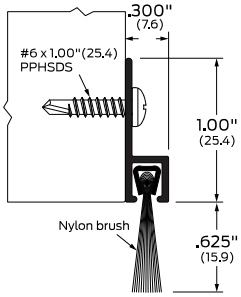
255



Finishes: AA, BK, D, G
Options: SEC
ANSI/BHMA: 255AA, 255BK, 255D, 255G R3F434

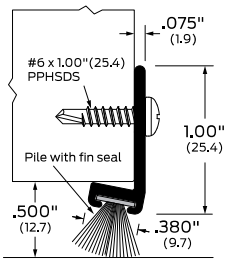
Adjustable

8192



Finishes: AA, BK, D, G
Options: PSA, SEC
ANSI/BHMA: 8192AA, 8192BK, 8192D, 8192G R3A436

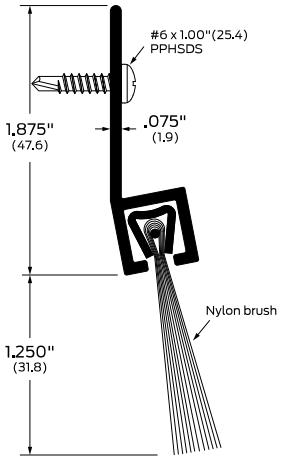
98





Finishes: A, BK, D, G
Options: PSA, S, SEC
ANSI/BHMA: 98A, 98BK, 98D, 98G R3F436

96



Finishes: A, BK, D, G
Options: SEC
ANSI/BHMA: 96A, 96BK, 96D, 96G R3A436

Suitable for mixed-use commercial, hospitality, multi-family, as well as sliding barn doors.

See Perimeter seals Accessories & options page for details.

Finishes:

A	Aluminum mill finish
AA	Aluminum clear anodized
BK	Aluminum black anodized
D	Aluminum dark bronze anodized
G	Aluminum gold anodized
B	Bronze, architectural mill finish
B-ORB	Oil-rubbed aged bronze

Options:

FLO	Air flow/ sound block
PSA	Pressure-sensitive adhesive
ZAG	Ligature resistant gasketing
S	Order as a set
SEC	Security screws

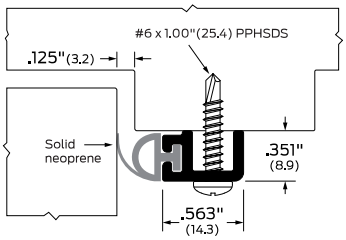
Note:

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Commercial Doors & Hardware Ltd.
2150 Winston Park Drive, Unit 16
Oakville, L6H 5V1
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Perimeter seals

Head and jamb gasketing

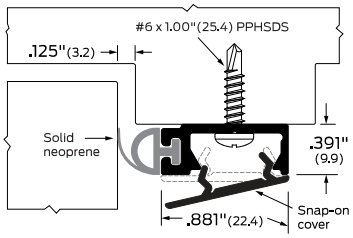
485



Finishes: AA, BK, D, G
Options: ZAG, S, SEC
ANSI/BHMA: 485AA, 485BK, 485D, 485G R3B164

ZAG option for mental health applications includes security screws.
Extruded Bulb/Finger for double-sealing protection.

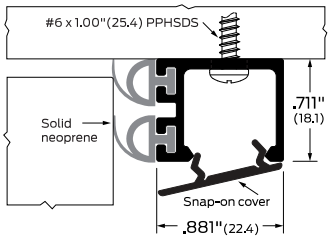
475



Finishes: AA, BK, D, G
Options: S, SEC
ANSI/BHMA: 475AA, 475BK, 475D, 475G R3B164

Extruded Bulb/Finger for double-sealing protection. Channel may be used for low-voltage wiring, subject to local building codes.

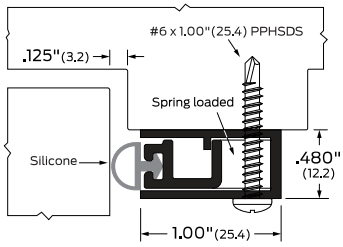
478



Finishes: AA, BK, D, G
Options: S, SEC
ANSI/BHMA: 478AA, 478BK, 478D, 478G R3B154

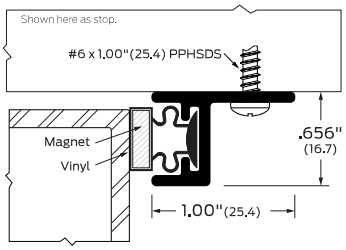
Extruded Bulb/Finger for double-sealing protection. Channel may be used for low-voltage wiring, subject to local building codes.

570



Finishes: AA, BK, D, G
Options: S, SEC
ANSI/BHMA: 570AA, 570BK, 570D, 570G R3E264

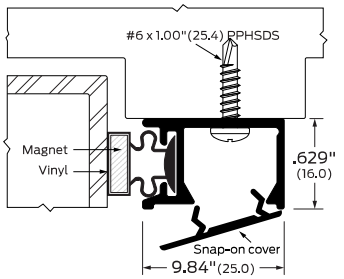
370



Finishes: A, BK, D, G
ANSI/BHMA: 370A, 370BK, 370D, 370G R3L155

Magnetic head & jamb gasketing For use with interior metal doors only.
Available to order as engineering special.

375



Finishes: A, BK, D, G
ANSI/BHMA: 375A, 375BK, 375D, 375G R3L155

Magnetic Head & Jamb Gasketing For use with interior metal doors only.
Available to order as engineering special.

See Perimeter seals Accessories & options page for details.

Finishes:

A	Aluminum mill finish
AA	Aluminum clear anodized
BK	Aluminum black anodized
D	Aluminum dark bronze anodized
G	Aluminum gold anodized
B	Bronze, architectural mill finish
B-ORB	Oil-rubbed aged bronze

Options:

FLO	Air flow/ sound block
PSA	Pressure-sensitive adhesive
ZAG	Ligature resistant gasketing
S	Order as a set
SEC	Security screws

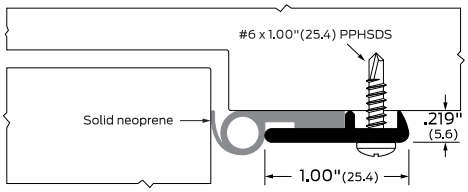
Note:

CDH
Commercial Doors & Hardware Ltd.
2150 Winston Park Drive, Unit 16
Oakville, L6H 5V1
Oakville #5 P.S. HDSB
Submittal Date: May 1/24, Nov 3/25, Nov 14/25, Nov 18/25, Nov 19/25

Perimeter seals

Head and jamb gasketing

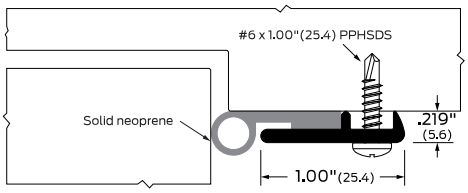
326



Finishes:	Options:	ANSI/BHMA:	
AA, BK, D, G, B, B-ORB	ZAG, S, SEC	326AA, 326BK, 326D, 326G 326B	R3B164 R1B164

Extruded Bulb/Finger for double-sealing protection.

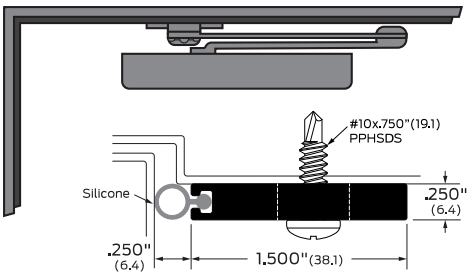
328



Finishes:	Options:	ANSI/BHMA:	
AA, BK, D, G, B, B-ORB	ZAG, S, SEC	328AA, 328BK, 328D, 328G 328B	R3B164 R1B164

ZAG option for mental health applications includes security screws

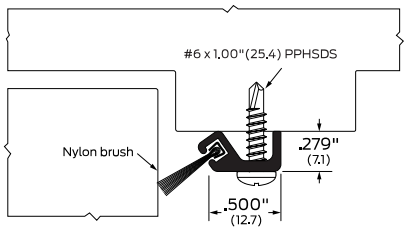
429



Finishes:	Options:	ANSI/BHMA:	
AA, BK, D, G	S, SEC	429AA, 429BK, 429D, 429G	R3E164

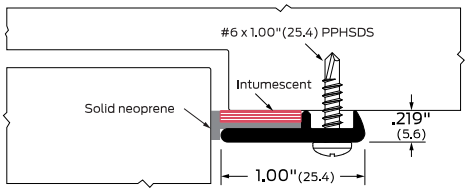
Gasketing protection for closer bracket or door coordinator.

8305



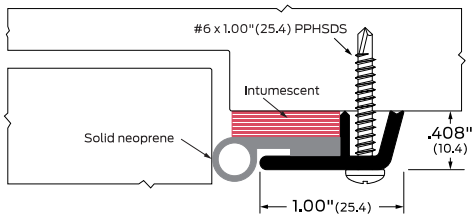
Finishes:	Options:	ANSI/BHMA:	
AA, BK, D, G	S, SEC	8305AA, 8305BK, 8305D, 8306G	R3A166

302FS



Finishes:	Options:	ANSI/BHMA:	
AA, BK, D, G B, B-ORB	S, SEC	302FS-AA, 302FS-BK, 302FS-D, 302FS-G 302FS-B	R3R164 R1R164

328FS



Finishes:	Options:	ANSI/BHMA:	
AA, BK, D, G	S, SEC	328FS-AA, 328FS-BK, 328FS-D, 328FS-G	R3R164

See Perimeter seals Accessories & options page for details.

Finishes:

A	Aluminum mill finish
AA	Aluminum clear anodized
BK	Aluminum black anodized
D	Aluminum dark bronze anodized
G	Aluminum gold anodized
B	Bronze, architectural mill finish
B-ORB	Oil-rubbed aged bronze

Options:

FLO	Air flow/ sound block
PSA	Pressure-sensitive adhesive
ZAG	Ligature resistant gasketing
S	Order as a set
SEC	Security screws

Note:

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2150 Winston Park Drive, Unit 16
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Oakville #5 P.S. HDSB
Submittal Date: May 1/24, Nov 3/25, Nov 14/25, Nov 18/25, Nov 19/25

Solutions and specialty products

Finger guards



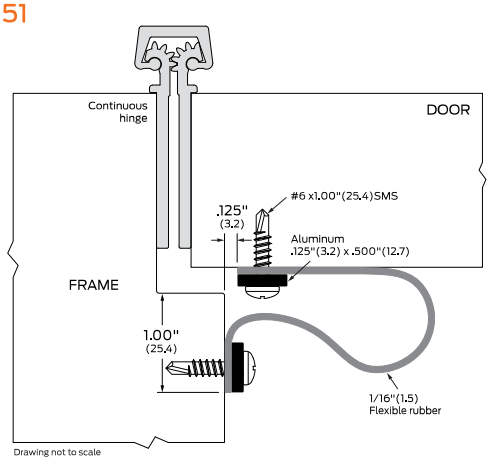
Finger guards

Hand and finger protection for heavy-duty industrial applications, child care, school safety, hospitals, and workplaces.

A commercial-quality, maintenance-free product. Aluminum and flexible rubber available in grey color.

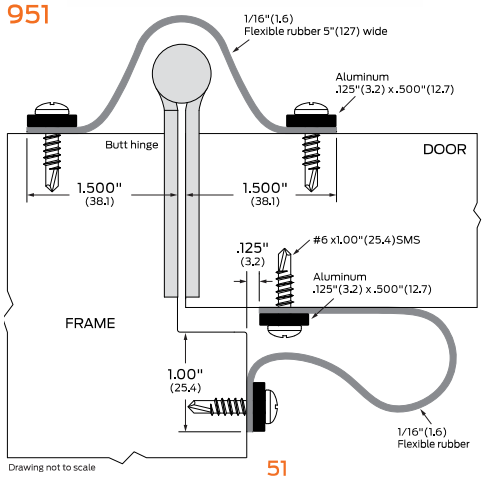
51A-90 (6.5" wide) For door opening up to 90°
51A-180 (8.5" wide) For door opening up to 180°
951 Cover for mortise type hinges

51



Finishes: A, BK, D, G
Options: SEC
Opening degree: 90, 180

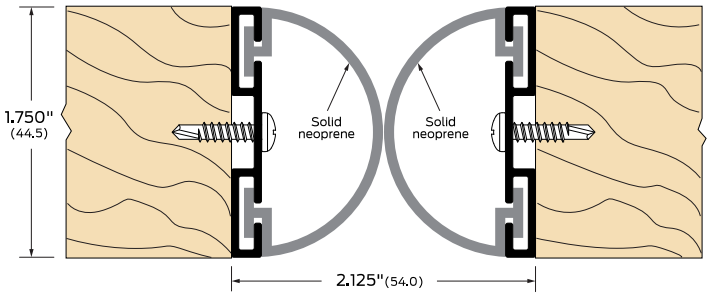
951



51

Finishes: A, BK, D, G
Options: SEC

72





Finishes: A
Options: SEC

Finishes:

A	Aluminum Mill Finish
BK	Black Anodized Aluminum
D	Dark Bronze Anodized Aluminum
G	Gold Anodized Aluminum

Options:

SEC	Torx security screws

CDH
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2150 Winston Park Drive, Unit 16
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Oakville #5 P.S. HDSB
Submittal Date: May 1/24, Nov 3/25, Nov 14/25, Nov 18/25, Nov 19/25

GT710/8710

Low-Energy
ADA Swing Door Operator

Where SOLUTIONS are AUTOMATIC



Product Features and Benefits

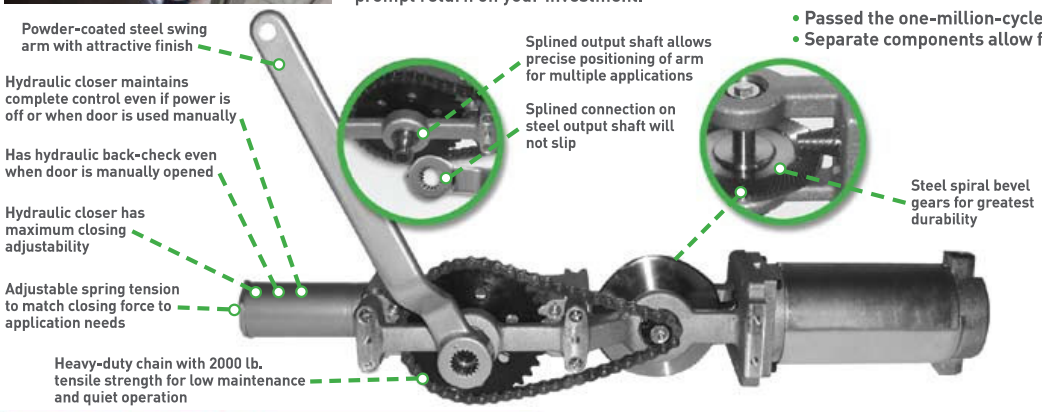
- Hydraulic design offers **proven reliability**
- Adjustable closing speeds to **enhance energy savings**
- Manual mode requires very little pressure to open **promoting ease of operation**
- Approved on fire door assemblies rated up to 3 hours, **maintaining security and safety**
- Hydraulic back-check during windy conditions **protects the door and operator from damage**



GT710/8710 Low-Energy ADA Swing Door Operator

The NABCO GT710/8710 Low-Energy Operator is engineered for interior and exterior use, and designed to automate essentially any new or existing door frame. The GT710/8710 operates in both automatic and manual modes with a hydraulic back-check that protects the door and mechanical operator from damage when forced open in windy conditions or when manually operated. The GT710/8710 Operator has been approved for use on fire door assemblies rated up to 3 hours. The low-energy performance, combined with the adjustable opening and closing speeds, reduces energy consumed, which offers a prompt return on your investment.

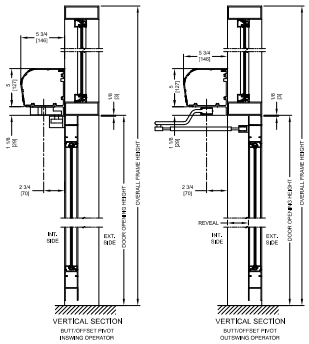
- Passed the one-million-cycle endurance test
- Separate components allow for lower repair costs



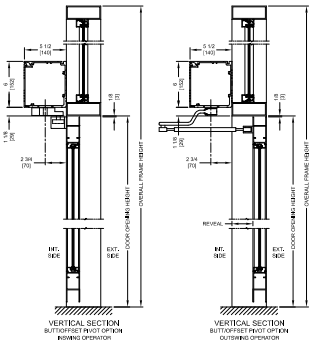
PRODUCT INFORMATION

Header dimensions	Side load - 5" H X 5 3/4" D (GT710) curved header Side load - 6" H X 5 1/2" D (GT8710)
Standard finish	Clear and dark bronze anodized
Optional finishes	Painted, clad, special anodized
Mounting	Surface applied or overhead concealed
Installation types	Push or pull
Operating voltage	120 VAC @ <5 amps
Auxiliary power output	12VDC 750mA
Operator drive	Electro-hydraulic
Motor voltage	Pulse width modulated
Motor type	1/8th HP @ peak
Control type	Microprocessor
Door panel weight	300 lbs.
Adjustable open	Force and speed
Adjustable close	Force and speed
Closing method	Spring/hydraulic (with selectable power assist)
Adjustable opening angle	Up to 145º
Power boost close	Selectable
Basic features	Low-energy operation Push and go Obstacle detection in opening and closing cycles Sequential or timer mode operation LCD display for programming and diagnostics Open- or closed-circuit safety inputs Momentary or maintained activation
Switch modes	On, off, hold-open
Opening and closing speed	Adjustable
Hold-open time	Adjustable (0-30 seconds)
Code compliances	ANSI A156.19/ANSI A117.1
Approvals	UL, ULC

GT710 Operator



GT8710 Operator



CONFIGURATIONS:
The GT710/8710 is available for multiple configurations, such as single doors, simultaneous pairs, and dual-egress, as well as the Opman configuration, which is a single continuous header for a pair of doors containing a manual closer on one side and an automatic operator on the other.

NABCO Service and Specifications

Along with the NABCO factory branches, NABCO has the largest independently owned network of automatic door distributors in North America. Their friendly, qualified installers and technicians always strive to exceed your expectations from install to after-sales service. NABCO's factory branches and independent distributors provide AAADM-certified technicians to ensure your doors meet all ANSI A156.10/A156.19 standards.

Complete three-part specifications and CAD drawings are available on the NABCO website.

NABCO
Member of the Nabtesco Group

Member AAADM

NABCO ENTRANCES INC.
S82 W18717 Gemini Drive | Muskego, WI 53150 | 877-622-2694 | Fax 888-679-3319
www.NABCOentrances.com | Email info@nabcoentrances.com

Distributed by:

06/15

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 11 – Final Cleaning.

.3 Section 01 78 00 - Closeout Submittals

.4 Section 08 11 14 – Metal Doors and Frames.

.5 Section 08 50 50 – Aluminum Windows.

.6 Section 07 92 10 - Joint Sealing: caulking of joints between frames and other building components.

.7 Section 10 28 10 – Toilet, Bath and Laundry Accessories.

1.2 REFERENCES

.1 American National Standards Institute (ANSI).

.1 ANSI/ASTM E330-[02], Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

.2 American Society for Testing and Materials International, (ASTM).

.1 ASTM C542-[94(1999)], Specification for Lock-Strip Gaskets.

.2 ASTM D790-[02], Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

.3 ASTM D1003-[00], Test Method for Haze and Luminous Transmittance of Plastics.

.4 ASTM D1929-[96(R2001)e1], Test Method for Determining Ignition Temperature of Plastics.

.5 ASTM D2240-[02b], Test Method for Rubber Property - Durometer Hardness.

.6 ASTM E84-[01], Test Method for Surface Burning Characteristics of Building Materials.

.7 ASTM F1233-[98], Test Method for Security Glazing Materials and Systems.

.3 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-12.1-[M90], Tempered or Laminated Safety Glass.

.2 CAN/CGSB-12.2-[M91], Flat, Clear Sheet Glass.

.3 CAN/CGSB-12.3-[M91], Flat, Clear Float Glass.

.4 CAN/CGSB-12.4-[M91], Heat Absorbing Glass.

.5 CAN/CGSB-12.5-[M86], Mirrors, Silvered.

.6 CAN/CGSB-12.6-[M91], Transparent (One-Way) Mirrors.

.7 CAN/CGSB-12.8-[97], Insulating Glass Units.

.8 CAN/CGSB-12.9-[M91], Spandrel Glass.

.9 CAN/CGSB-12.10-[M76], Glass, Light and Heat Reflecting.

.10 CAN/CGSB-12.11-[M90], Wired Safety Glass.

.11 CAN/CGSB-12.12-[M90], Plastic Safety Glazing.

.12 CAN/CGSB-12.13-[M91], Patterned Glass.

.13 CAN/CGSB-12.1-M90 Tempered or Laminated Safety Glass

.14 CAN/CGSB-12.3-M76 Glass, Polished Plate or Float, Flat, Clear

.4 Canadian Standards Association (CSA International).

.1 CSA A440.2-[98], Energy Performance Evaluation of Windows and Sliding Glass Doors.

.2 CSA Certification Program for Windows and Doors [2000].

.5 Environmental Choice Program (ECP).

.1 CCD-045-[95], Sealants and Caulking.

.6 Flat Glass Manufacturers Association (FGMA).

.1 FGMA Glazing Manual - [1997].

.7 Laminators Safety Glass Association (LSGA).

.1 LSGA Laminated Glass Design Guide [2000].

1.3 SAMPLES

.1 Submit a 300 x 300 sample of all glass products in accordance with Section 01 33 00 - Submittal Procedures.

1.4 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 013300 – Submittal Procedures. Co-ordinate location with Consultant.

1.5 WARRANTY

.1 Contractor hereby warrants glass against defects and failure, including leakage, under normal conditions of use, in accordance with the Contract, but for ten (10) years total, as follows:

.2 Supplier shall submit a written warranty from the insulated glass manufacturer to replace or repair any defects in materials or sealed units for a period of ten (10) years from the date of Substantial Completion.

.3 Mirrors:

.1 Submit a warranty for mirrors, covering the repair or replacement of defective work in accordance with the Contract, but for five (5) years total.

.2 Warranty shall apply against defects in workmanship and materials and, against silver deterioration and loosening of fastenings.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal [paper] [plastic] [polystyrene] [corrugated cardboard] packaging material [in appropriate on-site] for recycling.

.3 Unused or damaged glazing materials are not recyclable and must not be diverted to municipal recycling programs.

.4 Divert unused or damaged wood materials from landfill to [recycling] [reuse] [composting] facility approved by Consultant.

.5 Divert unused metal materials from landfill to metal recycling facility approved by Consultant.

.6 Divert unused caulking material from landfill to official hazardous material collections site approved by Consultant.

.7 Plastic caulking tubes are not recyclable and must not be diverted for recycling with other plastic materials.

Part 2 Products

2.1 MATERIALS

.1 Acceptable Manufacturers:

.1 AFG Glass Inc
.2 Libby-Owens Ford
.3 PPG Industries

.2 Exterior Tempered Safety Glass: All exterior Vision Glass to exterior windows, curtain wall and non-fire-rated screens to be sealed insulated units conforming to CAN/CGSB-12.8. Exterior lite 6mm tempered clear glass, Solarban 70 Low Emissivity Coating on inner pane (2nd surface), 13mm Argon filled air space, inner lite 6 mm clear tempered glass.

.1 All tempered glass to conform to CAN2-12.1 M-90 Type 2 tempered glass, Class B Double glazed units to have an integral non-metallic space creating a 13 mm hermetically sealed Argon filled air space. Spacers shall be continuous with butt joints (if any) at corners only. Pieces are not permitted. Butyl based spacers are not permitted.

.3 Polished Plate or Float Glass: To CAN/CGSB-12.3 clear.

.4 Spandrel Glass (SP): CAN/CGSB-12.9-M, 6 mm thick unless otherwise indicated, with water-based silicone emulsion coating applied to backside, ‘Opaci-Coat 300' by ICD High Performance Coatings or approved alternative. Colour: To be selected by the Consultant.

.5 Fire Rated Glazing (‘FR’ ‘FRG’ or ‘GW’): Fire rated glazing to be impact safety rated, intumescent laminated glazing to meet required fire resistance rating. Coordinate

glazing thickness with screen frame manufacturer. Refer to drawing A01 “Fire Separations Plans & OBC Data Matrix” for fire separation ratings. Intumescent laminated glazing to be supplied by:

.1 Fireswiss "Fireswiss Foam C44++" (for 3/4 hour rating) by GLASSOPOLIS
.2 Pyrostop "Pyrostop 45" (for 3/4 hour rating) by TECHNICAL GLASS PRODUCTS
.3 Firelite Plus (for 3/4 hour rating)

.6 Georgian Wired rated glazing: not to be used on this project.

.7 Spandrel glass (SP): CAN/CGSB-12.9-M, 6 mm thick unless otherwise indicated, with water-based silicone emulsion coating applied to backside, ‘Opaci-Coat 300' by ICD High Performance Coatings or approved alternative. Colour: To be selected by the Consultant.

.8 Mirrors: Refer to Section 10 28 10 Washroom Accessories.

.9 Setting blocks: neoprene, 80 durometer hardness, 102 mm x 6 mm width to suit glass to extend from the fixed stop to the opposite face of the glazing unit.

.10 Spacer Blocks: neoprene, thickness to provide a minimum glass to face clearance of 3mm.

.11 Glazing tape**:** preformed polyisobutylene-butyl glazing tape with integral shim strip, 10-15 durometer, hardness, paper release, black color. Acceptable materials**:** Tremco Polyshim II by Tremco Ltd. or approved alternate.

.12 Gasket: black neoprene "U" cavity type with lock strip.

.13 Sealant: one component silicone, Spectrem 2 by Tremco Ltd. Refer to Section 07900.

.14 Display cases: shelves to be 13mm tempered glass with polished rounded edges. Doors to be tempered 8mm tempered glass. Coordinate sizes and provide to Section 06 40 00 for installation.

.15 Frosted Glazing Film:
- .1 3M™ Crystal Glass Film
- .2 To be applied on glazing at Quiet Rooms, as directed by Consultant.

.16 Glazing for Smoke Baffles:
- .1 12mm tempered-laminated glass, 200mm deep x 400mm long (refer to floor plans).
- .2 Quantity: Refer to drawings.
- .3 Locations: Stair A at u/s of landing at ground and second floors.
- .4 Construction shall conform to NFPA 13.
- .5 Refer to Section 10 11 25 for required mounting shoe.

.17 Glazing for Draft Stops:
- .1 12mm tempered-laminated glass, 460mm deep x length required for stair landing (refer to floor plans).
- .2 Quantity: Refer to drawings.
- .3 Locations: Stair A at u/s of landing at ground and second floors.
- .4 Construction shall conform to NFPA 13.
- .5 Refer to Section 10 11 25 for required mounting shoe.

2.2 FABRICATION

.1 Fabricate in accordance with CSA-A440/A440.1 supplemented as follows:

.2 Make field measurements before cutting and assembling materials.

.3 Maintain minimum bite or lap of glass as recommended by the glazing unit manufacturer.

.4 Each glass lite shall be labeled with the name of the product, weight and quality and year manufactured.

.5 If requested, provide owner or consultant access to the plant or shop to review fabrication. Consultant or owner to provide 24 hour advance notice of visit.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 EXAMINATION

.1 Verify that openings for glazing are correctly sized and within tolerance.

.2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

3.3 PREPARATION

.1 Clean contact surfaces with solvent and wipe dry.

.2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.

.3 Prime surfaces scheduled to receive sealant.

3.4 INSTALLATION:

.1 Inspect all glazing channels prior to application. All openings in joints and channels to be sealed shall be clean, dry and free of dust, oil, grease, loose mortar or any foreign material.

.2 All surfaces to receive glazing tape shall be wiped dry with a clean rag dampened in Xylol, followed by a dry wipe.

.3 Examine all sashes prior to glazing to determine if the openings are square and plumb. Any butt and miter joints which are open shall be sealed prior to glazing. Adjust all operating sashes and glaze in the closed position.

.4 Compression Glazing:

.1 When butt joint is in a vertical direction, the glazier shall first run the tape on the head and sill members while going over the joint. If joints at the sash run horizontally, the tape must be applied first to the jambs so that it crosses over the joint.

.2 When an offset condition exists at each corner where a horizontal member passes behind vertical mullions, two different sized tapes shall be used to equalize the pressure seal. The thinner tape is to applied first on the glazing leg closest to the interior. The thicker tape shall be cut to the length between the two tapes and applied.

.3 Each section of tape shall butt the adjoining tape and be united with a tool to eliminate any openings. Lapping of the adjoining tapes at the corners is not permitted.

.4 Remove paper backing just prior to setting glass and apply a toe bead of sealant 150 mm long in each of the corners.

.5 Position one setting block at the quarter point of each corner on the sill members or as recommended by IGMA guidelines.

.6 Set the glass on the setting blocks and press firmly in place. Snap in the interior glazing stops.

.7 Set the spacer blocks to prevent any “walking” of the lite.

.5 Mirrors:

.1 Install mirrors by means of concealed vandalproof clips If clips are used, install cushioning tape completing around perimeter of mirror back, set in concealed location within 25 mm of edge. Install fixed mirrors in washrooms at two different heights as indicated on drawings.

.2 Follow manufacturer’s installation recommendations.

.6 Install any wired glass with the wire parallel to the opening.

.7 Replace any loose glazing stops and tighten all screws.

.8 Contractor shall include for needle point (cap beads) at all lower horizontal rail joints of all sash/glazing units at the discretion of and as may be requested by the Consultant or owner.

3.5 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Remove traces of primer, caulking.

.3 Remove glazing materials from finish surfaces.

.4 Remove labels after work is complete.

.5 Immediately upon job completion and when sealants have cured, remove any temporary protection and clean all exposed interior and exterior surfaces. Use proper cleaning materials only which will not harm the window components or any adjacent surfaces.

.6 Ensure all temporary labels have been removed and fully cleaned.

.7 Mirrors:

.1 Clean mirrors using non-abrasive soap or detergent and rinse with clean water. Leave in clean, polished condition for Owner occupancy.

3.6 INSPECTION

.1 Where inspection is called for elsewhere in the specification, perform Window air and water leakage test to ensure installation meets performance requirements stated herein. Should test fail, take remedial measures and re-test a different location at not additional cost to the owner until the test passes.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 Submittal Procedures.

.2 Section 01 78 00 Closeout Submittals.

.3 Section 05 50 00 Metal Fabrications.

.4 Section 08 80 50 Glazing.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM International)
- .1 ASTM A167-99 (2009), Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
- .2 ASTM A276-10, Specification for Stainless and Heat-Resisting Steel Bars and Shapes.
- .3 ASTM F738M-02 (2008), Specification for Stainless Steel Metric Bolts, Screws, and Studs.

.2 Canadian General Standards Board (CGSB):
- .1 CAN/CGSB-19.13-M87, Sealing Compound, One-Component, Elastomeric, Chemical Curing.

1.3 DESIGN REQUIREMENTS

.1 Design the entire glass balustrade system, including all glazing supports as required for complete and secure installation.

.2 Design members to withstand dead load and live loads calculated in accordance with OBC and applicable local regulations.

1.4 SUBMITTALS

.1 Shop drawings: Submit shop drawings in accordance with Section 01 33 00 indicating:
- .1 Plans, sections, details, type of extrusions, profiles, thicknesses, seals, finishes, panels, operating components, related flashings, closures, fillers, and end caps, and sealants.
- .2 Products and glazing types.
- .3 Anchorage inserts, system installation tolerances.
- .4 Section and hardware reinforcement, anchorage, assembly fixings.
- .5 Detailing, locations, and allowances for movement, expansion, contraction.

.2 Samples: Submit two samples of the following in accordance with Section 01 33 00:
- .1 250 mm long samples of each type of extrusion and finish.
- .2 250 x 200 mm samples of glass.

.3 Reports/Certificates:
- .1 Submit documentation to substantiate ten years of experience in glazed system manufacture and installation.
- .2 Submit written manufacturer's certificate certifying compliance with the specifications.

.4 Close-out submittals: Submit data for incorporated into the Operations and Maintenance Manual as part of Section 01 78 00.

1.5 QUALITY ASSURANCE

.1 Retain a licensed Professional Engineer, registered in Province of Ontario, to perform following services for interior glazed system Work:
- .1 Design of interior glazed system work.
- .2 Review, stamp, and sign shop drawings.
- .3 Conduct on-site inspections and prepare and submit inspection reports.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Protect surfaces with strippable coating. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather. Do not remove before final cleaning of building.

1.7 EXTENDED WARRANTY

.1 Submit a warranty for glazed system work in accordance with General Conditions, except that warranty period is extended to 5 years.
- .1 Warrant against failure to meet the design criteria and requirements.
- .2 Coverage: Complete replacement including affected adjacent Work.

Part 2 Products

2.1 ACCEPTABLE MANUFACTURERS

.1 Glass balustrade manufacturers:
- .1 C. R. Laurence of Canada
- .2 Mogg, Mississauga 905 696-9828
- .3 Inkan Limited.
- .4 Or approved alternative.

.2 Glazed balustrade system – Learning Commons Mezzanine:
- .1 19 mm tempered glass railing set in stainless steel shoe moulding, minimum 100 mm high with dry mount system.
- .2 Stainless steel roll formed cap rail with mitred elbow corners; anchored to concrete slab.
- .3 Material: Type 316 stainless steel with polished finish.
- .4 Glazed balustrade system is to comply with OBC SB13 requirements.

2.2 MATERIALS

.1 General: All materials under Work of this Section, including but not limited to, sealants and coatings are to have low VOC content limits.

.2 Stainless steel sheet and channels: ASTM A167, Type 316. Size as shown.

.3 Stainless steel shapes: ASTM A276, Type 316. Sizes and shapes as shown.

.4 Reinforcements and anchors: ASTM A167, Type 316. Size as shown.

.5 Glass and glazing materials: In accordance with Section 08 80 50.

.6 Glazing gasket: EPDM roll-in glazing gasket.

.7 Sealant: CAN/CGSB-19.13-M; Single-Component, silicone sealant; ‘Spectrem 1' by Tremco or ‘790 Silicone Building Sealant' by Dow Corning Corporation. Colour as selected by Engineer.

.8 Joint backing: Closed cell foam polyethylene rod, outsized minimum 30-50% larger than joint width and compatible with joint sealant. Product as recommended by sealant manufacturer.

.9 Anchors, clips, and angles: Stainless steel.

.10 Flashings, closures and trim: 1 mm minimum stainless sheet, finish to glazed system.

.11 Screws, bolts and other fasteners: ASTM F738M; Stainless Steel Type 316.

.12 Glass mounted handrail: Stainless steel glass mounted handrail with bracket, fabricated from 38 mm diameter tubing; ‘HRS Handrails Adjustable Glass Mounted Hand Railing Bracket' by C.R. Laurence or approved alternative.

.13 Stainless steel handrail: In accordance with Section 05 50 00 – Metal Fabrications.

2.3 FABRICATION

.1 Fabricate glass railing system in accordance with reviewed shop drawings, Contract Drawings and manufacturer’s written instructions.

.2 Fabricate sections true to detail, free from defects impairing appearance, strength and durability. Fabricate extrusions with sharp, well defined corners.

.3 Fabricate, fit, and secure framing joints and corners accurately, with flush surfaces, and hairline joints.

.4 Conceal anchors, reinforcement and attachments from view. Fabricate reinforcement in accordance with design requirements.

.5 Do not expose manufacturer's identification labels on glazed assemblies.
.6 Fabricate filler and closure pieces as necessary for a complete installation.

.7 Fabricate glazed balustrade work closures and trim from stainless steel sheet.

Part 3 Execution

3.1 INSTALLATION

.1 Install interior glazed system work in accordance with reviewed shop drawings, manufacturer's written instructions.

.2 Install Work of this Section securely, in correct location, level, square, plumb, at proper elevations, free of warp or twist.

.3 Install closures and trim pieces.

.4 Location: Around ramp in Learning Commons ‘B’ 1079. Install glazing in accordance with Section 08 80 50.

.5 Install glass in balustrades properly centred with uniform bite and face and edge clearance, free from twist, warp or other distortion likely to develop stress.

.6 Remove damaged or unacceptable Products and assemblies from Site and replace to Engineer's acceptance.

.7 Install glass presence markers, in two cross stripes extending from diagonal corners. Maintain markers until final clean-up.

3.2 ERECTION TOLERANCES

.1 Tolerances: Non-cumulative.
- .1 Maximum variation from plumb: 1.5 mm/3 m non-cumulative or 12 mm/30 m, whichever is less.
- .2 Maximum misalignment of two adjoining members abutting in plane: 0.8 mm.
- .3 Vertical and horizontal positions: +/- 3 mm.
- .4 Racking of face: 6 mm, nil in elevation.
- .5 Maximum perimeter sealant joint between glazed system and adjacent construction: 12 mm.

3.3 JOINT BACKING AND SEALANT

.1 Prepare substrate surface and mask as recommended by sealant manufacturer.

.2 Install joint backing and sealant at glazed system work and perimeter joints for sound tight installation in accordance with sealant manufacturer's instructions. Tool sealant. Remove excess sealant.

3.4 CLEANING

.1 Maintain glazed system work, inside and outside, in clean condition throughout construction period.

.2 Remove labels, protective material, and glass presence markers from prefinished surfaces.

.3 Wash glazed system work with solution of mild detergent in warm water, with particular attention to recesses and corners. Wipe surfaces clean and dry.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 Submittal Procedures.

.2 Section 01 78 00 Closeout Submittals.

.3 Section 07 92 10 Joint Sealants.

1.2 REFERENCES

.1 American Architectural Manufacturers Association (AAMA) Aluminum Association Designation System for Aluminum Finishes.

.2 American Society for Testing and Materials (ASTM International)
- .1 ASTM B209M-07, Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- .2 ASTM B211M-03, Specification for Aluminum and Aluminum-Alloy Bar, Rod and Wire.
- .3 ASTM C920-10, Specification for Elastomeric Joint Sealants.

.3 Canadian General Standards Board (CGSB):
- .1 CAN/CGSB-1.108-M89, Bituminous Solvent Type Paint.

1.3 DESIGN REQUIREMENTS

.1 Design louvre Work in accordance with OBC and to withstand live, dead, lateral. wind, seismic, handling, transportation and erection loads.

.2 Design louvers to accommodate expansion and contraction of components due to temperature changes.

1.4 SUBMITTALS

.1 Shop drawings: Submit shop drawings in accordance with Section 01 33 00 indicating fabrication and erection details, including anchorage, accessories, thicknesses, profiles, finishes, pressure drop, face area, and free area.

.2 Samples: Submit duplicate 600 x 600 mm samples of louvres in accordance with Section 01 33 00 indicating frame and reinforcing, finished in selected colours.

.3 Certification: Submit certified data from independent laboratory substantiating aerodynamic performance.

.4 Close-out submittals: Submit operation and maintenance data for incorporation into Operations and Maintenance Manual in accordance with Section 01 78 00.

Part 2 Products

2.1 MANUFACTURED UNITS

.1 Mechanical Penthouse Louvre:
- .1 Conforming to ASTM B209M and ASTM B211M;
- .2 100 mm (4") weather resistant louvre, 'Model SP-645' as manufactured by McGill Louvers, (Pickering ON 905-420-0485).
- .3 Acceptable Alternate: Product meeting the same profile and specifications as above by Cometal Inc. (Quebec, Ph: 418-839-8831), TenPlus Architectural and Ventex.
- .4 Colour: Custom colour to be later selected by the Consultant.
- .5 Provide concealed mullions. Refer to Exterior Elevations & sections.
- .6 Locations:
  - .1 Second floor Mechanical Room.

.2 Isolation coating: CAN/CGSB-1.108-M; Bituminous solvent type paint.

.3 Anchors and fasteners: AISI Type 304 stainless steel.

.4 Sealant: ASTM C920, Type M, Grade NS, Class 25; Two-part, Polyurethane non-sag type. Dymeric by Tremco Ltd., Sikaflex 2C-NS by Sika Inc., colour as selected by Consultant. Primer and joint backing as recommended by sealant manufacturer.

.5 Sunshades:
- .1 Outrigger sunshade by CRL, comprised of:
  - .1 Square profile outrigger
  - .2 Flat bar or rectangular tube blades
  - .3 Wall mount bracket
  - .4 C Channel Fascia
  - .5 Finish: anodized aluminium
  - .6 102mm (4") high x 900mm (36") outrigger x length noted on drawings
- .2 Locations: Refer to exterior elevation drawings.

Part 3 Execution

3.1 INSTALLATION

.1 Coordinate framing and anchorage for louvres with other parts of the Work.

.2 Install louvres in accordance with manufacturer's instructions and accepted shop drawings. Securely anchor into opening.

.3 Apply isolation coating to separate dissimilar metals, and metals and masonry or concrete unless neoprene washers are shown.

.4 Seal louvre perimeter perimeter with sealant and joint backing for weather tight seal in accordance with requirements of Section 07 92 10.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 04 21 13 – Masonry

.3 Section 09 22 16 – Non-structural Metal Framing.

.4 Supply of access doors for mechanical and electrical devices in mechanical and electrical sections.

1.2 REFERENCES

.1 Aluminum Association

.1 Designation for Aluminum Finishes-[1997].

.2 American Society for Testing and Materials International, (ASTM)

.1 ASTM C36/C36M-[01], Specification for Gypsum Wallboard.

.2 ASTM C79/C79M-[01], Standard Specification for Treated Core and Non-treated Core Gypsum Sheathing Board.

.3 ASTM C442/C442M-[01], Specification for Gypsum Backing Board, Gypsum Coreboard, and Gypsum Shaftliner Board.

.4 ASTM C475-[01], Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.

.5 ASTM C514-[01], Specification for Nails for the Application of Gypsum Board.

.6 ASTM C557-[99], Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.

.7 ASTM C630/C630M-[01], Specification for Water-Resistant Gypsum Backing Board.

.8 ASTM C840-[01], Specification for Application and Finishing of Gypsum Board.

.9 ASTM C931/C931M-[01], Specification for Exterior Gypsum Soffit Board.

.10 ASTM C954-[00], Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.

.11 ASTM C960/C960M-[01], Specification for Pre-decorated Gypsum Board.

.12 ASTM C1002-[01], Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.

.13 ASTM C1047-[99], Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.

.14 ASTM C1280-[99], Specification for Application of Gypsum Sheathing Board.

.15 ASTM C1177-[01], Specification for Glass Mat Gypsum Substrate for Use as Sheathing.

.16 ASTM C1178/C1178M-[01], Specification for Glass Mat Water-Resistant Gypsum Backing Board.

.3 Association of the Wall and Ceilings Industries International (AWEI)

.4 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-51.34-[M86(R1988)], Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

.2 CAN/CGSB-71.25-[M88], Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.

.5 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S102-[1988(R2000)], Surface Burning Characteristics of Building Materials and Assemblies.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials in original packages, containers or bundles bearing manufacturers brand name and identification.

.2 Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.

.3 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.

1.4 SITE ENVIRONMENTAL REQUIREMENTS

.1 Maintain temperature minimum 10 degrees C, maximum 21 degrees C for 48 hours prior to and during application of gypsum boards and joint treatment, and for at least 48 hours after completion of joint treatment.

.2 Apply board and joint treatment to dry, frost free surfaces.

.3 Ventilation: Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal [paper] [plastic] [polystyrene] [corrugated cardboard] packaging material [in appropriate on-site] for recycling.

.3 Divert unused gypsum from landfill to gypsum recycling facility for disposal approved by Consultant.

.4 Divert unused metal materials from landfill to metal recycling facility approved by Consultant.

.5 Divert unused wood materials from landfill to [recycling] [composting] facility approved by Consultant.

.6 Divert unused paint and caulking material from landfill to official hazardous material collections site approved by Consultant.

.7 Do not dispose of unused paint and caulking materials into sewer systems, into lakes, streams, onto ground or in other locations where it will pose health or environmental hazard.

Part 2 Products

2.1 MATERIALS

.1 Standard board: to ASTM C36/C36M, 13mm, 16 mm or 19 mm thick or as indicated, tapered edges.

.2 Standard board: to ASTM C36/C36M, X Rated, 16 mm or 19 mm thick or as indicated, tapered edges.

.3 Water-resistant board: to ASTM C630/C630M, 13 mm water resistant, tapered edges (WRGB in Finish Schedule).

.4 Abuse resistant/Fire rated: to CSA A82.27-M1977 Fire-Rated Type X, 5/8" thick, "Abuse Resistant Fire Code" gypsum board panels, tapered edges, by CGC, Fibrerock interior AquaTuff panel. All gypsum board to have anti-microbial and anti-mould properties.

.5 All gypsum board to have Anti-Microbial and Anti Mold properties. Acceptable Manufacturers; CGC inc., Certain Teed, or others meeting these specifications at time of tender.

.6 Nails: to ASTM C514.

.7 Steel drill screws: to ASTM C1002.

.8 Stud adhesive: to CAN/CGSB-71.25.

.9 Laminating compound: as recommended by manufacturer, asbestos-free.

.10 Concrete Anchors: Phillips Red Head TW-614 or equivalent. Do not use powder activated fasteners for ceiling support.

.11 Tie Wire: #16 ga. galvanized soft annealed steel wire.

.12 Caulking: Acoustical sealant.

.13 38 mm thick mineral wool batts ULC labeled, if indicated on drawings.

.14 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, 0.5 mm base thickness commercial sheet steel with G90 zinc finish, perforated flanges, and one piece length per location.

.15 Sealants: in accordance with Section 07 92 10 - Joint Sealing.

.16 Insulating strip: rubberized, moisture resistant, [3] mm thick [cork] [closed cell neoprene] strip, [12] mm wide, with self sticking permanent adhesive on one face, lengths as required.

.17 Joint compound: to ASTM C475, asbestos-free.

2.2 ACOUSTIC WALL ASSEMBLY

.1 Acoustic insulation inside partitions: AFB Acoustic Fire Bat by Roxul or equivalent product by Fibrex, or Quietzone by Owens Corning.

.2 Steel deck closures: Emseal 25V Expanding Foam Sealant sized and shaped to fit flutes.

.3 Acoustic Insulation: mineral fibre acoustical batt insulation, as specified under Section 07210. Thickness of 90% of wall assembly cavity depth; Acceptable products:

.1 Fibrex ‘Sound Attenuation Fire Batt (SAFB)’
.2 Johns Manville ‘Sound-SHIELD’.
.3 Roxul ‘AFB’.
.4 Owens-Corning ‘QuietZone’.
.5 Certain Teed ‘Noise Reducer’.

.4 Acoustical sealant: CAN/CGSB-19.21-M87; non-skinning acoustic sealant, non-hardening type.

.5 Acoustical compound: pre-mixed perlite plaster.

.6 Fasteners: use mechanical fasteners to secure batts into position as recommended by manufacturer.

Part 3 Execution

3.1 ERECTION

.1 Do application and finishing of gypsum board in accordance with ASTM C840 except where specified otherwise.

.2 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C840 except where specified otherwise.

.3 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.

.4 Install work level to tolerance of [1:1200].

3.2 APPLICATION

.1 Do not apply gypsum board until bucks, anchors, blocking, sound attenuation, electrical and mechanical works are approved.

.2 Apply single layer gypsum board to metal furring or framing using screw fasteners and laminating adhesive. Maximum spacing of screws 300 mm on centre.

.1 Single-Layer Application:

.1 Apply gypsum board on ceilings prior to application of walls in accordance with ASTM C840.

.2 Apply gypsum board vertically or horizontally, providing sheet lengths that will minimize end joints.

.2 Double-Layer Application:

.1 Install gypsum board for base layer and exposed gypsum board for face layer.

.2 Apply base layer to ceilings prior to base layer application on walls; apply face layers in same sequence. Offset joints between layers at least 250 mm.

.3 Apply base layers at right angles to supports unless otherwise indicated.

.4 Apply base layer on walls and face layers vertically with joints of base layer over supports and face layer joints offset at least 250 mm with base layer joints.

.3 Apply water-resistant gypsum board [where [wall tiles] [coating] to be applied] [and] [adjacent to [slop sinks] [janitors closets] [___]]. Apply water-resistant sealant to edges, ends, cut-outs which expose gypsum core and to fastener heads. [Do not apply joint treatment on areas to receive tile finish.]

.4 Apply gypsum board to concrete block surfaces, where indicated, using laminating adhesive.

.5 Apply type X gypsum board where indicated, in accordance with U.L.C. requirements and with supplement to the National Building Code of Canada to obtain the required fire protection, fire rating and fire separation.

.6 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.

.7 Where indicated on drawings, staple blanket to wallboard in accordance with ULC design requirements. Blanket shall be continuous and tightly fitted between studs and at perimeter.

.8 Install gypsum board on walls vertically to avoid end-butt joints. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-rated assemblies require vertical application.

.9 Install gypsum board with face side out.

.10 Do not install damaged or damp boards.

.11 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

.12 Where a floor or roof structural member interferes with an interior partition wall at which a smoke or fire separation is required, a gypsum board enclosure with a fire rating not

less than required for the wall must be provided to continue the required, a gypsum board enclosure with a fire rating not less than required for the wall must be provided to continue the required separation to the floor or roof above (typical)

3.3 INSTALLATION

.1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure [at [150] mm on centre] [using contact adhesive for full length].

.2 Install casing beads around perimeter of suspended ceilings.

.3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. [Seal joints with sealant.]

.4 Construct control joints of [preformed units] [two back-to-back casing beads] set in gypsum board facing and supported independently on both sides of joint.

.5 Provide continuous polyethylene dust barrier behind and across control joints.

.6 Locate control joints [where indicated] [at changes in substrate construction] [at approximate [10] m spacing on long corridor runs] [at approximate [15] m spacing on ceilings].

.7 Install control joints straight and true.

.8 Construct expansion joints [as detailed], at building expansion and construction joints. Provide continuous dust barrier.

.9 Install expansion joint straight and true.

.10 Install cornice cap where gypsum board partitions do not extend to ceiling.

.11 Fit cornice cap over partition, secure to partition track with two rows of sheet metal screws staggered at [300] mm on centre.

.12 Splice corners and intersections together and secure to each member with 3 screws.

.13 Seal with acoustical sealant at ceilings, floors, wall intersections and all penetrations such as electrical outlets.

.14 Install access doors to electrical and mechanical fixtures specified in respective sections.

.1 Rigidly secure frames to furring or framing systems.

.15 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.

.16 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with Association of the Wall and Ceiling Industries (AWCI) International Recommended Specification on Levels of Gypsum Board Finish:

.1 Levels of finish:

.1 Level 0: No tapping, finishing or accessories required.

.2 Level 1: Embed tape for joints and interior angles in joint compound. Surfaces to be free of excess joint compound; tool marks and ridges are acceptable.

.3 Level 2: Embed tape for joints and interior angles in joint compound and apply one separate coat of joint compound over joints, angles, fastener heads and accessories; surfaces free of excess joint compound; tool marks and ridges are acceptable.

.4 Level 3: Embed tape for joints and interior angles in joint compound and apply two separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.

.5 Level 4: Embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.

.6 Level 5: Embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; apply a thin skim coat of joint compound to entire surface; surfaces smooth and free of tool marks and ridges.

.17 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.

.18 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.

.19 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

.20 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

.21 Apply one coat of white primer sealer over surface to be textured. When dry apply textured finish in accordance with manufacturer's instructions.

.22 Mix joint compound slightly thinner than for joint taping.

.23 Apply thin coat to entire surface using trowel or drywall broadknife to fill surface texture differences, variations or tool marks.

.24 Allow skim coat to dry completely.

.25 Remove ridges by light sanding or wiping with damp cloth.

.26 Provide protection that ensures gypsum drywall work will remain without damage or deterioration at time of substantial completion.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 09 21 16 - Gypsum Board Assemblies.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).

.1 ASTM C645-[00], Specification for Nonstructural Steel Framing Members.

.2 ASTM C754-[00], Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.

.2 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-1.40-[97], Primer, Structural Steel, Oil Alkyd Type.

.3 Environmental Choice Program (ECP).

.1 CCD-047a -[98], Paints - Surface Coatings.

.2 CCD-048-[98], Surface Coatings - Recycled Water-borne.

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal [paper] [plastic] [polystyrene] [corrugated cardboard] packaging material in appropriate on-site bins for recycling.

.3 Divert unused metal materials from landfill to metal recycling facility approved by Consultant.

.4 Divert unused gypsum materials from landfill to recycling facility approved by Consultant.

Part 2 Products

2.1 MATERIALS

.1 Non-load bearing channel stud framing: to ASTM C645, roll formed from 0.59mm thickness hot dipped galvanized steel sheet, for screw attachment of gypsum lath and metal lath. Knock-out service holes at 150 mm centres.

.2 Floor and ceiling tracks: to ASTM C645, in widths to suit stud sizes, 30 mm legs for floor track, 50 mm for ceiling track.

.3 Metal channel stiffener: 38 mm size, 2 mm thick cold rolled galvanized steel.

.4 Metal Accessories: CSA A82.30-1965 (R-1971).

.5 “Unistrut” support channel framing, by Tyco Electrical and Metal Products.

Part 3 Execution

3.1 ERECTION

.1 Align partition tracks at floor and ceiling and secure at 600 mm on centre maximum.

.2 Place studs vertically at 400 mm on centre and not more than 50 mm from abutting walls, and at each side of openings and corners. Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.

.3 Erect metal studding to tolerance of 1:1000.

.4 Attach studs to bottom track using screws.

.5 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.

.6 Install steel frames and anchor frames securely to studs using minimum of three (3) anchors per jamb for jambs up to 2100 mm high and a minimum of four (4) anchors per jambs for jambs over 2100 mm high.

.7 Provide two (2) studs at each side of openings wider than stud centre specified.

.8 Install, cut to length, piece of runner horizontally over door frames and at top and bottom of rough opening in glazed partitions.

.9 Provide 38 mm x 89 mm vertical and horizontal wood studs secured between metal studs for attachments of bathroom fixtures, accessories, cabinet work, and other fixtures, including grab bars, towel rails, attached to steel stud partitions.

.10 Install steel stud or furring channel between studs for attaching electrical and other boxes.

.11 Extend all partitions to underside of deck above for sound and fire separation.

.12 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs.

3.2 CEILING FURRING TO CANOPIES & CEILING PANELS

.1 Provide to all interior and exterior canopies where shown to receive wood slat or plywood finishes.

.2 Framing channel to be model P1000 (1-5/8”) ; 12 ga.

.3 For exterior locations provide with 4 m dia. Holes at 500 o.c. for drainage and hot dip galvanize.

.4 Provide shop drawings for layouts.

.5 Refer to drawings for locations.

3.3 CEILING FURRING

.1 Install runners level to tolerance of 3 mm over 3.5 m. Provide runners at interruptions of continuity and change in direction.

.2 Frame with furring channels, perimeter of openings to accommodate access panels, light fixtures, diffusers, grilles, etc.

.3 Furr for bulkheads within or at termination or ceilings.

.4 Install furring channels at 400 mm o.c. maximum.

3.4 WALL FURRING

.1 Install steel furring, as indicated.

.2 Frame opening and around built-in equipment on four (4) sides with channels.

.3 Box-in beads, columns, pipes, and around exposed services.

3.5 FIRE RATED ASSEMBLIES

.1 If required, install Metal Stud System and Furring in accordance with appropriate ULC Design and with supplement to the National Building Code of Canada 1985.

3.6 CLEANING

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 07 92 10 - Joint Sealing.

1.2 REFERENCES

.1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)

.1 ANSI A108.1-[99], Specification for the Installation of Ceramic Tile (Includes ANSI A108.1A-C, 108.4-.13, A118.1-.10, ANSI A136.1).

.2 CTI A118.3-[92], Specification for Chemical Resistant, Water Cleanable Tile Setting and Grouting Epoxy and Water Cleanable Tile Setting Epoxy Adhesive (included in ANSI A108.1).

.3 CTI A118.4-[92], Specification for Latex Portland Cement Mortar (included in ANSI A108.1).

.4 CTI A118.5-[92], Specification for Chemical Resistant Furan Resin Mortars and Grounts for Tile Installation (included in ANSI A108.1).

.5 CTI A118.6-[92], Specification for Ceramic Tile Grounts (included in ANSI A108.1).

.2 American Society for Testing and Materials (ASTM International) International

.1 ASTM C144-[99], Specification for Aggregate for Masonry Mortar.

.2 ASTM C 207-[91(1997)], Specification for Hydrated Lime for Masonry Purposes.

.3 ASTM C847-[95(2000)], Specification for Metal Lath.

.4 ASTM C979-[99], Specification for Pigments for Integrally Coloured Concrete.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-51.34-[M86(R1988)], Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

.2 CGSB 71-GP-22M-[78], Adhesive, Organic, for Installation of Ceramic Wall Tile.

.3 CAN/CGSB-75.1-[M88], Tile, Ceramic.

.4 CAN/CGSB-25.20-[95], Surface Sealer for Floors.

.4 Canadian Standards Association (CSA International)

.1 CAN/CSA-A3000-[98], Cementitious Materials Compendium (Consists of A5-98, A8-98, A23.5-98, A362-98, A363-98, A456.1-98, A456.2-98, A456.3-98).

.2 CSA A123.3-[98], Asphalt Saturated Organic Roofing Felt.

.5 Terrazzo Tile and Marble Association of Canada (TTMAC)

.1 Tile Specification Guide 09300 [2000], Tile Installation Manual.

.2 Tile Maintenance Guide [2000].

1.3 PRODUCT DATA

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

.2 Include manufacturer's information on:

.1 Ceramic tile, marked to show each type, size, and shape required.
.2 Chemical resistant mortar and grout (Epoxy and Furan).
.3 Cementitious backer unit.
.4 Dry-set Portland cement mortar and grout.
.5 Divider strip.
.6 Elastomeric membrane and bond coat.
.7 Reinforcing tape.
.8 Levelling compound.
.9 Latex-Portland cement mortar and grout.
.10 Commercial Portland cement grout.
.11 Organic adhesive.
.12 Slip resistant tile.
.13 Waterproofing isolation membrane.
.14 Fasteners.

1.4 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
.2 Base tile: submit 300 x 300 mm sample panels of each colour, texture, size, and pattern of tile.
.3 Floor tile: submit 300 x 300 mm sample panels of each colour, texture, size, and pattern of tile.
.4 Trim shapes, bullnose cap and cove including bullnose cap and base pieces at internal and external corners of vertical surfaces, each type, colour, and size.
.5 Stair Accessories: submit duplicate samples of each trim.
.6 Adhere tile samples to [11] mm thick plywood and grout joints to represent project installation.
.7 Prepare a 2 m x 3m mock-up sample on site to ensure demonstration of installation details and quality control. Include stair accessories in mock-up.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials in containers with labels legible and intact and grade-seals unbroken.
.2 Store material so as to prevent damage or contamination.
.3 Store materials in a dry area, protected from freezing, staining and damage.
.4 Store cementitious materials on a dry surface.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal packaging material in appropriate on-site bins for recycling.

.3 Unused adhesive, sealant and coating materials must be disposed of at an official hazardous material collections site as approved by the Consultant.

.4 Unused adhesive, sealant and coating materials must not be disposed of into the sewer system, into streams, lakes, onto the ground or in other location where it will pose a health or environmental hazard.

.5 Broken ceramic materials must be diverted from landfill to a local facility as approved by Consultant.

1.7 ENVIRONMENTAL CONDITIONS

.1 Maintain air temperature and structural base temperature at ceramic tile installation area above 12 °C for 48 h before, during, and 48 h after, installation.

.2 Do not install tiles at temperatures less than 12 °C or above 38 °C.

.3 Do not apply epoxy mortar and grouts at temperatures below 15 °C or above 25 °C.

1.8 EXTRA MATERIAL

.1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide minimum 5% of each type and colour of tile required for project for maintenance use. Store where directed.

.3 Maintenance material to be of same production run as installed material.

1.9 EXTENDED WARRANTY

.1 Submit a warranty for entire wall tile installation, covering materials and labour and the repair or replacement of defective work in accordance with the Contract, but for three (3) years total.

Part 2 Products

2.1 FLOOR TILE

.1 Porcelain floor tile (Designation: POR): to CAN/CGSB-75.1.

.1 Acceptable Materials: Size 300 mm x 600 mm; “Urbancrete” or “Adrock” by Centura or “Regal” by Olympia Tile, in matte finish. Allow for one (1) field colour from manufacturer’s full line and two (2) accent floor tiles.

.2 Locations: First Floor corridors, vestibules, washrooms and stairs where indicated – refer to drawings. Refer to Room Finish Schedule for locations.

.3 Install in a one-third staggered pattern.

.4 Provide prefabricated movement joints in conjunction with slab saw cuts approx. 3500-6000mm distance (refer to floor pattern drawing).

.2 Porcelain tile (Designation: POR-WD): to CAN/CGSB-75.1, Type 5, Class MR 4, 100mm wide x 700mm size, 'wood look' and slip resistant Porcelain Tile. Colour to be selected from full line. Thin-set application.

.1 Acceptable Material: "Treverkfusion Series", by Olympia.

.2 Alternative: similar 100mm wide product by Centura as approved by architect.

.3 Grout joints for POR3 to be 1.5mm-2.0mm (1/16").

.2 Porcelain floor tile bull-nose base (Designation: POR): to CAN/CGSB-75.1.

.1 Acceptable Materials: Size 76mm or 100 mm x 300 mm 'sit-on' **bull-nose top** base; "Vitra", by Centura or "Omnia", by Olympia Tile, "Ultra Modern" by Daltile, or "Anchorage" by Daltile, all in matte finish. Allow for two (2) colours from manufacturer's Category/Group 2 colours. Cut tile is not acceptable.

.3 Porcelain Tactile Attention Indicator Tiles: to CAN/CGSB-75.1.

.1 Acceptable Materials: Size 300 mm x 300 mm GT Black STOP Matt, 11 ¾" x 11 ¾", as manufactured by Atlas Concorde and distributed by Centura Tile. Colour: contrasting to field tile.

.2 Conforming to OBC Article 3.8.3.18., required to be installed at the top of all stairs, starting one tread depth back from the edge of the top stair. The depth of the tactile attention indicator shall be not less than 300mm and not more than 610mm. Tactile attention indicator to be porcelain tile of contrasting colour from landing and stair treads with differing textured finish.

.4 Designation CMT (floor): 50 x 50 porcelain mosaic floor tile to CAN/CGSB-75.1.

.1 Acceptable materials: Dotti by Vitra as distributed by Centura Tile. 2 colours from full range in matte non-slip finish.

.2 Acceptable Alternates: Quebec distributed by Olympia; Dal 'Keystone' by Dal-tile and American Olean full mosaic collection, including 'Egyptstone' Series. Allow 2 colours from manufacturer's full range.

.3 Include cove base, top slope edges, fitted corners; include all pieces and trims. Contractors to fit around bullnose block walls.

.4 Locations: shower within UTR. Refer to Room Finish Schedule and drawings.

2.2 WALL TILE

.1 Ceramic tile (Designation: CWT): to CAN/CGSB-75.1, Type 5, Class MR 4

.1 Size: 4" x 16", matte surface.
.2 Four colours to be selected from full colour line. Thin-set application.
.3 Acceptable Materials: Urban Max, by Centura or similar by Olympia.

.2 Locations: Washrooms, Drinking Fountain Niches, Corridor locations, other locations noted on Interior Elevations

.3 Tile Edging - wall: Purpose-made, anodized aluminum, polished chrome finish, metal edge strips as manufactured Schluter Systems at all exposed tile edging: Profile – JOLLY; thickness as required for wall tile and tile set.

2.3 TRIM SHAPES

.1 Conform to applicable requirements of adjoining floor and wall tile.

.2 Use slip resistant trim shapes for horizontal surfaces of showers, overflow ledges, recessed steps, shower curbs, drying area curbs, and stools.

.3 Use trim shapes sizes conforming to size of adjoining field wall tile, including existing spaces, unless specified otherwise.

.4 Internal and External Corners: Provide trim shapes as follows where indicated.

.1 Bullnose shapes for external corners including edges.

.2 Coved shapes for internal corners.

.3 Special shapes for:

.1 Base to floor internal corners to provide integral coved vertical and horizontal joint.

.2 Base to floor external corners to provide bullnose vertical edge with integral coved horizontal joint. Use as stop at bottom of openings having bullnose return to wall.

.3 Wall top edge internal corners to provide integral coved vertical joint with bullnose top edge.

.4 Wall top edge external corners to provide bullnose vertical and horizontal joint edge.

.5 Provide cove and bullnose shapes for where indicated and required to complete tile work.

2.4 MORTAR AND ADHESIVE MATERIALS

.1 Manufacturer's of commercial mortar, grout and adhesive having Product considered acceptable for use:

.1 Mapei

.2 Laticrete

.3 Flextile

.2 Walls: Mortarcrete Latex Mortar conforming to ANS1A118.4-1973, manufactured by L & M Ceramo Inc.

.3 Floors:

.1 Cement Mortar: Mixture of 1 part Portland cement, 4 parts dry sand and 1/10 hydraulic lime. Materials shall conform to the following:

.2 Portland Cement: To CAN3-A, Type 10.

.3 Hydrated Lime: To ASTM C-206 or 207, Type 5.

.4 Sand: To CSA A82.56, passing 1.6 mm sieve.

.5 Water: Potable, containing no contaminants which cause efflorescence.

.6 Thin Set Mortar: field mixed, blended sand-Portland cement-latex mortar, "Kerabond/Keralastic by Mapei.

.1 Acceptable Alternates: "Laticrete 4237 distributed by Ceratec Inc., or Flextile 52 thin set.

.2 Latex Additive: "Cemtex" by Master Builders, Laticrete 2022" distributed by Ceratec Inc.,

2.5 GROUT

.1 Colouring Pigments:

.1 Pure mineral pigments, limeproof and nonfading, complying with ASTM C979.

.2 Colouring pigments to be added to grout by manufacturer.

.3 Job coloured grout are not acceptable.

.4 Use in Commercial Portland Cement Grout, Dry-Set Grout, and Latex-Portland Cement Grout.

.2 Chemical-Resistant Grout for Walls:

.1 Epoxy grout: to ANSI A108.1, having quality, colour and characteristics to match epoxy bond coat. Adhesive and grout by same manufacturer.

.2 Epoxy Grout: "Latapoxy SP-100" Stainless, chemical resistant epoxy grout by Laticrete International. Colour from manufacturer's full range. Alternate: Kerapoxy by Mapei.

.3 Floors:

.1 Polymer modified grout as manufactured by MAPEI.

2.6 ACCESSORIES

.1 Stairs Nosings and Edge Trims:

.1 Stair nosing to be Kinesik, M series tile nosing with yellow non-slip glow in the dark contracting strip, model M4150.10 (as appropriate for the thickness of porcelain file flooring). Install in conjunction with porcelain tile as per manufacturer's recommendations.

.2 SCHIENE edge protection by Schluter, anodized aluminum to be installed at all exposed stair tile edges (except nosing). Mitre joints to suit stair angle. Size as required for tile and mortar bed.

.2 Prefabricated Movement Joints: purpose made Schluter, Dilex-KSN aluminum, sized as required for tile and mortar bed. Colour to be selected by consultant. To be installed directly above slab saw-cuts. Refer to floor pattern drawing for locations.

.3 Tile Edging – floor & bench applications: Purpose-made metal edge and transition strips as manufactured Schluter Systems at all exposed tile edging or transitions between materials: Profile – to be selected by architect from full line, as required for specific application.

.4 Reinforcing mesh: 50 x 50 x 1.6 x 1.6 mm galvanized steel wire mesh, welded fabric design, in flat sheets.

.5 Divider strips:

.1 Laminated strips, core 32 x 3 mm black neoprene, outsides (both sides) brass 32 x 1.29 mm complete with anchors, both sides spaced at 150 mm on centre.

.2 Brass complete with anchors, both sides spaced at 150 mm on centre.

.6 Cleavage plane: [polyethylene film to CGSB 51-34] [No. 15 asphalt saturated felt to CSA A123.3] .

.7 Metal lath: to ASTM C847 finish, 10 mm rib at 2.17 kg/m^2.

.8 Transition Strips: purpose made metal extrusion; stainless steel type.

.9 Reducer Strips: purpose made metal extrusion; stainless steel type; maximum slope of 1:2.

.10 Prefabricated Movement Joints: purpose made, having a Shore A Hardness not less than 60 and elasticity of plus or minus 40 percent when used in accordance to TTMAC Detail 301EJ.

.11 Sealant: in accordance with Section 07 92 10 - Joint Sealing.

.12 Floor sealer and protective coating: [to CAN/CGSB-25.20, Type [1] [2]] [to tile and grout manufacturers recommendations].

2.7 MIXES

.1 Portland Cement:

.1 Scratch coat: 1 part portland cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand, 1 part water, [and latex additive where required]. Adjust water volume depending on water content of sand.

.2 Slurry bond coat: portland cement and water mixed to creamy paste. Latex additive may be included.

.3 Mortar bed for floors: 1 part portland cement, 4 parts sand, 1 part water. Adjust water volume depending on water content of sand. [Latex additive may be included].

.4 Mortar bed for walls and ceilings: 1 part portland cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand and 1 part water. Adjust water volume depending on water content of sand. [Latex additive may be included].

.5 Levelling coat: 1 part portland cement, 4 parts sand, minimum 1/10 part latex additive, 1 part water including latex additive.

.6 Bond or setting coat: 1 part portland cement, 1/3 part hydrated lime, 1 part water.

.7 Measure mortar ingredients by volume.

.2 Dry set mortar: mix to manufacturer's instructions.

.3 Organic adhesive: pre-mixed.

.4 Mix bond and levelling coats, and grout to manufacturer's instructions.

.5 Adjust water volumes to suit water content of sand.

2.8 PATCHING AND LEVELING COMPOUND

.1 Portland cement base, acrylic polymer compound, manufactured specifically for resurfacing and levelling concrete floors. Products containing gypsum are not acceptable.

.2 Have not less than the following physical properties:

.1 Compressive strength - 25 MPa.

.2 Tensile strength - 7 MPa.

.3 Flexural strength - 7 MPa.

.4 Density - 1.9.

.3 Capable of being applied in layers up to 50 mm thick, being brought to feather edge, and being trowelled to smooth finish.

.4 Ready for use in 48 hours after application.

2.9 CLEANING COMPOUNDS

.1 Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including patching and levelling compounds and elastomeric waterproofing membrane and coat.

.2 Materials containing acid or caustic material are not acceptable.

Part 3 Execution

3.1 WORKMANSHIP

.1 Do tile work in accordance with TTMAC Tile Installation Manual 2000, "Ceramic Tile", except where specified otherwise.

.2 Apply tile [or backing coats] to clean and sound surfaces.

.3 Fit tile around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.

.4 Maximum surface tolerance 1:800.

.5 Make joints between tile uniform and approximately [1.5 mm] wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.

.6 Lay out tiles so perimeter tiles are minimum 1/2 size.

.7 Install floor tiles as per pattern. Layout and install flash cove tile first, before floor tile, ensuring a flush edge on the horizontal surface by feathering to masonry walls as required to produce a straight line on the floor. Install floor tiles to pattern supplied by Architect at a later date. Contact consultant to review when approximately no more than 10 sq. m has been installed.

.8 Sound tiles after setting and replace hollow-sounding units to obtain full bond.

.9 Make internal angles square, external angles rounded.

.10 Make internal angles square, external angles chamfered at 45° with narrow tile strip.

.11 Construct cove base, as described using all special pieces available for inside and outside corners.

.12 For Floors: Use bull nose edged tiles at termination of wall tiles, except where tiles abut projecting surface or differing plane.

.13 Seal grouted joints with sealer.

.14 Keep building expansion joints free of mortar or grout.

.15 For Walls: Use round edged tiles at termination of wall tile panels, except where panel abuts projecting surface or differing plane.

.16 Install divider strips at junction of tile flooring and dissimilar materials.

.17 Allow minimum 24 h after installation of tiles, before grouting.

.18 Clean installed tile surfaces after installation and grouting cured.

3.2 FLOOR TILE

.1 Install in accordance with TTMAC to applicable thinset detail.

3.3 STAIR TILE ACCESSORIES

.1 Install all accessories specified per manufacturer’s instructions using whole lengths.

.2 Provide sample installation for architect for review.

3.4 FLOOR SEALER AND PROTECTIVE COATING

.1 Apply in accordance with manufacturer's instructions.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 78 00 - Closeout Submittals.

.3 Section 06 10 10/06101 - Rough Carpentry: Wood strapping.

.4 Fabrication: to ASTM 365-78 and CAN/GSB-92.1-M77.

.5 Installation: to ASTM C636-76, except where specified otherwise.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.1 ASTM E1264-[98], Classification for Acoustical Ceiling Products.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-51.34-[M86], Vapour Barrier, Polyethylene Sheet, for Use in Building Construction.

.2 CAN/CGSB-92.1-[M89], Sound Absorptive Prefabricated Acoustical Units.

.3 Canadian Standards Association (CSA)

.1 CSA B111-[74(R1998)], Wire Nails, Spikes and Staples.

.4 Underwriters Laboratories of Canada (ULC)

.1 CAN/ULC-S102-[88(R2000)], Surface Burning Characteristics of Building Materials.

1.3 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit two each 300 x 300 mm samples of each individual tile and grid type in accordance with Section 01340.

1.4 REGULATORY REQUIREMENTS

.1 Fire-resistance rated floor/ceiling and roof/ceiling assembly: certified by a Canadian Certification Organization accredited by Standards Council of Canada.

1.5 DESIGN CRITERIA

.1 Maximum deflection 1/360 of span to ASTM 365-78 deflection test.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan

1.7 ENVIRONMENTAL REQUIREMENTS

.1 Permit wet work to dry before commencement of installation.

.2 Maintain uniform minimum temperature of 15^0C and humidity of 20 - 40% before and during installation.

.3 Store materials in work area 48 hours prior to installation.

1.8 EXTRA MATERIALS

.1 Provide extra materials of acoustic units in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide acoustical units amounting to 2 % of gross ceiling area for each pattern and type required for project.

.3 Extra materials to be from same production run as installed materials.

.4 Clearly identify each type of acoustic unit, including colour and texture.

.5 Store where directed by Consultant.

Part 2 Products

2.1 MATERIALS

.1 Acoustic units for suspended ceiling system: to CAN/CGSB-92.1.

.2 Acoustic Ceiling Panels, Designation LAP: Acoustic Ceiling Panels, wet formed mineral fibre panels, by Armstrong World Industries Canada Inc. or Rockfon by Roxul. Colour: White; Types as noted below:

.3 **Panel Types**:

.1 Type 1: LAP: 600 x 1200 mm x 15.9 mm thick; 'Fine Fissured 1729 by Armstrong' or 'Pacific by Rockfon' with medium texture, Square Lay-In; Location: For use at classroom areas, corridors and all other areas as indicated.

.3 Type 2: ACP: 1200 x 2400 x 22 mm thick, 'Optima White' Square Edge with acoustically transparent membrane #3934. Refer to Reflected Ceiling Plan for locations. Use with CAPZ accent hardware.

.4 Type 3: AB: Acoustic Blades: 1" thick x 4" depth, Metalworks Blades Classics by Armstrong Ceilings, installed in locations and patterns noted on Reflected Ceiling Plans. Location: Entrance Foyer, CO-Lab 204, 210, 304 & 307. Colour: Effects Oak.

.4 Type 4: CLD: Acoustical Clouds: 1" thick, Soundscapes Acoustical Clouds, circular shape, by Armstrong. Location: Corridor 127. Colour: Allow for three colours to be selected by Consultant from manufacturer's full range. Sizes: dia. 2440mm.

Acceptable alternates for CLD 'Acoustical Clouds': similar purpose-designed acoustical panels such as 'Avanti' acoustical ceiling clouds by Sound Solutions and 'Nuvola' Acoustical Clouds by Decoustics or Sound Seal (dist. By Wallworks Acoustic Arch. Products 647 808-5450), Shapes by Sound Concepts or Conwed Skyway Cloud by Owens Corning.

.4 Acceptable alternates for LAP: similar purpose-designed high humidity ceiling panels by Rockfon – Roxul, Armstrong, CGC Interiors, BPB Canada Inc. and Certainteed.

.5 **Suspension System Type 1**: 23.8 mm (15/16") "Prelude XL" exposed tee bar grid, including wall moulding, by Armstrong. Colour: white. Acceptable alternate: similar suspension system by CGC Interiors, Oakville and Chicago Metallic Corp. Grid sizes to suit ceiling panel types as shown on drawings.

.6 **Hanging Panel Trim:** 50mm, 100mm & 150mm Axiom Classic Trim by Armstrong World Industries Canada Inc., or acceptable alternate. Location: various locations with floating LAP and acoustic ceilings including in corridor outside Kindergarten Classroom doors. Refer to Drawings.

.7 **Accent Hardware:** 'Capz (ARCAPSL)' by Armstrong World Industries Canada Inc., or acceptable alternate in silver colour with smooth finish. For use with Type 4 acoustic tile type at Art Classroom 243.

.8 Suspension System for Radiant Panel Heaters: not applicable to this project.

.9 Hangers: 2.6 mm galvanized soft annealed steel wire.

.10 Accessories: splices, clips, retainers, etc., to complement suspension system components.

.11 Adhesive: low VOC type recommended by acoustic unit manufacturer.

.12 Staples, nails and screws: to CSA B111 non-corrosive finish as recommended by acoustic unit manufacturer.

.13 Hold down clips: purpose made clips to secure tile to suspension system, approved for use in fire-rated systems.

Part 3 Execution

3.1 EXAMINATION

.1 Do not install acoustical panels and tiles until work above ceiling has been inspected by Consultant.

3.2 INSTALLATION

.1 Install acoustical panels and tiles in ceiling suspension system.

.2 Install acoustic units parallel to building lines with edge unit not less than 50% of unit width.

.3 Scribe acoustic units to fit adjacent work. Butt joints tight, terminate edges with moulding.

.4 Support suspension system main runners at 1200 oc maximum with hangers from structure. Assembly shall support super-imposed loads. Maximum permissible deflection, 1/360 of span.

.5 Attach cross member to main runner to provide rigid assembly.

.6 Install suspension assembly to manufacturer's written instructions.

.7 Install flush edge moulding at junction of acoustic unit ceiling and other materials around entire length of joint. Secure to construction. Butt joints neatly, square and true in alignment.

.8 Set acoustic units in place.

.9 Set all ceiling levels by the use of transit or laser level.

.10 Ensure all installations are clean upon owner acceptance. Be responsible for monitoring damage and soiling after installation and before owner occupancy. Prior to owner takeover, replace all tiles with damage, blemishes or soiling whether caused by subcontractor handling or post installation above-ceiling adjustments, balancing, cabling, etc.

.11 Provide for Owner twelve (12) complete, undamaged ceiling tiles of each type, sealed and boxed. Leave in location as directed by Architect.

3.3 INTERFACE WITH OTHER WORK

.1 Co-ordinate ceiling work to accommodate components of other sections, such as light fixtures, diffusers, speakers, sprinkler heads, to be built into acoustical ceiling components.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM International)

.1 ASTM F1303-[99], Specification for Sheet Vinyl Floor Covering with Backing.

.2 Canadian Standards Association (CSA International)

.1 CAN/CSA-ISO 14040-[97], Environmental Management - Life Cycle Assessment - Principles and Framework (Adopted ISO 14040:1997, first edition).

1.3 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit duplicate 300 x 300 mm sample pieces of sheet material, 300 mm long base, nosing, feature strips, treads, edge strips.

1.4 CLOSEOUT SUBMITTALS

.1 Provide maintenance data for resilient flooring for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.5 ENVIRONMENTAL REQUIREMENTS

.1 Maintain air temperature and structural base temperature at flooring installation area above 20^{o} for 48 hours before, during and 48 hours after installation.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Do not dispose of unused sealant and adhesive materials into landfill. Divert materials to municipal hazardous materials depot approved by Consultant.

.2 Divert unused metal and wiring materials from landfill to metal recycling facility approved by Consultant.

.3 Remove from site and dispose of packaging materials at appropriate recycling facilities.

1.7 QUALITY ASSURANCE

.1 Supplier shall be an established firm experienced in the field.

.2 Installer:

.1 Flooring contractor experienced in the field and approved by the manufacturer.

.2 Flooring contractor shall have manual instructions and be trained by the manufacturer and distributor.

.3 Manufacturer's recommendations for the correct preparation, finishing and testing sub floor surface.

1.8 EXTENDED WARRANTY

.1 Submit a warranty for all the installation of all resilient sheet flooring, covering materials and labour and the repair or replacement of defective work in accordance with the General Conditions of the Contract, but for seven (7) years total.

Part 2 Products

2.1 MATERIALS

.1 Resilient Sheet Flooring **Type 1** (SF-Sp): Acceptable materials:

.1 Acceptable Materials:
- .1 Gerflor, Taraflex Sport 'M Plus'
- .2 Tarkett OmniSports Active+
- .4 Roppe Shockguard Multi-Use

.2 Locations: Gymnasium. Refer to Room Finish Schedule and Drawings

.2 Resilient Sheet Flooring **Type 2** (SF): Acceptable materials:

.1 Acceptable Materials:
- .1 Gerflor, Recreation 45
- .2 Tarkett OmniSports Speed

.2 Locations: Kindergarten and Childcare classrooms and associated cubbie areas; Music and Music Practice Rooms. Refer to Room Finish Schedule and Floor Pattern Drawing.

.3 Allow for four (4) colours from manufacturer's full range for Kindergarten Classrooms. Refer to Floor Pattern Drawing.

.1 Surface resistance: Unaffected by surface water and chemicals.

.2 Slip resistance tested in accordance with ASTM D2047 Static coefficient of friction: Dry 0.95, Wet 0.93.

.3 Meets ULC 102.2 Flame spread 5, Smoke developed 295.

.4 Wear Resistance: ASTM C501 Wear index 436.

.5 Static Load Limit: 500 PSI.

.6 Hygiene: Bacteriostat retards the growth of bacteria.

.4 Self Levelling Underlayment: **"**Ultraplan 1**"** by Mapei fast setting, polymer-modified; for over cured concrete, plywood, ceramic tile, old cutback adhesive, and old vinyl and vinyl composition flooring, feather edge to 1 1/2" (38 mm).for use to prepare floor at locations where existing flooring has been removed and subfloor is not level..

.5 Filler and Cover Former:

.1 As recommended by manufacturer to suit subfloor on which its material is installed and to suit vertical wall/floor junctions.

.6 Primers and Adhesives: As recommended by manufacturer of material to suit subfloor condition.

.7 Cleaner: Neutral chemical compound that will not damage sheet or affect its colour.

.8 Welding Rod: PVC welding rod, colour to match resilient sheet flooring.

.9 Cap strip: sized to suit application, type recommended by flooring manufacturer, Altro Stainless Steel Cap, mechanically fastened to wall

Part 3 Execution

3.1 SITE VERIFICATION OF CONDITIONS

.1 Ensure concrete floors are clean and dry by using test methods recommended by flooring manufacturer.

3.2 PREPARATION

.1 Scope includes preparation of floor using self levelling coating and patching compound as required.

.2 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.

.3 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.

.4 Remove or treat old adhesives to prevent residual, old flooring adhesives from bleeding through to new flooring and/or interfering with the bonding of new adhesives.

.5 As required, seal concrete slab to resilient flooring manufacturer's printed instructions.

3.3 INSTALLATION

.1 Install on a smooth, flat concrete finish, which will be achieved manually or mechanically.

.2 Ensure concrete sub floor temperature to be maintained at a minimum of 70°F during installation and ensure the moisture content does not exceed 3 Lbs per 1000 Sq Ft per 24 hours or lower.

.3 Paint game lines using approved game line paint primer and game line paint in strict accordance with the game line paint manufacturer’s instructions.

.4 Before proceeding with any work, inspect the sub floor surface and report, in writing, to the project manager and the General Contractor any visible defect on the surface, such as cracks, bumps, rough areas or variations in planarity.

.5 This installation is to proceed on an existing concrete slab in addition to new concrete work as required for mechanical services. Ensure slab is adequately cured and free of moisture or contaminants. If necessary, as part of the work of this section, scarify existing surfaces to prepare surface for adhesive, or to meet manufacturer's installation requirements. Fill joints, cracks, and holes in these surfaces and level surface irregularities with filler. Remove prime paint and wire brush steel base surfaces.

.6 Check for any grease, oil, paint, duct or any combination remaining on the concrete sub floor.

.7 Before proceeding with installation, clean concrete surface to remove any dirt or foreign materials, rinse thoroughly and allow eight (8) hours minimum to dry, if required, sanding is necessary in all installations.

.8 Fill any areas not meeting ±1/8" in 10' for level before installation. This will insure levelness and proper adhesion of material.

.9 Lay each material in accordance with manufacturer's specifications.

.10 Weld joints on flooring and internal and external angles of coves using welding rod in matching plain colours, and the standard hot-air-welding technique.

.11 Install standard rubber base at resilient sheet flooring locations.

.12 Flash into drain openings; do not cut on surface at edge of drain cover. Coordinate with Division 15 for installation with suitable drain type and cover. Bond flooring to drain flange under clamping ring using epoxy adhesive.

.13 Extend resilient sheet under all cabinet work and casework to the wall line.

3.4 CLEANING

.1 Remove excess adhesive from floor, base and wall surfaces without damage.

.2 Clean, seal and wax floor and base surface to flooring manufacturer's printed instructions.

3.5 PROTECTION

.1 Protect new floors from time of final set of adhesive, with polyethelene or Kraft paper until final inspection.

.2 Prohibit traffic on floor for 48 hours after installation.

.3 Do not wax.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 03 30 00 – Cast-in-Place Concrete.

.3 Section 03 35 05 – Concrete Floor Hardeners.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM International)

.1 ASTM F1066-[99], Specification for Vinyl Composition Floor Tile.

.2 ASTM F1344-[00], Specification for Rubber Tile.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-25.20-[95], Surface Sealer for Floors.

.2 CAN/CGSB-25.21-[95], Detergent-Resistant Floor Polish.

1.3 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit duplicate tile in size specified, 300 mm long.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal [paper] [plastic] [polystyrene] [corrugated cardboard] packaging material in appropriate on-site bins for recycling.

.3 Dispose of unused finish and adhesive materials at official hazardous material collections site approved by Consultant.

.4 Do not dispose of unused finish and adhesive materials into sewer system, into streams, lakes, onto ground or in other locations where it will pose health or environmental hazard.

1.5 ENVIRONMENTAL REQUIREMENTS

.1 Maintain air temperature and structural base temperature at flooring installation area above 20°C for 48 hours before, during and for 7 days after installation.

1.6 EXTRA MATERIALS

.1 Provide 6 m^2 or 3% of each colour, pattern and type flooring material required for this project for maintenance use.

.2 Extra materials to be from same production run as installed materials.

.3 Clearly identify each container of floor tile and each container of adhesive.

.4 Store where directed by Consultant.

Part 2 Products

2.1 MATERIALS

.1 Luxury Vinyl Tile (LVT): 30 MIL (0.70mm) wear layer thickness, 3mm tile thickness, square or plank sizing, with 20 year commercial warranty. Allow for total of three (3) colours from full line.

.1 Mirra, by Centura

.2 Event, by Tarkett

.3 Creation 70, by Gerflor

.2 Resilient base (RR): rubber, top set coved, 3 mm thick, rubber, 100 mm high minimum 1200 mm long, including premoulded end stops and external corners. Acceptable materials: non-shrink Rubber Wall Base with toe as manufactured by Johnsonite. Colours: Six (6) from full Johnsonite "Coloright" colour line.

.3 Rubber Stair Tread/ Riser combination (RSTR): Minimum of 5 mm thick, visually impaired Round Raised Disk pattern, rubber one-piece tread/ riser combination with speckled pattern. Stair tread to be one piece, for full width of stair. Include contrast strip on stair nosing for visual impaired, including mid and upper landings. Acceptable materials: VIRTR-Rd, as manufactured by Johnsonite, ROPPE, Activa Rubber Flooring, Flexco or Nora Rubber Flooring. Stair tread with contrast edge strip and no upstand is to be inserted into floor tile at top stair at mid and top landings. Stair treads to be speckled using minimum three colours.

.4 Rubber Tile at Stair Mid and Upper Landings (RT): Minimum of 5 mm thick, hammered finish rubber tile, 600mm x 600mm square. Stair tread with contrast edge strip and no upstand is to be inserted into floor tile at top stair at mid and top landings. Acceptable materials: Johnsonite, ROPPE, Activa Rubber Flooring, Flexco, or Nora Rubber Flooring. Tile to be marbleized or speckled using three colours.

.5 Tactile attention indicator: conforming to OBC Article 3.8.3.18. required to be installed at the top of all stairs, starting one tread depth back from the edge of the top stair. The depth of the tactile attention indicator shall be not less than 300mm and not more than 610mm. Tactile attention indicator to be rubber tile of contrasting colour from landing and stair treads with differing textured finish. Acceptable Products: 300mm x 600mm ‘Safe Sense Warning Indicator’ rubber tiles by Johnsonite, or approved alternates.

.6 Vinyl Cove Base adhesives: ‘Johnsonite 990 Solvent Free Environmentally Safe White Acrylic Cove Base Adhesive’. Submit product data sheets.

.7 Primer: ‘Flextile 43 Latex Additive’ by Flextile. Submit product data sheets

.8 Sub-floor filler and leveller: 'Flextile Patch' by Flextile, or alternate as recommended by flooring manufacturer for use with their product.

.9 VCT Adhesive: Acceptable Materials: Armstrong S-515 Moisture Resistant, clear, waterproof adhesive. Submit product data sheets

.10 Metal edge strips: aluminum extruded, smooth, with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.

.11 Polyethylene sheet: to CAN2 51.33-M77, Type 2, for protection.

.12 Nose filler: Epoxy caulking compound Johnsonite 930.

.13 Nose filler: Epoxy caulking compound Johnsonite 930.

.14 Transition strips; as required between adjacent flooring finishes: manufactured by Johnsonite or Mercer or Finercraft to suit conditions at the place of the work for smooth transition. Colour to later selection by Consultant from manufacturer's full range. Adhesive to be as recommended by manufacturer.

.15 Vinyl Reducing Strip: Johnsonite RRS-XX-C; to suit thickness of flooring; colours selected by Consultant.

.16 Vinyl Adaptor: Johnsonite CTA-XX-K; colours selected by Consultant.

Part 3 Execution

3.1 INSPECTION

.1 Ensure concrete floors are dry, by using test methods recommended by tile manufacturer. Inspect for negative alkalinity, carbonization or dusting.

.2 Commencement of work indicates acceptance of conditions by flooring installer.

3.2 SUB-FLOOR TREATMENT

.1 Confirm concrete floors where porcelain tile meets resilient has been depressed to allow for flush condition. Do NOT feather edges of resilient tile floors flush without prior review and approval of the Architect.

.2 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.

.3 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.

3.3 TILE APPLICATION

.1 Apply adhesive uniformly using recommended trowel in accordance with flooring manufacturer's instructions. Do not spread more adhesive than can be covered by flooring before initial set takes place.

.2 Lay flooring with joints parallel to building lines to produce symmetrical tile pattern. Border tiles minimum half tile width.

.3 Install tiles in corridor as per pattern provided by Consultant. Pattern will be provided at a later date.

.4 Cut tile and fit neatly around fixed objects.

.5 Install flooring in pan type floor access covers. Maintain floor pattern.

.6 Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.

.7 Install metal edge strips at unprotected or exposed edges where flooring terminates.

.8 At doorways to incrapack units, extend tile and base fully into door opening to incrapak classroom.

.9 Install solid colour vinyl strip to form gymnasium game lines, as indicated on drawings. Cut field tiles tight and smooth contour against game lines. Strips to be minimum of 300 mm long on curves and of indicated width and colour.

3.4 BASE APPLICATION

.1 Lay out base to keep number of joints at minimum. Use lengths as long as practicable and not less than minimum 500 mm long.

.2 Clean substrate and prime with one coat of adhesive.

.3 Apply adhesive to back of base.

.4 Set base against wall and floor surfaces tightly by using 3 kg hand roller.

.5 Install straight and level to variation of 1:1000.

.6 Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.

.7 Miter internal corners. Use premoulded corner pieces at all external corners and ensure full adhesion through to ends of corner pieces. See detail for termination at door frames.

.8 Install toeless type base before installation of carpet on floors.

.9 Leave in the building one (1) complete carton of each of two (2) colours of floor tile and twelve (12) tiles of each of the remaining colours. Colours of extra tile to be specified by Consultant.

3.5 INITIAL MAINTANANCE AFTER INSTALLATION

.1 Broom sweep or vacuum thoroughly.

.2 Do not wet mop, wash, scrub, or strip the floor. These procedures will be done by the Owner.

3.6 PROTECTION OF FINISHED WORK

.1 Following broom sweeping, protect new floors with 0.15 mm thick Polyethylene cover and lay planking in all necessary traffic areas to minimize damage by other trades. Maintain until just before final inspection.

.2 Prohibit traffic on floor for 48 hours after installation.

3.7 PREPARATION FOR INSPECTION

.1 Only if so notified by Architect, and in the presence of the Owner, scrub the floor using a neutral detergent and a floor machine of 170-250 rpm capability equipped with a scrub brush or a scrubbing pad (3M blue or equal).

.2 Lightly rinse and allow to dry. Note: Do not flood the floor with rinse water, scrubbing, or stripping solutions. Final re-washing, if required, and waxing will be done by owner.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures

.2 Section 01 51 00 - Temporary Utilities.

.3 Section 01 78 00 - Closeout Submittals.

1.2 REFERENCES

.1 American Association of Textile Chemists and Colorists (AATCC)

.1 AATCC 16-[1998], Color Fastness to Light.
.2 AATCC 23-[1999], Color Fastness to Burn Gas Fumes.
.3 AATCC 118-[1997], Oil Repellency: Hydrocarbon Resistance Test.
.4 AATCC 129-[2001], Colour Fastness to Ozone in the Atmosphere Under High Humidities.
.5 AATCC 134-[2001], Electrostatic Propensity of Carpet.
.6 AATCC 171-[2000], Carpets: Cleaning of; Hot Water Extraction Method.
.7 AATCC 174-[1998], Antimicrobial Activity Assessment of Carpets.
.8 AATCC 175-[1998], Stain Resistance: Pile Floor Coverings.
.9 AATCC 189-[2001], Fluorine Content of Carpet Fibers.

.2 American Society for Testing and Materials (ASTM International)

.1 ASTM D1055-[97], Specification for Flexible Cellular Materials - Latex Foam.
.2 ASTM D1335-[98], Tuft Bind of Pile Floor Coverings.
.3 ASTM D1667-[97], Standard Specification for Flexible Cellular Materials-Vinyl Chloride Polymers and Copolymers (Closed-Cell Foam).
.4 ASTM D3936-[00] Standard Test Method for Resistance to Delamination of the Secondary Backing of Pile Yarn Floor Covering.
.5 ASTM D5252-[98a], Standard Practice for the Operation of the Hexapod Drum Tester.
.6 ASTM D5417-[99], Standard Practice for Operation of the Vettermann Drum Tester.
.7 ASTM E84-[01], Test Method for Surface Burning Characteristics of Bulding Materials.
.8 ASTM E648-[00], Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source.
.9 ASTM E662-[01], Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-4.2 No.27.6-[M91], Textile Test Methods - Flame Resistance - Methemine Tablet Test for Textile Floor Coverings.
.2 CAN/CGSB-4.2 No.77.1-[94]/ISO 4919:1978, Textile Test Methods - Carpets - Determination of Tuft Withdrawal Force.

.3 CGSB 4-GP-36M-[78], Carpet Underlay, Fiber Type.

.4 CAN/CGSB-4.129-[93(R1997)], Carpets for Commercial Use.

.5 CGSB 20-GP-23M-[78], Cushion, Carpet, Flexible Polymeric Material.

.6 CAN/CGSB-25.20-[95], Surface Sealer Floors.

.4 Carpet and Rug Institute (CRI)

.1 CRI-104-[96], Standard Installation of Commercial Carpet.

.2 IAQ Carpet Testing Program.

.5 National Floor Covering Association (NFCA)

.1 Floor Covering Specification Manual [1998].

.6 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S102-[88(R2000)], Surface Burning Characteristics of Building Materials and Assemblies.

.2 CAN/ULC-S102.2-[88(R2000)], Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials and Assemblies.

1.3 SUBMITTALS

.1 Submit control submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit verification to demonstrate compliance with CAN/ULCS102 and CAN/ULCS102.2.

.3 Submit proof that carpet has been tested and passed the Indoor Air Quality (IAQ) Carpet Testing Program requirements of the Carpet and Rug Institute (CRI) and the Canadian Carpet Institute (CCI).

.4 Submit report verifying that tuft bind meets requirements of CAN/CGSB-4.129 when tested to CAN/CGSB-4.2 No.77.1.

.5 Submit report outlining proposed dust control measures.

.6 Submit carpet schedule using same room designations indicated on drawings.

.7 Submit carpet manufacturer's installation instructions: Indicate special procedures and perimeter conditions requiring special attention.

.8 Submit certification and description of carpet recycling process

1.4 PRODUCT DATA

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit product data sheet for each carpet, undercushion, adhesive, carpet protection and subfloor patching compound.

.3 Submit WHMIS MSDS - Material Safety Data Sheets acceptable to Labour Canada and Health Canada for carpet adhesive and seam adhesive. Indicate VOC content.

.4 Submit data on specified products, describing physical and performance characteristics, sizes, patterns, colours, and methods of installation.

1.5 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Indicate locations and lengths of seams for carpeted areas.

.3 Indicate nap direction, open edges, special patterns, and other details required by Consultant to clarify work.

.4 Submit drawings showing columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cut-outs are required as well as direction of carpet pile and pattern, location of edge mouldings and edge bindings to Consultant for review prior to installation of carpet.

1.6 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit duplicate 225 x 225 mm pieces for each colour selected, 300 mm square pieces of under-cushion, 150 mm lengths of carpet gripper and binder bars, base, divider strips.

1.7 CLOSEOUT SUBMITTALS

.1 Submit operation and maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

.2 Submit maintenance data: Include maintenance procedures, recommendations for maintenance materials and equipment, and suggested schedule for cleaning.

.3 Schedule of carpet reclamation activities indicating following:

.1 Detailed sequence of removal work.
.2 Inventory of items to be removed and reclaimed.
.3 Proposed packing and transportation measures.

.4 Certification: Reclamation Agency to verify in writing that used carpet was removed and recycled in accordance with carpet manufacturers' reclamation program.

.1 Record off-site removal of debris and materials and provide following information regarding removed materials.

.1 Time and date of removal.
.2 Type of material.
.3 Weight and quantity of materials.
.4 Final destination of materials.

1.8 QUALIFICATIONS

.1 Installer Qualifications:

.1 Flooring contractor requirements.

.1 Specialty contractor normally engaged in this type of work, with prior experience in installation of these types of materials.

.2 Certified by carpet manufacturer prior to [tender] [bid] submission.

.3 Must not sub-contract labour without written approval of Consultant.

.2 Be responsible for proper product installation, including floor testing and preparation as specified and in accordance with carpet manufacturers written instructions.

1.9 REGULATORY REQUIREMENTS

.1 Prequalification: tested to CAN/CGSB-4.2-No.27.6.

.2 Indoor Air Quality: compliance with CRI/CCI Green Label Indoor Air Quality Program, CRI/CCI-IAQ requirements for maximum total volatile chemicals released into air. Label each carpet product with CRI/CCI-IAQ label.

1.10 DELIVERY, STORAGE AND HANDLING

.1 Label packaged materials. For carpet tile products indicate nominal dimensions of tile and indicate installation direction.

.2 Packaging, labelling, packing and marking details.

.3 Store packaged materials in original containers or wrapping with manufacturer's seals and labels intact.

.4 Store carpeting and accessories in location as directed by Consultant. Store carpet and adhesive at minimum temperature of 18°C and relative humidity of maximum 65% for minimum of 48 hours before installation.

.5 Prevent damage to materials during handling and storage. Keep materials under cover and free from dampness.

.6 Store materials in area of installation for minimum period of 48 hours prior to installation.

.7 Modular carpet: store on pallet form as supplied by Manufacturer. Do not stack pallets.

1.11 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Vacuum used carpet before removal.

.3 Maintain possession of removed used carpet.

.4 Carpet undercushion: provide recycling of carpet padding where locally available or as designated by carpet reclamation program.

1.12 ENVIRONMENTAL REQUIREMENTS

.1 Moisture: Ensure substrate is within moisture limits and alkalinity limits prescribed by manufacturer. Prepare moisture testing and provide report to Consultant

.2 Temperature: Maintain ambient temperature of not less than 18 ^{o}C from 48 hours before installation to at least 48 hours after completion of work.

.3 Relative humidity: Maintain relative humidity between 10 and 65% RH for 48 hours before, during and 48 hours after installation.

.4 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.

.5 Ventilation:

.1 Ventilate area of work as directed by Consultant by use of approved portable supply and exhaust fans.

.2 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities. Provide fans with HEPA filters.

.3 Provide continuous ventilation during and after carpet application. Run ventilation system 24 hours per day during installation; provide continuous ventilation for 7 days after completion of carpet installation.

.6 Test existing floor levelling compound for presence of asbestos contamination. Notify Consultant for additional instructions where asbestos is discovered.

.7 Do not install carpet until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete.

1.13 EXTRA MATERIALS

.1 Provide extra materials of carpet, carpet base, and adhesives in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide 20 m^2 of each colour, pattern and type of carpeting.

.3 Extra materials to be from same production run as installed materials.

.4 Identify each package of carpet and each container of adhesive.

.5 Deliver to Consultant and store where directed by Consultant.

Part 2 Products

2.1 MANUFACTURERS

.1 Certified to Carpet and Rug Institute's and the Canadian Carpet Institute IAQ requirements.

2.2 CARPET TILE (CPT) – Carpet Tiles

Product shall be suitable for direct glue-down installation as per CGSB-4-SP-156. Pre-glued products are NOT acceptable

1.1.1 Manufacturer: Interface

1.1.2 Style: Open Air 404

1.1.3 All carpet supplied for each installation shall be manufactured from yarn of the same dye lot. Carpet will be selected by the Project Manager or Board Designee from Manufacturer's stock colour and pattern range.

1.1.2 'NEW' CARPET PRODUCTS

When requested, and if time allows, new carpet products other than those indicated above, to be considered, must be submitted to the School Board along with specification sheets and samples. If samples are deemed appropriate for further testing and approval, the Board will require an installation at a School Board site for sampling. The site sample installation to be provided and installed free of charge and to be left on site for a set period of time to be arranged and agreed to at the time of installation. The decision to accept any samples provided for future use within the Board is at the sole and unfettered discretion of the Board.

The Board may award the supply and installation of specialty products other than those noted within the specifications at its sole and unfettered discretion.

1.1.3 WARRANTY

Carpet and installation shall carry a minimum Manufacturer’s ten (10) year warranty.

1.1.4 ADHESIVES

Use Manufacturers recommended adhesive. Provide with bid submission all adhesive products MSDS.

IMPORTANT: Spraying of adhesive will not be accepted.

1.1.5 INSTALLATION

All carpet to be installed as per Manufactures instructions (latest editions/amendments) and in accordance with good installation practices.

IMPORTANT: Spraying of adhesive will not be accepted.

Carpet shall be of maximum widths and lengths, with all pile running the same direction, free from end joints in a run and with a minimum of side seams. Side seams shall be parallel to each other.

Where variations of colour within normal textile tolerance occur (i.e. more than two (2) variations of colours within a given room), the change in colour shall be restricted to between individual classrooms and/or designated rooms, with such changes occurring at the door line unless authorized in writing to do otherwise by the School Board. No rooms shall have two (2) variations of the same colour and pattern within its boundaries, unless written authority from the School Board.

Carpeting shall be wall to wall, where carpet meets vinyl tile or other surfaces of less thickness, a carpet to resilient adapter as manufactured by Johnsonite or Schluter, compatible with the decor, shall be installed, using mechanical fasteners, plastic plugs and screws or concrete nails. Do not use powder actuated devices. Carpet shall neatly follow line of walls, bulkheads, columns and door framing.

At openings, seams to occur under door edges.

1.1.6 SEAMS

End seams arzfe generally not acceptable. However where such seams can be so located that they are hidden from view or are otherwise inconspicuous, Project Manager or Board Designee may permit an exception.

.1

.2 Carpet: to CAN/CGSB-4.129 and as follows.

- .1 Certified for flammability to Health Canada regulations under "Hazardous Products (Carpet) Regulations", Part II of the Schedule.
- .2 Maximum flame spread rating 300, maximum smoke developed classification 500, when tested to CAN/ULC-S102.2 .
- .3 Certified to Carpet and Rug Institute's and the Canadian Carpet Institute's IAQ requirements.
- .4 Performance rating: to ASTM D5252 or ASTM D5417.

.3 Construction: woven.

.4 Pile fibre: to CAN/CGSB-4.129.

- .1 Nylon: BCF.
  - .1 Type: Nylon 6.6.

.5 Colourfastness to light: to CAN/CGSB-4.2No.18.3.

.6 Colour Fastness to Atmospheric Fading: to AATCC 129 and AATCC 23.

.7 Tufted Carpet backing: to CAN/CGSB-4.129.

.8 Colour Fastness to Atmospheric Fading: to AATCC 129 and AATCC 23.

.9 Lamination Strength of Secondary Backing: to ASTM D3936, minimum acceptable peel strength of [7.4] kg/25 mm.

.10 Tear Strength: to ASTM D2661, minimum acceptable tear strength in both length and width to be:

- .1 11.3 kg for carpets to be installed by glue down installation.
- .2 15.9 kg for carpet to be installed by power stretch.

.11 Permanent static control: to AATCC 134, 3000V maximum at 20%RH and 22°C.

.12 Anti-microbial: to AATCC 174, 99% reduction, 0% growth.

.13 Stain resistance: to AATCC 175, [8].

2.3 ACCESSORIES

.1 Base:

.1 Carpet base: 100 mm high, same material, colour, pattern and texture as adjoining carpet. Bound edge. Vinyl cap strip to accommodate carpet base thickness, colour to match carpet.

.2 Carpet tackstrips: types recommended by carpet manufacturer.

.3 Seaming tape: types recommended by carpet manufacturer for purpose intended.

.4 Seaming sealer adhesive: type recommended by carpet manufacturer for purpose intended.

.5 Binder bars: aluminum

.6 Adhesive:

.1 Multi-purpose adhesive type: recommended by carpet manufacturer for direct glue down installation.

.2 Pressure sensitive type: recommended by carpet manufacturer for direct glue down installation of modular carpet or speciality backed carpets.

.7 Carpet protection: non-staining heavy duty kraft paper.

.8 Concrete floor sealer: to CAN/CGSB-25.20, Type 1.

.9 Subfloor patching compound: Portland cement base filler, mix with latex and water to form a cementitious paste.

Part 3 Execution

3.1 SUB-FLOOR TREATMENT

.1 Concrete shall be inspected to determine special care required to make it a suitable foundation for carpet. Cracks [3] mm wide or protrusions over [0.8] mm will be filled and levelled with appropriate and compatible [latex] [polymer fortified] patching compound.

.2 Do not exceed manufacturer's recommendations for patch thickness.

.3 Large patch areas are to primed with a compatible primer.

.4 Concrete substrates shall be cured, clean and dry.

.5 Concrete substrates shall be free of paint, dirt, grease, oil, curing or parting agents, and other contaminates, including sealers, that may interfere with the bonding of the adhesive.

.6 Wherever a powdery or porous concrete surface is encountered, a primer compatible with the adhesive shall be used to provide a suitable surface for glue-down installation.

3.2 PREPARATION

.1 Prepare floor surfaces in accordance with CRI 104 Standard for Installation of Commercial Carpet.

.2 Pre-condition carpeting following manufacturer's printed instructions.

3.3 INSTALLATION

.1 Install carpeting and undercushion using minimum of pieces.

.2 Install in accordance with manufacturer's printed instructions and in accordance with Carpet and Rug Institute Standard for Installation of Commercial Carpet, CRI 104.

.3 Install carpet and undercushion after finishing work is completed but before demountable office partitions and telephone and electrical pedestal outlets are installed.

.4 Finish installation to present smooth wearing surface free from conspicuous seams, burring and other faults.

.5 Use material from same dye lot. Ensure colour, pattern and texture match within any one visual area. Maintain constant pile direction.

.6 [Hot melt] [Adhesive] seams and cross-joints. Seam edges must be sealed.

.7 Fit neatly around architectural, mechanical, electrical and telephone outlets, and furniture fitments, around perimeter of rooms into recesses, and around projections.

.8 Install carpeting to underfloor duct system and to access covers.

.9 Install carpeting in pan type floor access covers.

.10 Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

.11 Install carpet smooth and free of bubbles, puckers, and other defects.

3.4 CARPET TACKSTRIPS AND BINDER BARS

.1 Install carpet grippers at junctions of walls and vertical surfaces. Secure gripper to prevent movement.

.2 Install binder bars at exposed carpet edges and centre under doors in door openings.

3.5 UNDERCUSHION INSTALLATION

.1 Install undercushion fully adhered using minimum number of pieces. Secure undercushion to prevent shifting.

.2 Butt edges firmly together. Install to edge of gripper and tape top of joints. Remove bubbles and slightly stretch.

.3 Secure undercushion at projections and penetrations, and where cut to contours and ramps.

.4 Offset undercushion seams at least 300 mm from carpet seams.

3.6 DIRECT GLUE DOWN CARPET

.1 Apply adhesive and install carpeting over undercushion in accordance with manufacturer's written instructions, by direct glue-down method.

3.7 STRETCH-IN CARPET

.1 Install carpeting over undercushion and secure at carpet grippers in accordance with manufacturer's written instructions.

3.8 SEAMS

.1 Seal edges of cut-outs with binding method.

.2 Carpet visibility of seams and joints to acceptable industry standards.

3.9 BASE INSTALLATION

.1 Install bound edge carpet base to match adjacent carpeting.

.2 Attach carpet to wall with adhesive. Neatly fit against floor carpet and into cap strip.

.3 Extend floor carpeting over cove, up wall and into capstrip to form cove carpet base.

.4 Install resilient base in accordance with Section 09 65 19.

3.10 PROTECTION OF FINISHED WORK

.1 Vacuum carpets clean immediately after completion of installation. Protect traffic areas.

.2 Prohibit traffic on carpet for a period of 24 hours until adhesive is cured.

.3 Install carpet protection to satisfaction of Consultant.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 78 00 - Closeout Submittals.

.3 Section 09 22 16 - Non-structural Metal Framing.

.4 Section 06 10 10 - Rough Carpentry: Wood strapping.

.5 Section 09 51 13 – Acoustic panel Ceiling.

.6 Section 04 21 13 – Masonry.

.7 Section 06 40 00 – Architectural Woodwork.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM International)

.1 ASTM C423-[01], Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-51.34-[M86], Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

.2 CAN/CGSB-92.1-[M89], Sound Absorptive Prefabricated Acoustical Units.

.3 Canadian Standards Association (CSA International)

.1 CSA B111-[1974(R1998)], Wire Nails, Spikes and Staples.

.4 Underwriter Laboratories of Canada (ULC)

.1 CAN/ULC-S702-[97], Thermal Insulation, Mineral Fibre, for Buildings.

1.3 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit one 300 x 300 sample of acoustic panel.

1.4 ENVIRONMENTAL REQUIREMENTS

.1 Commence installation after building enclosed and dust generating activities are completed.

.2 Permit wet work to dry prior to commencement of installation.

.3 Maintain uniform minimum temperature of 15°C and relative humidity of 20- 40% prior to, during and after installation.

1.5 WASTE MANAGEMENT

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal paper, plastic, polystyrene, and corrugated cardboard, packaging material in appropriate on-site bins for recycling.

1.6 EXTRA MATERIALS

.1 Provide acoustical units for maintenance use amounting to 2% of gross wall area for each pattern and type required for project.

.2 Provide sufficient adhesive to install extra material provided.

.3 Extra materials to be from same production run as installed materials.

.4 Clearly identify each package of acoustical units including colour and type, and each container of adhesive.

.5 Store where directed by Consultant.

Part 2 Products

2.1 MATERIALS

.1 <u>Type 1: Fabric Acoustic Panels (FAB):</u>

.1 Supply and install surface mounted panels for use in Library.
.2 Acoustical construction products must:
  .1 Not require being labelled as poisonous, corrosive, flammable or explosive under the Consumer Chemical and Container Regulations of the Hazardous Products Act.
  .2 Be accompanied by detailed instructions for proper handling and installation so as to minimize health concerns.
.3 Composition: Fiberglass with resin-hardened edges with 25% recycled content.
.4 Panels shall be square edged with mechanical butt joints. A Flame Spread rating shall not exceed 25 and NRC-0.80 in accordance with ASTM C423.
.5 Finish: Fabric finish in three colours to be selected by Consultant from Manufacturer's standard colour range.
.6 Panel size: As indicated on drawings.
.7 Mounting method: Z-clips.
.8 Acoustic Insulation: CAN/ULC S702; 63 mm thick acoustic insulation "Fiberglass Noise Stop Blanket".
.9 Screws: Non corrosive finish, type recommended by acoustic unit manufacturer.
.10 'Soundsoak' by Armstrong (Contact: Ruth Shannon) or 'Acoustical Panel' by Decoustics, Wallworks 'Fabri-Lok' Tensioned Fabric System (Contact Darcey Jerrom 877 829-2550 Ext. 35), Conwed by Owens Corning, AP Impact Acoustical Panels by Sound Concepts or approved alternative manufacturer.

.2 Type 2: Perforated Wood Acoustic Panels (PWP)

.1 Core: FSC-certified fire retardant particle board with face-cut veneer.
.2 Finish: Face-cut veneer finish to be selected by Consultants in manufacturer full colour range with perforated option.
.3 Panel size: as indicated on drawings.
.4 Attachment method: Wall splines or z-clips.
.5 Acceptable Product: 'Woodworks' W2 with round perforations in straight pattern in maple or light cherry finish complete with solid wood peak corner (square) edge banding as manufactured by by Armstong, Atkar (905 648-7580), WoodTrends (dist. by Wallworks Acoustic Arch. Products 647 808-5450) or Decoustics (dist. by Kinetics Noise Control 905 670-4922), or by Norton Industries as distributed by Acoustex Group (604 720-0024) or by ACGI Wood as distributed by Rieger Architectural Products..
.6 Location: Refer to drawings and Room Finish Schedule.

.3 Type 3: Tectum Acoustic Panels (TEC)

.1 Use only undamaged, single pieces of 600 mm x 2400 mm nom. x 25 mm thick Tectum board. Material shall be ULC rated for fuel contributed, flame spread and smoke development in compliance with Ontario Building Code.
.2 Locations: refer to drawings and Room Finish Schedule
.3 Colour: pre-painted a custom colour to Architect's selection; installed with wood trim by Section 06 40 00.
.4 Acceptable alternate: Acoustiplank manufactured by Acoustex (tel: 905-692-0916)
.5 Provide solid maple or birch wood trim with clear satin finish, around perimeter of groupings.

.2 Metal Framing: 64 mm deep metal furring channels

.3 Acoustic Insulation: 63 mm thick acoustic insulation "Fiberglass Noise Stop Blanket".

Part 3 Execution

3.1 EXAMINATION

.1 Examine carefully surfaces to which panels will be attached and report defects to the Architect. Commencement of installation will signify complete acceptance of substrate.

3.2 INSTALLATION OF TECTUM PANELS

1. Fasten metal furring channels to wall at 600 mm O.C. and at perimeter to receive panels, insulation and wood trim. Refer to detail drawings.

2. Install acoustic insulation to suitable friction fit between channels.

3. Fasten Tectum panels, long dimension to the vertical, to furring using suitable self tapping screws at maximum 300 mm O.C.

4. Install wood surround trim. Refer to Section 06 40 00.

3.3 INSTALLATION OF PANELS

1. Fasten zee clips to wall-shim, as required, for level and even appearance.

2. Install insulated panels on clips. Provide vandal resistant fastening and metal trim.

3.4 CLEANING

.1 Keep acoustic installation and all components clean. Remove blemishes immediately.

3.5 PROTECTION

.1 Use cardboard to protect finished acoustical wall treatment from damage.

.2 Remove prior to substantial completion.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 06 40 00 - Architectural Woodwork.

.3 Section 05 12 23 – Structural Steel for Buildings.

.4 Section 05 50 00 – Metal Fabrications.

.5 Section 08 11 14 – Metal Doors and Frames.

.6 Section 09 91 27 – Finish and Colour Notes.

.7 Section 09 91 30 – Door and Room Finish Schedule.

1.2 REFERENCES

.1 Architectural Painting Specifications Manual, Master Painters Institute (MPI).

.2 Ontario Painting Contractors Association (OPCA) Architectural Specification Manual - referenced as OPCA Manual, latest Edition. Paint formulations and methods referred to herein refer to this Manual. If contractor is unfamiliar with this reference standard, contact the OPCA at (416) 498-1897.

1.3 WARRANTY

.1 At outset of the contract, contractor to register with the OPCA for the inspection service paid for from Cash Allowances.

.2 Upon completion of the inspection program, contractor to furnish an OPCA 2 Year Guarantee. The Guarantee shall warrant that the work has been performed with respect to the standards and requirements incorporated in the OPCA specification manual-latest edition.

1.4 ENVIRONMENTAL PERFORMANCE REQUIREMENTS

.1 Do not apply paint finish in areas where dust is being generated.

.2 Conform to requirements of OPCA Manual.

.3 Comply with the requirements of Section 01 35 30- Health and Safety.

1.5 JOB MOCK-UP

.1 Complete a mock-up room to be reviewed and approved by Owner, Consultant, and OPCA Inspector for approval on application of block filler and finish paint coats.

1.6 SCHEDULING OF WORK

.1 Submit work schedule for various stages of painting to Consultant for approval. Submit schedule minimum of 72 hours in advance of proposed operations.

.2 Obtain written authorization from Consultant for any changes in work schedule.

.3 Schedule painting operations to prevent disruption of occupants in and about the building.

1.7 EXTRA MATERIALS

.1 Submit one - four litre can of each type and colour of [primer] [stain] [finish coating]. Identify colour and paint type in relation to established colour schedule and finish system.

.2 Deliver to Contractor and store where directed.

1.8 DELIVERY, HANDLING AND STORAGE

.1 Labels shall clearly indicate:

.1 Manufacturer's name and address.
.2 Type of paint or coating.
.3 Compliance with applicable standard.
.4 Colour number in accordance with established colour schedule.

.2 Remove damaged, opened and rejected materials from site.

.3 Provide and maintain dry, temperature controlled, secure storage.

.4 Observe manufacturer's recommendations for storage and handling.

.5 Store materials and supplies away from heat generating devices.

.6 Store materials and equipment in a well ventilated area with temperature range 7^0C to 30^0C.

.7 Store temperature sensitive products above minimum temperature as recommended by manufacturer.

.8 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Consultant. After completion of operations, return areas to clean condition to approval of Consultant.

.9 Remove paint materials from storage only in quantities required for same day use.

.10 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.

.11 Fire Safety Requirements:

.1 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

.2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

1.9 FINISHES AND COLOURS

.1 Review the requirements outlined in Section 099127, Finish Schedule and Colour Notes. A separate colour schedule will be issued after contract award.

.2 Allow for 10 colours total from all formulations for this project including room wall accent colours.

1.10 WASTE MANAGEMENT AND DISPOSAL

.1 Paint, stain and wood preservative finishes and related materials (thinners, solvents, etc.,) are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.

.2 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.

.3 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.

.4 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into ground the following procedures shall be strictly adhered to:

.1 Retain cleaning water for water-based materials to allow sediments to be filtered out.

.2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.

.3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.

.4 Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.

.5 Empty paint cans are to be dry prior to disposal or recycling (where available).

.5 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.

.6 Set aside and protect surplus and uncontaminated finish materials: galvanized touch up; wood stain, prefinished metal touch up paint. Deliver to or arrange collection by recycling organization for verifiable re-use or re-manufacturing.

.7 Close and seal tightly partly used sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.

Part 2 Products

2.1 MATERIALS

.1 Acceptable Manufacturer's: Where OPCA code numbers are not referenced, use Products from one of the following manufacturers:

- .1 Benjamin Moore & Co. Ltd.
- .2 ICI (Glidden) Paints.
- .3 Para Paints.
- .4 Pratt & Lambert Inc.
- .5 The Sherwin-Williams Company.

.2 Manufacturers of intumescent coatings having Product considered acceptable for use:

- .1 A/D Fire Protection Systems Inc.
- .2 Carboline.

.3 Paint materials for paint systems shall be products of a single manufacturer.

.4 Acceptable products: Per Chapter 5 OPCA Manual and as listed.

.5 Paint materials for each paint system to be products of a single manufacturer.

.6 Use low-VOC and low-odour paints only.

Part 3 Execution

3.1 GENERAL

.1 Prepare surfaces to receive paint per Chapter 3 OPCA Manual.

.2 For doors supplied by Relocatable Contractor as indicated in the Door Finish schedule, clean and re-prime all surfaces prior to painting. Refer to AD drawings for Door Finish Schedule.

3.2 APPLICATION

.1 Sand and dust between each coat to remove defects visible from distance up to 1.5 m.

.2 Finish closets and alcoves as specified for adjoining rooms.

.3 Apply each coat at the proper consistency. Each coat of finish should be fully dry and hard before applying the next coat, unless the manufacturer's instructions state otherwise.

.4 Method of application to be as approved by Consultant. Apply paint by [brush] [roller] [air sprayer] [airless sprayer]. Conform to manufacturer's application instructions unless specified otherwise.

.5 Brush and Roller Application:

.1 Apply paint in a uniform layer using brush and/or roller of types suitable for application.

.2 Work paint into cracks, crevices and corners.

.3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.

.4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces shall be free of roller tracking and heavy stipple unless approved by Consultant.

.5 Remove runs, sags and brush marks from finished work and repaint.

.6 Spray application:

.1 Provide and maintain equipment that is suitable for intended purpose, capable of properly atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.

.2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.

.3 Apply paint in a uniform layer, with overlapping at edges of spray pattern.

.4 Brush out immediately all runs and sags.

.5 Use brushes to work paint into cracks, crevices and places which are not adequately painted by spray.

.7 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access and only when specifically authorized by Consultant.

.8 Apply coats of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

.9 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.10 Sand and dust between coats to remove visible defects.

.11 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.

.12 Finish inside of cupboards and cabinets as specified for outside surfaces.

.13 Finish closets and alcoves as specified for adjoining rooms.

.14 Finish top, bottom, edges and cut-outs of doors after fitting as specified for door surfaces.

3.3 MECHANICAL/ELECTRICAL EQUIPMENT

.1 Refer also to Finish Notes in Section 099127- Finish and Colour Notes.

.2 Paint exposed conduits, pipes, hangers and other mechanical and electrical equipment occurring in finished areas as well as inside cupboards and cabinet work. Colour and

texture to match adjacent surfaces, except as noted otherwise. Coordinate with mechanical trades applying banding and labeling after pipes have been painted. Do not paint white PVC covers on exposed mechanical water, drain and other lines

.3 Paint gas piping standard yellow where visible on roof or in service spaces. Do not paint gas meter or gas equipment in wall niche yellow—colour to later selection by Architect.

.4 Paint surfaces inside of ductwork and elsewhere behind grilles where visible using primer and one coat of matte black paint.

.5 Paint both sides and edges of plywood backboards for equipment before installation.

.6 Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

3.4 PAINT SYSTEMS

.1 System references listed are based on Chapters 4A and 4B of OPCA Manual and are OPCA Premium Grade, unless noted otherwise.

3.5 INTERIOR FINISHES

.1 Wood, where applicable:

- .1 Doors, miscellaneous trim: INT. 1-A, Alkyd Semi-Gloss Finish, Premium Grade
- .2 Wood slat ceiling to Foyer: INT. 1-J Premium Grade; satin finish, Fire Retardent. Slats to be sealed and shop finished prior to installation. Refer also to Section 064000.
- .3 Casework and miscellaneous wood items:
  - .1 Exterior surfaces: INT. 1-A, Alkyd Semi-Gloss Finish, Premium Grade
  - .2 Interior surfaces: INT. 1-A, Alkyd Semi-Gloss Finish, Premium Grade
  - .3 Wood Benches and Upper Shelves: INT. 2-F, Stained Alkyd Satin Finish, Premium Grade.
  - .4 Gym Storage Shelves: INT. 3-A, Stain Finish, Custom Grade

.2 Gypsum board: INT.4-B, Latex Eggshell Finish, Premium Grade.

.3 Acoustical wall panels: INT. 6-A, Latex Flat Finish, Custom Grade.

.4 Concrete Block: INT.8-C -modified; Latex Semi-Gloss Finish, Premium Grade. Modified system refers to all work where 2 full coats of block filler shall be applied.

.5 Concrete Block: Alkyd Gloss Finish, Premium Grade - shown on Room Finish Schedule as P-GF (Paint - Gloss) finish.

.6 Concrete Floors; refer to Section 03 35 05- Concrete Floor Hardeners and Sealers for liquid sealer.

.7 Exposed Cast in Place Concrete ceilings: INT. 8-A, Latex Flat Finish, Premium Grade

.8 Exposed Precast Concrete ceilings: INT. 8-A, Latex Flat Finish, Custom Grade

.9 Miscellaneous metal:

.1 Primed: INT. 12-A, Alkyd Semi-Gloss Finish, Premium Grade

.2 Galvanized: INT. 13-A, Alkyd Semi-Gloss Finish, Premium Grade

.3 INT. 12-G, Water based Epoxy finish, two coats on a rust inhibitive primer for all exposed steel on Stairs 1S1 & 1S2 including exposed steel nosing at porcelain tile stair landing, stair stringer, pickets and railings".

.10 Galvanized metal: INT. 13-A, Alkyd Semi-Gloss Finish, Premium Grade

.11 Hollow Metal Doors and Frames: Without exception, all wipecoated Galvanized Hollow Metal Doors, Frames and Screens, interior and exterior shall be field cleaned with solvent, galvanized prime paint coated and then finished with INT. 13-A Premium Grade, Gloss Finish. Base coat primer shall be submitted for review in advance or door/frame painting shall be rejected by Consultant. For exterior hollow metal frames, if any, adjacent to aluminum windows, provide finish coat as an exterior premium grade metallic gloss finish to match anodized windows or Aluminum Composite panels. Colour to be confirmed by Architect during construction.

.12 Gymnasium Painting:

.1 note that painting of gymnasium acoustic deck and structural steel is part of painting contract.

.2 Allow for single colour for deck and joists.

.3 Allow for complete painting of all hangers and equipment brackets including but not limited to basket ball baskstops, electrical pipe rails, mechanical equipment fan cages, etc.

.4 Allow for accent painting of 2 perimeter stripes to all walls and over proscenium, shown on drawings. Total of 2 accent colours for these stripes.

.13 Other Painting:

.1 Painting of Elevator/Lift doors and frame is part of this contract.

.2 In the following rooms with exposed metal deck including mechanical rooms and storage rooms:

.1 Allow for single colour for deck and joists.

.2 Allow for complete painting of all hangers and equipment brackets including but not limited to, electrical and mechanical equipment, etc.

.3 painting deck/floor slab and structural steel is part of painting contract.

.4 Locations: Electrical Room 115, Sprinkler Room 116, Receiving Room 118, Outdoor Toy Storage 132, Gym Storage 154, Machine Room 156, Chair Storage 158, Custodian 165, Gym 168, Applications Classroom 206, Dust Collector 208, Kiln 215, Art 216, Custodian 234, Electrical Room 245, Storage Room 239, Mechanical Room 243.

3.6 EXTERIOR PAINTING

.1 Pavement markings: EXT. 7-A, Zone Marking Alkyd Finish, Premium Grade.

.2 Steel columns at front entrance: EXT. 6F, Two component epoxy finish, Premium Grade. Custom colour.

.3 Miscellaneous metal:

.1 Primed: EXT. 11-A-Gloss, Premium Grade

.2 Galvanized: Touch up any welds, cuts or damage with 'Galvafroid' Paint by W.R. Meadows prior to prime and finish coats.; Finish System EXT. 12-A-Gloss, Premium Grade

.4 Galvanized Structural Steel: Touch up any welds, cuts or damage with 'Galvafroid' Paint by W.R. Meadows prior to prime and finish coats.; Finish System: EXT. 12-A-Gloss, Premium Grade.

.5 Steel - high heat: EXT. 15-A

3.7 INSPECTIONS

.1 Register with OPCA at the outset of the project.

.2 Provide Architect with all formulations at outset of project.

.3 Provide inspections by representative of the Ontario Painting Contractors Association (OPCA) in compliance with the terms of the Canadian Painting Contractors Association Inspection and Guarantee Program.

.4 Cooperate at all times with the paint inspection agency in the performance of their duties as required as part of the work of this Section.

.5 OPCA inspection costs to be paid from Cash Allowance.

END OF SECTION

Part 1 General

1.1 GENERAL FINISH NOTES

.1 The Material and Colour Schedule will be issued by the Consultant after tender. It shall be read in conjunction with the Drawings, Specifications, Room Schedule and Door Schedule. Colour and material references named will be based on one manufacturer, as carried by the Contractor or, in the case that no specific manufacturer is carried, based on the Consultant's choice.

.2 Approved alternative manufacturers will be acceptable only as indicated in the specifications. However, approved alternate products submitted must match the products named in the Specification to the Consultant's selection. Alternate products other than those named in the specifications will not be allowed unless previously approved by the Consultant.

.3 Consult Consultant prior to painting any surface not included in the formulae as listed.

.4 Final colour for exterior painted surfaces and prominent interior areas shall be approved on the job site by the Consultant.

.5 Paint samples: Contractor to submit paint samples for all areas required to "Match Adjacent Finish".

.6 All similar paint formulations are to be identical when dry. Variations in tone, texture or sheen shall not be accepted.

.7 Submit two 300 mm x 300 mm paint samples of each colour required for approval by the Architect.

.8 Exact locations of accent paint called for in the Material and Colour Schedule, to be issued after Contract award, not specifically identified on the drawings are to be verified on site with the Consultant.

1.2 EXTERIOR FINISH NOTES

.1 All exposed metal (doors, frames, lintels, stairs, handrails, mechanical equipment, etc.) to be painted except for prefinished metal louvres, stainless steel, and aluminum. Mechanical equipment is to be painted whether delivered to the site prepainted or not (exhaust fans, goosenecks, exhaust stacks, supports, HVAC units, HRU units, etc.). Colours to match adjacent material-generally either to match brick or tan to match flashing or siding material. Do not paint exposed white PVC pipe covers on interior. Architect will advise on jobsite which other items mentioned above, if any, do not require painting.

.2 All unfinished metal work provided by landscaping is to be painted by Section 099122-Painting.

1.3 INTERIOR FINISH NOTES

.1 All heating units, recessed convectors, grilles, pipes, access panels, hangers and miscellaneous exposed metal work (except stainless steel or anodized aluminum) to be painted to match the surfaces on which they occur unless noted otherwise on the colour schedule, prefinished in suitable colour or directed by the Consultant. If prefinished equipment is damaged, it shall be re-painted. Painting to be by formulations specified in Section 09 91 12- Painting.

.2 All interior fitments, casework, millwork, etc. to be melamine unless otherwise noted. Refer to Sections for specific requirements regarding materials, construction, finishes and hardware. Note that drawer and cupboard interiors are to be considered as exposed surfaces and will therefore be finished.

.3 Do not paint over nameplates, identification tags, etc.

.4 Make good all existing surfaces and finishes that are damaged during construction.

END OF SECTION

PART 1 - GENERAL

1.1 General Notes

1. Find the **Room Finish Schedule** on the following pages
2. **This schedule MUST be read in conjunction with a complete set of drawings** to ascertain all details and finished surfaces that may not be listed on the schedule.
3. Refer to interior elevations, plans sections and reflected ceiling plans to coordinate finish notes and extents of materials.
4. Refer to various specifications sections for different types of materials including, but not limited to:
   - .1 flooring materials
   - .2 ceiling materials
   - .3 wall treatment
5. Abbreviations Legend:

Code	Reference
ACP	Acoustic Ceiling Panel (CAPZ)
AB	Acoustic Blades
CB	Concrete Block
CLD	Ceiling Cloud Acoustic Panels
CPT	Carpet
CWT	Ceramic Wall Tile
EP	Paint - Epoxy
EWPM	Exposed Waterproof Membrane (refer to Section 09 97 24)
FAB	Fabric Acoustic Panels
GB	Gypsum Board
GWT	Glass Wall Tile
LVT	Luxury Vinyl Tile (Alternate Price)
LAP	Lay-in Acoustic Panel
MV	Masonry Veneer
P.GF	Paint - Gloss Finish
POR	Porcelain Tile
P	Paint
PWP	Perforated Wood Panels
RR	Resilient Rubber
RSTR	Rubber Stair Tread & Riser
S.CONC	Sealed Concrete (refer to Section 03 35 05.)
SF	Sheet Flooring
SF-SP	Sheet Flooring – Sport (Gym)
TEC	Tectum Panels
VCT	Vinyl Composite Tile
WS	Wood Slatwall

END OF SECTION

ROOM FINISH SCHEDULE		FLOOR		WALL		CEILING			REMARKS
NO.	NAME	FIN.	BASE	MAT'L	FIN.	MAT'L	FIN.	HEIGHT(mm)	
GROUND FLOOR									
101	VESTIBULE	POR	POR	CB	P.GF / MV	EXPOSED/ LAP		-	GYP. BD. BULKHEAD (PAINT FINISH) AND LAP CEILING AT U/S OF PRECAST OVERHANG. PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC.
102	LOBBY	POR	POR	CB	P.GF / MV/CWT	EXP. /AB	-	-	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC. AB SUSPENDED AT CEILING IN 3 GROUPINGS PER RCP - COORDINATE WITH DIFFUSERS AND LIGHTING. WS & MV APPLIED TO WALLS. REF. INT. ELEVATIONS. U/S OF AB AT 2610 AFF. GYP.BD. BULKHEAD PAINT FINISH TO U/S OF PRECAST TIGHT TO MILLWORK TOP AT VARYING HEIGHTS.
103	GENERAL OFFICE	POR/ CPT	POR/CPT	CB	P	LAP	-	2810	
104	OFFICE	CPT	CPT	CB	P	LAP	-	2810	
105	OFFICE	CPT	CPT	CB	P	LAP	-	2810	
106	OFFICE	CPT	CPT	CB	P	LAP	-	2810	
107	MEETING	CPT	CPT	CB	P	LAP	-	2810	
108	HEALTH	LVT	RR	CB	P	LAP	-	2810	
109	B/F W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
110	COPY	LVT	RR	CB	P	LAP	-	2810	
111	STAFF LOUNGE	LVT	RR	CB	P	LAP	-	2810	GYP. BULKHEAD ABOVE RANGE UPPER UNIT
112	SPRINKLER	S. CONC.	RR	CB	P	EXPOSED	P	-	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC.
113	ELECTRICAL	S.CONC	RR	CB	P	EXPOSED	P	-	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC.
115	KINDERGARTEN CLASSROOM	SF	RR	CB	P	LAP	-	2810	CWT ON CHASE WALL AT BRADLEY TYP.
116	B/F W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
117	STORAGE	POR	POR	CB	P	LAP	-	2510	
118	STORAGE	POR	POR	CB	P	LAP	-	2510	
119	B/F W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE

ROOM FINISH SCHEDULE		FLOOR		WALL		CEILING			REMARKS
NO.	NAME	FIN.	BASE	MAT'L	FIN.	MAT'L	FIN.	HEIGHT(mm)	
120	KINDERGARTEN CLASSROOM	SF	RR	CB	P	LAP	-	2810	CWT ON CHASE WALL AT BRADLEY TYP.
121	KINDERGARTEN CLASSROOM	SF	RR	CB	P	LAP	-	2810	CWT ON CHASE WALL AT BRADLEY TYP.
122	B/F W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
123	STORAGE	POR	POR	CB	P	LAP	-	2510	
124	STORAGE	POR	POR	CB	P	LAP	-	2510	
125	B/F W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
126	KINDERGARTEN CLASSROOM	SF	RR	CB	P	LAP	-	2810	CWT ON CHASE WALL AT BRADLEY TYP.
114	RECYCLING & CUSTODIAN STORAGE AREA	S.CONC	RR	CB	P	EXPOSED	P	-	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC.
127	CORRIDOR	POR	POR	CB	P.GF	LAP/CLD	-	2610	REFER TO INT. ELEVATIONS FOR ACCENT PAINT & ISP. REFER TO RCP FOR CLD
127A	VESTIBULE	POR	POR	CB	P.GF	LAP	-	2800	
128	STAIR B	POR	POR	CB	P.GF	LAP/GB	P	2610/2560	LANDINGS, TREADS, RISERS, BASE TO BE POR.
129	KINDERGARTEN CLASSROOM	SF	RR	CB	P	LAP	-	2810	CWT ON CHASE WALL AT BRADLEY TYP.
130	STORAGE	POR	POR	CB	P	LAP	-	2610	
131	W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
132	W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
133	STORAGE	POR	POR	CB	P	LAP	-	2610	
134	KINDERGARTEN CLASSROOM	SF	RR	CB	P	LAP	-	2810	CWT ON CHASE WALL AT BRADLEY TYP.
135	VESTIBULE	POR	POR	CB	P.GF	LAP	-	2610	
136	KINDERGARTEN CLASSROOM	SF	RR	CB	P	LAP	-	2810	CWT ON CHASE WALL AT BRADLEY TYP.
137	STORAGE	POR	POR	CB	P	LAP	-	2610	

ROOM FINISH SCHEDULE		FLOOR		WALL		CEILING			REMARKS
NO.	NAME	FIN.	BASE	MAT'L	FIN.	MAT'L	FIN.	HEIGHT(mm)	
138	W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
139	STORAGE	POR	POR	CB	P	LAP	-	2610	
140	W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
141	KINDERGARTEN CLASSROOM	SF	RR	CB	P	LAP	-	2810	
142	W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
143	W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
144	SENSORY	LVT	RR	CB	P	GB	-	2810	
145	SPECIAL ED. STORAGE & RESOURCES	LVT	RR	CB	P	LAP	-	2810	
146	PRIMARY LITERACY ROOM	LVT	RR	CB	P	LAP	-	2810	
146A	MACHINE ROOM	S.CONC	RR	CB	P	EXPOSED	P	-	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC.
147	WASHROOM	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE. WASHROOM PARTITIONS TO BE FULL HEIGHT. REFER TO SPECIFICATIONS.
149	CORRIDOR	POR	POR	CB	P.GF	LAP	-	2610	
150	LIFESKILLS CLASSROOM	SF	RR	CB / GWB	P	LAP	-	2810	GWB AT CHASE AT EXTERIOR WALL. CWT TO WINDOW SILLS. SEE SECTION DETAIL
151	KITCHENETTE	LVT	RR	CB / GWB	P	LAP	-	2810	GWB AT CHASE AT EXTERIOR WALL. CWT TO WINDOW SILLS. SEE SECTION DETAIL. GYP. BULKHEAD ABOVE DRYER UPPER UNIT. REFER TO ELEVATION FOR EXTENTS OF CWT.
152	UNIVERSAL TOILET ROOM	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
153	STORAGE	LVT	RR	CB	P	LAP	-	2810	
154	SENSORY	LVT	RR	CB	P	GB	P	2810	
155	LIFESKILLS CLASSROOM	SF	RR	CB / GWB	P	LAP	-	2810	GWB AT CHASE AT EXTERIOR WALL. CWT TO WINDOW SILLS. SEE SECTION DETAIL

ROOM FINISH SCHEDULE		FLOOR		WALL		CEILING			REMARKS
NO.	NAME	FIN.	BASE	MAT'L	FIN.	MAT'L	FIN.	HEIGHT(mm)	
156	CORRIDOR	POR / POP WD	POR	CB/ MV/ CWT / TEC	P.GF	LAP	-	2610	MV & TEC AT 2 STOREY AREA ADJACENT GYM. CWT AT DRINKING FOUNTAIN AREA. REF. INT. ELEVATIONS
157	STAIR A	POR	POR	CB	P.GF	LAP/GB	P	2610/2560	LANDINGS, TREADS, RISERS, BASE TO BE POR. COORDINATE SMOKE BAFFLES ON GYP. BD. CEILING AT STAIR MID-LANDINGS.
158	ELEVATOR	POR	ELEVATOR BY MANUFACTURER						
159	KITCHENETTE	POR	POR	CB	P	LAP	-	2810	GYP BULKHEAD ABOVE RANGE UPPER UNIT
160	W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
161	MUSIC ROOM / STAGE	LVT	RR	CB	P/ TEC	EXPOSED	-	-	WALL MOUNTED FABRIC ACOUSTIC PANELS (FAB). REF. INT. ELEVATION AND SPECS. PAINT JOISTS, DUCTS, SUPPORTS, CONDUITS ETC., ACOUSTIC STEEL DECK.
162A	PRACTICE ROOM	SF	RR	CB	P/ PWP	LAP	-	2810	PWP ACOUSTIC PANELS ON WALLS.
162B	PRACTICE ROOM	SF	RR	CB	P/ PWP	LAP	-	2810	PWP ACOUSTIC PANELS ON WALLS.
163	GYM STORAGE	LVT	RR	CB	P	EXPOSED	P	-	PAINT JOISTS, DUCTS, SUPPORTS, CONDUITS ETC., ACOUSTIC STEEL DECK.
164	GYMNASIUM	SF - SP	RR	CB	P	EXPOSED	P	-	PAINT JOISTS, DUCTS, SUPPORTS, CONDUITS ETC., ACOUSTIC STEEL DECK. PAINT ACCENT BANDS AS INDICATED IN INT. ELEV. SOUND BLOCK ON WALLS. VENEER ON PLY SURROUND AT STAGE
164A	GYM STORAGE	LVT	RR	CB	P	EXPOSED	P	-	PAINT STRUCTURE, DUCTS, SUPPORTS, CONDUITS ETC.,
165	BOY'S CHANGE RM	POR	POR	CB	P.GF	GB	P	2610	
166	GIRL'S CHANGE RM	POR	POR	CB	P.GF	GB	P	2610	
167	INSTRUCTOR OFFICE	LVT	RR	CB	P	LAP	-	2810	
CHILD CARE FACILITY									
401	VESTIBULE	POR	POR	CB	P.GF / MV	LAP	-	2610	
402	OFFICE	LVT	RR	CB	P	LAP	-	2810	
403	W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE

ROOM FINISH SCHEDULE		FLOOR		WALL		CEILING			REMARKS
NO.	NAME	FIN.	BASE	MAT'L	FIN.	MAT'L	FIN.	HEIGHT(mm)	
403A	STORAGE	POR	POR	CB	P	LAP	-	2810	
404	SLEEPING	SF	RR	CB	P	LAP	-	3000	
405	INFANT	SF	RR	CB	P	LAP	-	3000	
406	TODDLER	SF	RR	CB	P	LAP	-	3000	
407	B/F W/R	POR	-	CB / GB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
408	W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
409	W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
410	COT STORAGE	POR	POR	CB	P	LAP	-	2810	
411	TODDLER	SF	RR	CB	P	LAP	-	3000	
412	PRESCHOOL	SF	RR	CB	P	LAP	-	3000	
413	W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
414	W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
415	COT STORAGE	POR	POR	CB	P	LAP	-	2810	
416	PRE-SCHOOL	SF	RR	CB	P	LAP	-	2810	
417	STAFF	POR	POR	CB	P	LAP	-	2810	
418	LAUNDRY	POR	POR	CB	P	LAP	-	2810	
419	KITCHEN	POR	POR	CB	P	LAP	-	2810	GYP. BULKHEAD AT FIRE SUPPRESION SYSTEM
420	CORRIDOR	POR	POR	CB	P.GF	LAP	-	2610	
421	UTILITY	S.CONC	RR	CB	P.GF	EXPOSED	P	-	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC.
422	VESTIBULE	POR	POR	CB	P.GF	LAP	-	2610	
423	STAIR C	POR	POR	CB	P.GF	LAP/GB	P	2810/2560	LANDINGS, TREADS, RISERS, BASE TO BE POR.

ROOM FINISH SCHEDULE		FLOOR		WALL		CEILING			REMARKS
NO.	NAME	FIN.	BASE	MAT'L	FIN.	MAT'L	FIN.	HEIGHT(mm)	
SECOND FLOOR									
201	STAIR A	POR	POR	CB	P.GF	LAP/GB	P	2810/2560	LANDINGS, TREADS, RISERS, BASE TO BE POR. COORDINATE SMOKE BAFFLES ON GYP. BD. CEILING AT STAIR MID-LANDINGS.
202	ELEVATOR	POR	ELEVATOR BY MANUFACTURER						
203	CORRIDOR	LVT	RR	CB	P.GF	LAP	-	2610	
204	SEMINAR ROOM	LVT	RR	CB	P	LAP	-	2810	
205	HUB	S.CONC	RR	CB	P	EXP	-	-	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC.
206	ACAD STORAGE & STAFF RESOURCE	LVT	RR	CB	P	LAP	-	2810	
207	LAPTOP STORAGE	LVT	RR	CB	P	EXPOSED	P	-	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC.
208	STAIR D	POR	POR	CB	P.GF	GB	P	SLOPED	GYP. BD. ON FURRING AT U/S OF STAIRS
209	LIBRARY	CPT / POR	CPT / POR	CB	P/ FAB /WS	EXPOSED/ ACP	P	-	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC. FAB PANELS TO WALLS. ACP PANELS SUSPENDED AT CEILING @ 2600 ABOVE FIN 3RD FLOOR. REFER TO INTERIOR ELEVATIONS.
210	CO-LAB	LVT	RR	CB/WS	P.GF / WS	EXPOSED/ AB	P	-	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC. WOOD SLAT WALL APPLIED TO WALL (LIBRARY SIDE). AB SUSPENDED AT CEILING. U/S OF AB AT 2610. REFER TO INTERIOR ELEVATION.
210A	SEMINAR ROOM	LVT	RR	CB	P	LAP	-	2810	
211	RESOURCE ROOM	LVT	RR	CB	P	LAP	-	2810	GYP. BD. ON METAL STUD CHASE. PAINT FINISH. REFER TO PLANS.
212	SPECIAL EDUCATION CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
213	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
214	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
215	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
216	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
217	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	

ROOM FINISH SCHEDULE		FLOOR		WALL		CEILING			REMARKS
NO.	NAME	FIN.	BASE	MAT'L	FIN.	MAT'L	FIN.	HEIGHT(mm)	
218	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
219	CORRIDOR	LVT	RR	CB	P.GF	LAP	-	2610	CWT IN DF NICHE. REF. INT. ELEVS
220	STAIR B	POR	POR	CB	P.GF	LAP/GB	P	2610/2560	LANDINGS, TREADS, RISERS, BASE TO BE POR.
221	RESOURCE ROOM	LVT	RR	CB	P	LAP	-	2810	
222	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
223	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
224	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
225	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
226	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
227	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
228A	CO-LAB	LVT	RR	CB	P.GF / POR WD	GB	P	2460	REFER TO INT. ELEVATIONS
229	QUIET RM	LVT	RR	CB/CW	P.GF / POR WD	GB	P	2460	REFER TO CURTAIN WALL SCHEDULE
228B	CO-LAB	LVT	RR	CB	P.GF / POR WD	GB	P	2460	REFER TO INT. ELEVATIONS
230A	CO-LAB	LVT	RR	CB	P.GF / POR WD	GB	P	2460	REFER TO INT. ELEVATIONS
231	QUIET ROOM	LVT	RR	CB/CW	P.GF / POR WD	GB	P	2460	REFER TO CURTAIN WALL SCHEDULE
230B	CO-LAB	LVT	RR	CB	P.GF / POR WD	GB	P	2460	REFER TO INT. ELEVATIONS
232	B/F W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
233	WASHROOM	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE. WASHROOM PARTITIONS TO BE FULL HEIGHT. REFER TO SPECIFICATIONS.
235	W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
236	CUSTODIAL	S CONC	RR	CB	P	EXPOSED	P	-	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC.

ROOM FINISH SCHEDULE		FLOOR		WALL		CEILING			REMARKS
NO.	NAME	FIN.	BASE	MAT'L	FIN.	MAT'L	FIN.	HEIGHT(mm)	
237	MECHANICAL	EWPM	RR	CB	P	EXPOSED	P	-	HOUSEKEEPING CONCRETE PAD TO BE COORDINATED WITH STRUCTURAL AND MECHANICAL DRAWINGS. TYP.
238	CORRIDOR	LVT	RR	CB	P.GF	LAP	-	2610	
239	CO-LAB	LVT	RR	CB	P.GF / POR WD	GB	P	2460	REFER TO INT. ELEVATIONS
240	QUIET RM	LVT	RR	CB/CW	P.GF / POR WD	GB	P	2460	REFER TO CURTAIN WALL SCHEDULE
241	W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
242	W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
243	B/F W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
244	CO-LAB	LVT	RR	CB	P.GF / POR WD	GB	P	2460	REFER TO INT. ELEVATIONS
245	QUIET RM	LVT	RR	CB/CW	P.GF / POR WD	GB	P	2460	REFER TO CURTAIN WALL SCHEDULE
246	W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
247	W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
248	QUIET RM	LVT	RR	CB/CW	P.GF / POR WD	GB	P	2460	REFER TO CURTAIN WALL SCHEDULE
249	CO-LAB	LVT	RR	CB	P.GF / POR WD	GB	P	2460	REFER TO INT. ELEVATIONS
250	STAIR C	POR	POR	CB	P.GF	LAP/GB	P	2610/2560	LANDINGS, TREADS, RISERS, BASE TO BE POR.
251	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
252	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
253	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
254	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
255	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
256	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	

ROOM FINISH SCHEDULE		FLOOR		WALL		CEILING			REMARKS
NO.	NAME	FIN.	BASE	MAT'L	FIN.	MAT'L	FIN.	HEIGHT(mm)	
THIRD FLOOR									
301	STAIR A	POR	POR	CB	P.GF	LAP	-	2810	LANDINGS, TREADS, RISERS, BASE TO BE POR.
302	ELEVATOR	POR	ELEVATOR BY MANUFACTURER						
303	CORRIDOR	LVT	RR	CB	P.GF	LAP	-	2610	
304	CO-LAB	LVT	RR	CB	P.GF	EXPOSED/ AB	P	-	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC. REF. INT. ELEVS. REFER TO RCP. AB SUSPENDED AT CEILING. U/S OF AB AT 2610
305	LIBRARY MEZZANINE / SEMINAR	LVT	RR	CB	P	EXPOSED/ ACP	P	-	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC. ACP PANELS SUSPENDED AT CEILING @ 2610 ABOVE FIN 3RD FLOOR. REFER TO INTERIOR ELEVATIONS.
306	STAIR C	POR	POR	CB	P.GF	EXPOSED/ ACP	P	-	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC. AB PANELS ON CEILING. REFER TO INTERIOR ELEVATION.
307	CO-LAB	LVT	RR	CB	P.GF	EXPOSED/ AB	P	-	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC. REF. INT. ELEVS. REFER TO RCP. AB SUSPENDED AT CEILING. U/S OF AB AT 2610
210A	SEMINAR ROOM	LVT	RR	CB	P	LAP	-	2810	
308	RESOURCE	LVT	RR	CB	P	LAP	-	2810	
309	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
310	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
311	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
312	APPLICATIONS	LVT	RR	CB	P	EXPOSED /LAP	P	2810	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC. TEC ON WALLS. LAP WITH SPECIALTY ACCENT TRIM. ACCENT PAINT AT TOP OF WALL. CWT ON CHASE WALL AT BRADLEY. REF INT. ELEVATIONS
312A	DUST EXTRACTOR	LVT	RR	CB	P	EXPOSED	P	-	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC. ENSURE CLEAN TOOL JOINTS ON MASONRY WALLS AND NEAT CAULKING AT ROOF/WALL CONNECTIONS AND CONDUIT PENETRATIONS.
313	ART CLASSROOM	LVT	RR	CB	P	EXPOSED /LAP	P	2810	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC. LAP WITH SPECIALTY ACCENT TRIM. ACCENT PAINT AT TOP OF WALL. REF INT. ELEVATIONS

ROOM FINISH SCHEDULE		FLOOR		WALL		CEILING			REMARKS
NO.	NAME	FIN.	BASE	MAT'L	FIN.	MAT'L	FIN.	HEIGHT(mm)	
313A	ART STORAGE	LVT	RR	CB	P	EXPOSED	P	-	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC. ENSURE CLEAN TOOL JOINTS ON MASONRY WALLS AND NEAT CAULKING AT ROOF/WALL CONNECTIONS AND CONDUIT PENETRATIONS.
314	RESOURCE ROOM	LVT	RR	CB	P	LAP	-	2810	
315	CORRIDOR	LVT	RR	CB	P.GF	LAP	-	2610	
316	STAIR B	POR	POR	CB	P.GF	LAP	-	2810	LANDINGS, TREADS, RISERS, BASE TO BE POR.
317	SCIENCE	LVT	RR	CB	P	EXPOSED /LAP	P	2810	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC. LAP WITH SPECIALTY ACCENT TRIM. ACCENT PAINT AT TOP OF WALL. REF INT. ELEVATIONS
318	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
319	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
320	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
321	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
322	CLASSROOM	LVT	RR	CB	P	LAP	-	2810	
323	B/F W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
324	WASHROOM	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE. WASHROOM PARTITIONS TO BE FULL HEIGHT. REFER TO SPECIFICATIONS.
326	W/R	POR	-	CB	CWT	GB	P	2610	CWT ALL WALLS FROM FLOOR TO WHOLE TILE ABOVE CEILING LEVEL. START AT FLOOR WITH WHOLE TILE
327	CUSTODIAL	S CONC	RR	CB	P	EXPOSED	P	-	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC.
328A	CO-LAB	LVT	RR	CB	P.GF / POR WD	GB	P	2460	REFER TO INT. ELEVATIONS
328B	CO-LAB	LVT	RR	CB	P.GF / POR WD	GB	P	2460	REFER TO INT. ELEVATIONS
329	QUIET ROOM	LVT	RR	CB/CW	P.GF / POR WD	GB	P	2460	REFER TO CURTAIN WALL SCHEDULE
330A	CO-LAB	LVT	RR	CB	P.GF / POR WD	GB	P	2460	REFER TO INT. ELEVATIONS

ROOM FINISH SCHEDULE		FLOOR		WALL		CEILING			REMARKS
NO.	NAME	FIN.	BASE	MAT'L	FIN.	MAT'L	FIN.	HEIGHT(mm)	
330B	CO-LAB	LVT	RR	CB	P.GF / POR WD	GB	P	2460	REFER TO INT. ELEVATIONS
331	QUIET ROOM	LVT	RR	CB/CW	P.GF / POR WD	GB	P	2460	REFER TO CURTAIN WALL SCHEDULE
332	ELECTRICAL	S.CONC	RR	CB	P	EXPOSED	P	-	PAINT STRUCTURE INCL. MECH. DUCTS, SUPPORTS, CONDUITS ETC.
END OF SCHEDULE									

1 General

1. SUMMARY

.1 Section Includes:
  .1 Compliance with requirements of the sections of Division 1 of the specifications.
  .2 Requirements for providing the concrete floor sealer parts of the Work.

2. SUBMITTALS

.1 Product Data:
  .1 Submit manufacturer's technical data, installation instructions, maintenance instructions and general recommendations for concrete floor sealer.

.2 Samples:
  .1 Provide samples as specified in section 01 33 00 Samples, supplemented as follows:
    .1 Submit 300 mm x 300 mm square sample of concrete floor sealer applied to a smooth trowel finish concrete paver.
    .2 Submit each type of sample in triplicate.
    .3 Modify and resubmit samples as many times as may be necessary to obtain Consultant’s approval.

.3 Closeout Documents:
  .1 Provide manuals that contain the floor sealer manufacturer's maintenance and repair manual. The maintenance and repair manuals shall give specific warning of maintenance practices, Products and materials which may cause damage and disfigurement.

3. QUALITY ASSURANCE

.1 Single Source Responsibility:
  .1 Obtain concrete floor sealer Products from the same manufacturer with not less than ten (10) years of successful experience in manufacturing and installing principal materials described in this section. Contractor must have completed at least five projects of similar size and complexity. Provide secondary materials only of type and from source recommended by manufacturer of primary materials.

.2 Pre-installation Meeting:
  .1 Hold a pre-installation meeting at the Place of the Work.

.3 Mock-up:
  .1 At site, under manufacturer's supervision, apply for approval 9 m2 of each type of complete floor finish in area designated, to match submitted samples. When approved, site applied sample to be standard for appearance, texture, workmanship, etc. All Work to conform to this sample.

4. DELIVERY, STORAGE AND HANDLING

.1 Deliver Products to the Place of the Work. Check material for completeness and shipping damage prior to job start.

.2 All materials must be factory pre-weighed and pre-packaged in single, easy to manage batches to eliminate on site mixing errors. No on site weighing or volumetric measurements allowed.

.3 Store Products in a dry, enclosed area protected from exposure to moisture. Temperature of storage area shall be maintained between 16° and 32°C.

5. PROJECT CONDITIONS

.1 Environmental Requirements:
- .1 Concrete substrate must be properly cured for a minimum of 30 days.

.2 Temperature:
- .1 Maintain ambient temperature of not less than 18 deg.C/65 deg.F and a floor temperature of not less than 16 deg.C/60 deg.F from 7 days before installation to at least 48 hours after completion of work and maintain relative humidity not higher than 40% during same period.

.3 Moisture:
- .1 Ensure substrate is within moisture limits prescribed by concrete floor sealer manufacturer.

.4 Protection:
- .1 Areas to accept concrete floor sealer shall be free of other trades during, and for a period of 24 hours, after floor installation.

.5 Manufacturer’s Representative:
- .1 Manufacturer's representative must be on job site at start of installation.

6. WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate packaging material for recycling in accordance with the Waste Management Plan.

.2 Remove from the Place of the Work and dispose of packaging materials at appropriate recycling facilities.

.3 Dispose of unused finish and adhesive materials at official hazardous material collections site.

7. WARRANTY

.1 Furnish a single, written warranty covering both material and workmanship for a period of three (3) full years from date of Substantial Performance of the Work. The Warranty shall cover defects such as cracking, delamination under impact and under heavy loaded carts and under thermal shock, and excessive wear.

2 Products

1. MATERIALS

.1 Manufacturers:
  .1 The specifications are based on Products manufactured by Sika Canada Inc. Products by Duochem Inc, division of Corrosion Services, CPD Construction Products, Niagara Protective Coatings, Selby/Ucrete,. Stonhard Ltd. Euclid, Mapei or other approved manufacture may be approved on condition of being able to furnish evidence of equivalency or better to the specified Products.

.2 Concrete Floor Sealer System (EWPM)
  .1 General:
    .1 Two-component, clear, water based mat epoxy coating, Sika MRW roller applied two coat system on a sealed/primed substrate.
  .2 Characteristics
    .1 Seamless and very easy to clean.
    .2 Abrasion and chemical resistant.
    .3 No odour typical of solvent based coatings
  .3 Minimum Technical requirements
    .1 Solids content: 100% by weight, 100% by volume.
    .2 Pot life90 mins.
    .3 Application method: Brush, or roller.
    .4 Number of coats: Two.
    .5 Dry film thickness per coat: as per manufacturer's instructions
    .6 Cleaning solvent: Warm water.
    .7 Cure time: Touch dry: 4-5 hours.
      .1 Hard dry: 16-18 hours.
      .2 Complete cure: 7 days.
    .8 Recoat time: 16 hours.
  .4 Minimum Physical properties
    .1 Abrasion resistance: 175 mg loss per ASTM D 4060 CS-17 wheels 1000 revolutions 1000 gr/wheel.
    .2 Tensile strength 2.1 MPa per ASTM D 2370 (2.8 mils D.F.T.)
  .5 Primer: as recommended by manufacturer.

3 Execution

1. WORKMANSHIP

.1 General
  .1 Handle, mix and apply Products as per the Product manufacturer's printed surface preparation and application specifications, and as specified in this specification section 09 97 24.
  .2 Application tools and equipment shall be as per the Product manufacturer's printed requirements.

2. **PREPARATION**

.1 Prepare concrete by sanding smooth and for removal of bond inhibiting substances.
.2 Apply as per manufacturer's instructions.

3. **APPLICATION**

.1 Apply concrete sealer as indicated.
.2 Rolling direction of each coat shall be the same.

4. **FIELD QUALITY CONTROL**

.1 The Owner reserves the right to invoke the following material testing procedure at any time, and any number of times during period of flooring application.

.2 The Owner may engage service of an independent testing laboratory to sample materials being used on the jobsite. Samples of material will be taken, identified and sealed, and certified in presence of Contractor.

.3 Testing laboratory will perform tests for any of characteristics specified, using applicable testing procedures referenced herein, or if none referenced, in manufacturer's product data.

.4 If test results show materials being used do not comply with specified requirements, the Contractor may be directed by Owner to stop work; remove non-complying materials; pay for testing; reapply flooring materials to properly prepared surfaces which had previously been coated with unacceptable materials.

5. **CURING, PROTECTION AND CLEANING**

.1 Cure concrete floor sealing materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application and prior to completion of curing process. Close area of application for a minimum of 24 hours.

.2 Protect concrete floor sealing from damage and wear during construction operation. Where temporary covering is required for this purpose, comply with manufacturer's recommendations for protective materials and method of application. Contractor is responsible for protection and cleaning of surfaces after final coats.

.3 Cleaning: Remove temporary covering and clean flooring just prior to final inspection. Use cleaning materials and procedures recommended by the concrete floor sealer manufacturer.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures.

1.2 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Shop Drawings:

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.3 Samples:

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.4 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site packaging materials at appropriate recycling facilities.

.2 Dispose of recyclable packaging material in appropriate on-site bin for recycling.

Part 2 Products

2.1 MATERIALS

.1 Tack Boards (TB) - As supplied by CPE Design Solutions Inc, ASI or Global School Products Inc.:

.1 **NATURAL CORK TACKBOARDS** 12.7mm (1/2”) factory prelaminated consisting of 6mm (1/4”) thick a.s.p. natural cork laminated to 6mm (1/4”) particle board or masonite substrate under mechanical pressure in maximum panel sizes of 1219mm x 2438mm (4’0” x 8’0”). Bonding of materials by a waterproof adhesive that will not delaminate or rupture at the contact surfaces.

.2 All tackboards shall meet the minimum requirements of the applicable building code and/or Ontario Fire Marshall’s office.

.4 Shop finish rear faces of tackboard units being installed in horizontal sliding trim to a matte black finish.

.5 Refer to Construction Drawings for locations & sizes required.

.6 Tackboard Mounting Heights: Coordinate with interior elevations.

- Typical (Staff Areas / Rooms / Corridors): 1000mm AFF

- Childcare Classrooms: 1000mm AFF
- Kindergarten Classrooms: Installed vertical. Refer to Interior Elevations.
- Typical Ground Floor Classrooms (Primary Literacy Room and Life Skills Classroom): 800mm AFF
- Second Floor Classrooms: 800mm AFF
- Third Floor Classrooms: 1000mm AFF

.2 Linoleum Bulletin Boards (BB) - As manufactured by FORBO.

.1 FORBO BULLETIN BOARDS (BB) 12.7mm (1/2") thick panels cut to sizes as indicated on drawings.

.2 All bulletin boards shall meet the minimum requirements of the applicable building code and/or Ontario Fire Marshall's office.

.3 Perimeter Trim: extruded aluminum trim for all tackboards and also vertical jambs of chalkboards.

.4 Refer to Drawings for locations & sizes required.

.5 Linseed oil, Forbo Tackboard, surfacing to also be applied to include on inside of all display cases by Section 06 40 00.

.3 White Boards (WB**)** - "Vit-Rite: Rite on, Wipe off" model as supplied by CPE Design Solutions Inc, ASI or Global School Products Inc.:

.1 WHITEBOARD – VITRITE

by architectural school products Ltd., Mississauga, Ontario, consisting of a sandwich type construction composed of face panel, core and balancing rear sheet, in maximum panel sizes of 1524mm (5'0") x 4877mm (16'0") with no joints.

.2 Face Panel – 22 gauge high quality enameling steel base with a porcelain enamel writing surface used to a ground coat of not less than 0.076mm (.003") nor more than 0.127mm (.005") after firing at temperatures between 700°C (1300°F) and 800°C (1500°F) in accordance with the Porcelain Enamel Institute Standards PEI S104 as regards to durability, smoothness of texture, colour continuity and a gloss factor of 6 – 8 as measured by 45° glossometer.

.3 Core – 11.1mm (7/16") impregnated sound absorbing fibreboard laminated under heat and pressure to face panel and back sheet utilizing adhesives that ensure rupturing of the component materials before failure of joint contact surfaces.

.4 Back up balancing sheet – 28 gauge zinc coated stretcher leveled steel in one unjointed section. Overall thickness of Whiteboard lamination shall be 12.7mm (1/2").

.5 Colour: White

.6 Refer to Construction Drawings for locations & sizes required.

.7 Manufacturer's Warranty: warrant White Boards for a period of 10 years against defects due to normal usage and wear.

.8 All whiteboards to have a magnetic surface.

.9 Kindergarten classrooms to not have marker trays.

.10 All connecting whiteboards to have splice joints. Refer to interior elevations.

.11 White Board Mounting Heights: Coordinate with interior elevations.

- Typical (Staff Areas / Rooms / Corridors): 1000mm AFF
- Childcare Classrooms: 1000mm AFF
- Kindergarten Classrooms: Installed vertical. Refer to Interior Elevations.
- Typical Ground Floor Classrooms (Primary Literacy Room and Life Skills Classroom): 800mm AFF
- Second Floor Classrooms: 800mm AFF
- Third Floor Classrooms: 1000mm AFF

.4 White Board Music Lines: Provide black epoxy painted music lines on whiteboard in Music Room. Quantity and Length shown on Interior Elevations.

.5 White Board, Tack Board and Bulletin Board Fixed Trim: Series 200 to match details and profiles shown on architectural drawings. Aluminum to be 6063-T5 alloy with 0.051 mm thick clear anodized satin finish, free from extruding draw marks and surface scratches; components as follows:

.1 Perimeter Trim: extruded aluminum trim for all tackboards and also vertical jambs of chalkboards; e.g. No. 205.

.2 Divider Bar: extruded aluminum trim to adjacent chalkboard/tackboard panels and adjacent tackboard panels of elevations greater then 2,440 mm; e.g. No. 207.

.3 Marker Tray: extruded aluminum triangular box section for chalkboard elevation only complete with contour fitting end castings; 102 mm projection from finished wall; e.g. No. 212.

.4 Marker Tray Over Millwork: extruded aluminum trims section for elevations mounted directly on or above millwork; 70 mm projection from finished wall; e.g. No. 264.

.5 Refer to Construction Drawings for locations & sizes required.

.6 Back Painted Glass Writing Surface (GWS)

.1 Frameless, seamless, sized to fit entire area noted on drawings within the Co-Lab spaces. Concealed mounting.

.2 Tempered glass at ¼" low iron UltraClearTM

.3 Provide magnetic backing (to receive magnetics)

.4 Backpainted colour to be selected by architect from full range of colours. Allow for four (4) colours.

.5 Acceptable manufacturers: ASI

.7 Lockers, Single Tier: 305 wide x 380 deep x 1828 high Fabricate from cold rolled steel, with plastic bottom shelf (floor), min. Unless noted; lockers will mount on 100 mm concrete base.

.1 Lockers must be fabricated with the following attributes:

1. 14 Gauge Doors
2. 16 Gauge Interior Shelves
3. 16 Gauge Slope/Fillers/End Panels
4. 20 Gauge Sides/Backs
5. Solid Plastic Bottom Shelves

6. ASTM D3363 - Ultra Anti-Graffiti Coating Paint with 4H Rating

.2 Locker Count: refer to drawings for quantity of lockers required for entire school

.3 Continuous piano hinge, recessed extruded aluminum lock pocket, metal hasp with no moving part for padlock, individual number plate,

.4 Inside Equipment: 2 metal shelves (one near top and one near mid height), 2 hooks (one on side wall near top and one on side wall at underside of mid height shelf.)

.5 Sloping Tops: pre-finished steel; c/w clips and other attachment devices.

.6 Shelves shall have rolled fronts and rear flanges. Provide 25 mm air space between shelf and back of locker for ventilation. Install shelves at height to be determined by Architect at shop drawing stage.

.7 Colours: Allow for 3 colours: single standard colour for the frame with contrasting doors in two custom colours to later selection by Architect.

.8 Lockers to be installed on a 100 mm concrete base.

.9 Acceptable products: providing they meet or exceed all details of this specification as manufactured by:

.1 Hadrian Manufacturing Inc

.2 Shanahan Manufacturing Ltd

.3 North American Steel Equipment Co. Ltd

.4 Buddsteel Architectural Products Ltd

.5 Decor Tri-Lo Titan II by General Storage Systems

.6 Emperor (modified) by Hadrian.

.7 SML Deluxe (modified) by Shanahan's

.8 'Nova' Lockers by Lincora Canada Inc., as distributed by SP Stalls & Storage, Mount Brydges, ON (519) 264-1494

.9 'Atlas' Lockers by Anthony Steel Manu. Ltd., Brampton, ON (905) 791-9616

.10 ASI Group

.11 Y&M Manufacturing

.8 Expansion Joint Sealer**:**

.1 Seismic Colorseal by Emseal to be installed where shown on Construction Drawings. Colour to be selected by Consultant.

.9 Safety Release Coat Hook (BH):

.1 Refer to Sections 06 40 00 where specified for Childcare and Kindergarten Cubbies.

.2 This section to supply safety hooks for all other locations, such as barrier free washroom locations.

.3 High strength polycarbonate coat hook with safety release weight under downward pressure to not exceed 12 kg (26 lbs.)

.4 Supply all suitable mounting hardware for a vandal proof, secure installation using stainless steel sleeve bolts on partition doors or panels. Do not supply standard Robertson or Phillips head screws.

.5 Colours:

.1 Allow for two (3) colours from Manufacturers standard line

.6 Acceptable Materials: “HenkelHook” as manufactured/distributed by Henkel Diversified Inc, London ON, tel (519) 641-5872.

.7 Locations:

.1 Coat hooks to be mounted in ALL barrier free washrooms & Change Rooms and shall be safety release style and mounted on the side wall.

.2 Childcare and Kindergarten Cubbie Areas & Teachers Closets to be provided by Section 06 40 00.

.8 Samples: submit test data and samples for review as specified in Section 013330 – Submittal Procedures.

.10 Flagpole - Stepped aluminum flagpole: Model No. TS 30 as manufactured by Daf Indal Ltd.

.1 Cone tapered models meeting or exceeding these criteria will ne accepted as alternate products.

.2 minimum 9150 mm high (30'), complete with tilt anchor base, base cover, and concrete anchors.

.3 Shaft to be fitted with an internal #12 braided nylon halyard revolving truck system, stepped shaft aluminum alloy 6063-T6 (butt 127 o.d., butt wall 4.8 mm).

.4 Ball -152 mm in diameter, color ball: clear anodized.

.5 Finish of pole and accessories: Clear anodized.

.6 Base cover spun aluminum alloy 6061, 254 mm in diameter, wall thickness of 2.3 mm.

.7 Acceptable Alternates: John Ewing or All-Canadian Flagpole Co..

.8 Quantity: 1; Location: as shown on Drawing SP.1 and AD 212.

.11 Electric Projector Screen (Gym/Stage):

.1 Projection Screen: 110V power supply; dual motors, one motor operating the closure door and the second motor operating the projection screen; with remote control and switched operation; sizes and surfaces as indicated below; Cosmopolitan Electrol by Da-Lite Screens Inc.

.2 Projector Screen Components:

.1 Gym Screen: Wall Mounted; 2670mm x 3560mm size viewing surface, heavy duty matte white; 450mm block top skirt, black masking borders; 10mm OD tubular steel bottom slat, with baked enamel finish and plastic end caps.

.2 Enclosure: flat back design, rectangular steel case, baked enamel finish; for wall mount application; with fully automatic ceiling closure doors and in-the-roller motor mounting system; one required for each screen.

.3 Remote Control System: dual motor low voltage control system with three-button wireless radio frequency remote receiver and transmitter; separate UP, DOWN, and STOP commands, complete with control module, three-button keyed wall switch, box, cover plate and three button control radio frequency transmitter with receiver; one required for each screen.

.3 Location: 1 required at Gym Stage.

.4 Shop Drawings: Submit shop drawings in accordance with Section 01300 Submittals.

.12 Wire Storage System:

.1 Welded wire mesh partition and swing doors as manufactured by Spinnaker.

.2 provide a complete assembly, complete with hinges and locking hasps; for application room wood storage compartment.

.3 Refer to Detail AD 510.

.13 Bicycle Racks: Model MBR400-7-S as manufactured by Maglin or approved alt. by Belson or Landscape Structures Inc.

.1 Prefinished powdercoat colour: Black.
.2 Each unit to be supplied with anchor assembly for individual anchoring to concrete footing.
.3 Refer to Site Plan for detail.
.4 Coordinate installation with asphalt paving installation.
.5 Quantity: Refer to Site Plan for location and quantity.

.14 Change Table with integrated sink:

.1 Change table with sink, manufactured by Totmate.
.2 Model 8543A, Maple finish, right handed.
.3 Include pull-out toddler walk-up.
.4 Location & Quantity: Refer to drawings (Childcare and Child & Family areas).

.15 Coat Rod and Hooks:

.1 Student line Model STL 75 as manufactured by Architectural School Products, Mississauga. Mounted to underside of cubbies. Refer to AD drawings for locations. Mount directly to underside of upper cubbies.

.16 Stainless Steel Worktables:

.1 Rear Upturn, Stainless Steel Tubular Base
Tabletop: 1 5/8" diameter 180 degrees rolled edge on front. Ends are turned down 90 degrees providing for flush installations when required. 16 gauge 300 series polished stainless steel. Crossbracing 1 1/4" diameter: Heavy gauge type 304 stainless steel. Aluminum castings join crossbraces, legs and rear brace. Legs 1 5/8" diameter: Units 96" to 120" long come with six legs; Units 132" and 144" come with eight legs. Patented uni-lok gusset system (patent # 5,165,349): gussets are recessed into hat channel, reducing lateral movement. Heavy gauge stainless steel. Galvanized gussets. 1" adjustable stainless steel feet
.2 By Eagle Group or alternate meeting or exceeding these specifications.
.3 Quantity 1
.4 Room Kitchen 419
.5 Dimensions: Refer to drawings
to suit W x H x D of adjacent millwork countertop
.6 Detailed shop drawings to be provided prior to fabrication



.17 Science Room Moveable Tables (ST):

.1 Provide moveable science room tables with chemical resistant top.
.2 Diversified Maple Lab Table - Epoxy Resin Top
.3 Size to be 24” wide x 60” long by 36” high.
.4 Units may be fabricated by millwork contractor, or purchased.

.5 Model #DBT-2460EH https://www.hertzfurniture.com/Lab-Tables--Diversified-Maple-Lab-Table---Epoxy-Resin-Top--12849--mo.html



.6 Manufacturer: Diversified Woodcrafts
.7 Weight: 150 lbs.
.8 Adjustable Glides Leg
.9 Finish: Acrylic Finish
.10 Leg Specs: Solid Wood, 2.25"square
.11 Seating Capacity: 2
.12 Tabletop Core Material: Epoxy
.13 Tabletop Edge: Self Edge
.14 Tabletop Support: Solid-Wood Apron
.15 Tabletop Surface Material: Solid Epoxy
.16 Tabletop Thickness: 1"
.17 Tabletop Weight Capacity: 500 Lbs. Evenly Distributed
.18 Warranty: Limited Lifetime
.19 Location: Science Room. Designation 'ST'.

.18 Exterior Semi-Recessed (Buried) Garbage Container

.1 EarthBin front loader truck collected, semi-recessed Garbage containers as manufactured by EarthBin,
.2 Capacity: 6.5 cubic yard (5m3) each.
.3 Lids:
.1 Standard Garbage, square opening lid for one unit. Black.
.2 Large Carboard Slot for second unit. Blue.
.4 Framing panel colour: cedar
.5 Include excavation, supply and install of units.
.6 Location: 2 units; refer to Site Drawing.
.7 Acceptable alternates meeting or exceeding the above specifications. Must be front loader truck collected units.
.8 Refer to drawing 3/SP2.

.19 Smoke baffles and Draft Stops:
.1 Smoke Baffle / Draft stop shoe by CR Laurence:
.1 Catalog Number: B5B10
.2 Finish: Mill Aluminium
.3 Refer to Glazing Section for glass required.
.4 Custom Length to suit locations required c/w end caps.
.5 Include all accessories required to fasten to gypsum board on steel stud bulkhead.
.2 Locations: Stair A at u/s of landing at ground and second floors.
.3 Construction shall conform to NFPA 13.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 INSTALLATION

.1 Install where indicated on drawings and as per manufacturer’s instructions.

3.3 DEMONSTRATION AND TRAINING

.1 Provide demonstration of operation to the Owner and his representatives.

.2 Provide training for operation, maintenance and repairs.

3.4 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Clean surfaces after installation using manufacturer's recommended cleaning procedures.

.3 Clean aluminum with damp rag and approved non-abrasive cleaner.

.4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 RELATED WORK

.1 Section 01 33 00 - Submittal Procedures.

1.2 WORK INCLUDED

.1 Supply and install exterior signage as specified and listed. All signage may not be shown on the drawings.

.2 Supervision, inspection and checking of signage as installed on site.

1.3 REFERENCES

.1 All fire route signage to be fabricated in strict accordance with the signage standard of the Municipality where the site is located. All other exterior signage such as stop signs, one-way signs, do not enter signs, etc., shall be to M.O.T. standard.

.2 Aluminum Association, Inc. (AA)

.1 Designation System for Aluminum Finishes -[1997].

.3 American Society for Testing and Materials (ASTM)

.1 ASTM A653/A653M-[01a], Standard Specification for Steel Sheet, Zinc-Coated, (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM B32-[00], Standard Specification for Solder Metal.

.3 ASTM B456-[95], Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.

.4 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.81-[M90], Air Drying and Baking Alkyd Primer for Vehicles and Equipment.

.2 CAN/CGSB-1.88-[92], Gloss Alkyd Enamel, Air Drying and Baking.

.3 CGSB 31-GP-107Ma-[90], Non-Inhibited Phosphoric Acid Base Metal Conditioner and Rust Remover.

.4 CGSB 41-GP-6M-[1983], Sheets, Thermosetting Polyester Plastics, Glass Fibre Reinforced. Reaffirmation of September 1976.

.5 Canadian Standards Association (CSA)

.1 CAN/CSA-G164-[M92(R1998)], Hot Dip Galvanizing of Irregularly Shaped Articles.

.2 CSAW47.2-[M1987(R1998)], Certification of Companies for Fusion Welding of Aluminum.

.3 CSA W59-[M1989(R2001)], Welded Steel Construction (Metal Arc Welding) (Imperial Version).

.4 CSA W59.2-[M1991(R1998)], Welded Aluminum Construction.

.6 Canadian Sheet Steel Building Institute (CSSBI)

.1 Sheet Steel Facts # 6, Metallic Coated Sheet Steel for Structural Building Products-[July 1995].

.7 The Master Painters Institute (MPI)

.1 Architectural Painting Specification Manual - [March 1998].

1.4 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

1.5 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

1.6 QUALITY ASSURANCE

.1 Welding Certification in accordance with CSA W47.2.

1.7 SIGNAGE LIST

.1 A full Signage list is listed below and shown on site plan drawing.

1.8 GUARANTEE

.1 Submit a written Guarantee to the Board, that all work of this Tender shall be free from defects in workmanship and materials for a minimum period of one (1) year from date of approved completion.

.2 All defects (excluding vandalism) in materials and workmanship that become apparent during the Guarantee period shall be made good or material replaced at no cost to the Board.

1.9 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal packaging material for recycling.

.3 Place materials defined as hazardous or toxic in designated containers.

.4 Divert unused materials from landfill to metal recycling facility as approved by Consultant.

.5 Unused paint or coating material must be disposed of at an official hazardous material collections site as approved by Consultant.

.6 Fold up metal banding, flatten and place in designated area for recycling.

.7 Do not dispose of unused paint material into sewer system, into streams, lakes, onto ground or in any other location where it will pose health or environmental hazard.

Part 2 Products

2.1 MATERIALS

.1 Aluminum extrusions: to designation AA 6063-T5 and AA 6006-T5.

.2 Sheet aluminum: anodizing quality.

.3 Prefinished sheet steel: conforming to CSSBI - Sheet Steel Facts #6: for normal environment: in colours selected from manufacturer's standard range.

.4 Galvanized steel sheet to ASTM A653/A653M: Commercial Quality.

.5 Welding materials: to CSA W59.

.6 Solder: to ASTM B32, Type [Sn50].

.7 Self-stick foam tape: 2.4 mm thick, [352.4] Kg/m^3 density polyurethane open-cell foam tape for sign purposes, with synthetic self-stick adhesive on both sides. Width: to suit sign sizes.

.8 Acrylic top-coat: clear, non-yellowing, exterior grade, satin finish, acrylic polyester resin protective coating, compatible with metal surface of type recommended by sheet manufacturer.

.9 Bituminous paint: to MPI [EXT 5.4D].

.10 Mounting Hardware:

.1 Furnish all signage with the necessary screws, bolts, and other fasteners of suitable size and type, to anchor signage into position for long life under hard use.

.2 Exterior Fire route and School signs shall be permanently mounted on a strong flanged hot dipped rolled high tensile galvanized steel U-Channel posts. Theses posts are to have 10mm (3/8") dia. Holes spaced 25mm (1") on centre for easy sign mounting. Signs to be mounted to flanged side of post. All exterior signs are to come completed with galvanized steel mounting hardware, necessary to properly mount sign for exterior use. Fire route sign FR-6 when required is to be installed at a 45 degree angle in relation to the edge of the traveled portion of the designated fire route facing approaching traffic. Fire route signs FR-7 and FR-8 when required are to be installed at a 90 degree angle in relation to the edge of the traveled portion of the designated fire route, in such manner as to allow both sign faces to be visible to traffic, or as listed otherwise. Fire route sign FR-9 when required is to be installed at a 90-degree angle to the edge of the traveled portion of the designated fire route. Not withstanding what is stated here in 2.1.2, all signage must comply with the latest by-laws in the Municipalities applicable to the work.

.11 School Name, Address & School Board Logo (**this item only by Cash Allowance**):

.1 This item only by Cash Allowances. Refer to Section 01 11 00.

.12 U-Posts:

.1 Hot dipped rolled light temple galvanized steel
.2 Type: Flanged, 10 mm 0 holes @ 25 mm.o.c.
.3 Height: 3658 mm overall

.13 Free Standing Posts:

.1 Material: 25 mm x 25 mm galvanized steel hollow sections, primed + 2 coats exterior grade enamel
.2 Base: 100lb weight concrete base.
.3 Modified height: bottom of base to top of port: 15 25 mm

.14 Exterior Traffic Signs:

.1 Material: Aluminum
.2 Letters: Refer to style detail
.3 Mounting height: 2.0 to bottom of sign

2.2 SIGNAGE LIST

.1 All styles, quantities and location to be confirmed prior to ordering.

.2 "Stop" Signs:

.1 600 m x 600 m, red background, white lettering, white border.
.2 Quantity: refer to drawing SP-1.

.3 "Do Not Enter" Signs:

.1 600mm x 750mm, background, red circle, white bar, black border and lettering
.2 Quantity: refer to drawing SP-1.

.4 "One Way" Signs (arrow left):

.1 300 mm x 900 mm, black background, white arrow and border, black listing
.2 Quantity: refer to drawing SP-1.

.5 "Fire Department Connection" Signs:

.1 300mm x 450 mm, red background, white letters and borders
.2 1 required
.3 Mount on building at Fire Department Connection

.6 "Fire Route" Signs:

.1 As per Municipal standards
.2 Allow for supply and installation of 10 signs
.3 6 signs mounted on U-posts driven through sod and 4 mounted to building.

.7 "Handicapped" Signs:

.1 300 mm x 600mm white background, black border and letters, blue handicapped symbols and border, red circle and diagonal bar
.2 Quantity: refer to drawing SP-1.

.8 "No Left Turn" Signs:

.1 600mm x 600mm, white background red circle with slash, black arrow.

.2 Quantity: refer to drawing SP-1.

.9 "Keep Right" Signs:

.1 450mm x 300mm, white background, black arrow & lettering.

.2 Quantity: refer to drawing SP-1.

.10 "School Bus Loading Zone" Signs:

.1 450mm x 300mm, white background black arrow & lettering.

.2 Quantity: refer to drawing SP-1.

Part 3 Execution

3.1 INSTALLATION

.1 Erect and secure signs plumb and level at elevations as indicated.

.2 Comply with sign manufacturer's installation instructions and approved shop drawings.

.3 Mechanical attachment:

.1 To concrete or solid masonry use lag screws and expansion bolts or screws and fibre plugs, as appropriate for stresses involved.

.2 To hollow masonry use toggle bolts or equivalent.

.3 To steel use bolts with nut and lock washers, self-tapping screws.

.1 Do [steel welding to CSA W59] [and] [aluminum welding to CSA W59.2]. Finish exposed welds flush and smooth.

.4 To wood use screws.

.5 Secure into framing members behind stud walls or above ceilings.

.6 Mechanical fasteners on exterior to be non-staining, non-ferrous type.

.7 Fabricate special fasteners as required for installation conditions.

.8 Mechanical fasteners and methods of attachment subject to Engineer's approval. Obtain Engineer's approval before fixing to structural steel.

.4 Adhesive attachment:

.1 Use self-stick adhesive foam tape to manufacturer's instructions to adequately fix sign and prevent "rocking". Keep tape maximum 1.6mm from edges.

3.2 CLEANING

.1 Leave signs clean. Remove debris from interior of sign boxes.

.2 Touch up any damaged finishes.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 05 50 00 - Metal Fabrications: Suspended channel support for ceiling hung partitions.

.3 Section 10 28 10 - Toilet And Bath Accessories.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.1 ASTM A167-[99], Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-71.20-[M88], Adhesive, Contact, Brushable.

.3 Canadian Standards Association (CSA)

.1 CAN/CSA-B651-[95(R2001)], Barrier-Free Design.

1.3 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Indicate fabrication details, plans, elevations, hardware, and installation details.

1.4 SAMPLES

.1 Submit samples of finish hardware and phenolic plastic in selected colour and finish in accordance with Section 01 33 00 - Submittal Procedures, for approval of Consultant.

1.5 STORAGE AND PROTECTION

.1 Protect finished laminated plastic surfaces during shipment and installation. Do not remove until immediately prior to final inspection.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal [paper] [plastic] [polystyrene] [corrugated cardboard] packaging material [in appropriate on-site bins] for recycling.

.3 Place materials defined as hazardous or toxic in designated containers.

.4 Divert unused metal materials from landfill to metal recycling facility as approved by Consultant.

.5 Unused sealant and adhesive material must be disposed of at an official hazardous material collections site as approved by Consultant.

.6 Fold up metal banding, flatten and place in designated area for recycling.

.7 Do not dispose of unused sealant and adhesive material into sewer system, into streams, lakes, onto ground or in any other location where it will pose health or environmental hazard.

Part 2 Products

2.1 MATERIALS

.1 Doors, Panels and Pilasters:

- .1 Phenolic or high density polyethylene (HDPE) fabricated from polymer resins compounded under high pressure, forming single thickness panel.
- .2 Waterproof and non-absorbent, with anti-graffiti, self-lubricating surface, resistant to marks by pens, pencils, markers, and other writing instruments.
- .3 Thickness: 1 inch (25 mm) with 1/4 inch (6 mm) radiused edges. One edge of pilaster and transom panels to be ship lapped.
- .4 Panel above door must be translucent (frosted) resin or acrylic type material, to allow emergency strobe light transmission through into washroom stall. Manufacturer must be able to provide this translucent panel.
- .5 Fire Rating: Tested in accordance too NFPA 286: Pass.
- .6 Fire Rating: Tested to meet ASTM E 84: Class B flame spread/smoke developed rating.
- .7 Standard Collection, Does not meet NFPA 286 or ASTM E84.
- .8 Aluminum and Aluminum Extrusions: ASTM B221, 6463-T5 alloy and temper.
- .9 Stainless Steel: ASTM A167, Type 304.

2.2 TOILET COMPARTMENT SYSTEM

.1 Basis of Design: ARIA Toilet Partitions as manufactured by and supplied by Scranton Products.

- .1 Style: **Full height** floor mounted overhead braced toilet compartments.
- .2 Sightline-free, gap-free interlocking doors and stiles design.
- .3 Acceptable products: ARIA by Scranton Products, BRIO Series by EAD Design and EURO - Highrise by Bradley. Must provide translucent panel above door for emergency strobe light transmission into stall.

.2 System Construction:

- .1 System Specified Height: Full height floor to ceiling (no gaps) as confirmed on site.
- .2 Doors: **Full height floor to ceiling, mounted 1/2 inch (13 mm) maximum** above finished floor (to accommodate slopes in floor only) at doors only. All other panels to be floor to ceiling with no gaps.

.3 Dividing Panels: **Full height floor to ceiling, mounted 1/2 inch (13 mm) maximum** above finished floor (to accommodate slopes in floor only) at doors only. All other panels to be floor to ceiling with no gaps.

.4 Two panels stacked and secured with 3 dowels ensuring proper alignment totaling the system specified height.

.1 Trim: Application to hide seam gap between dividing panels.

.5 Pilasters: System specified height, shoeless system secured with 3/4 inch (19 mm) long stainless steel tamper resistant Torx head screws and angled wall brackets.

.6 Transom Panel: Height required to accommodate specified system height with ship lap on one edge. Mounted with four mending plates using 3/4 inch (19 mm) long stainless steel tamper resistant Torx head screws.

.7 Wall Brackets: 54 inches (1372 mm) long, heavy-duty aluminum with bright dip anodized finish. Mounts to pilasters, panels and walls with 3/4 inch (19 mm) long stainless steel tamper resistant Torx head screws.

.3 System Design:

.1 Door Design: Traditional Series; Model 1000 standard flat panel door, side panels and pilasters.

.2 Door Design: As determined by the Architect from Manufacturer's selection.

.3 Side Panel Design: Plain (standard).

.4 Color: As determined by the Architect from Manufacturer's selection.

.5 Trim: As determined by the Architect from Manufacturer's selection.

.6 Trim Color: As determined by the Architect from Manufacturer's selection.

2.3 HARDWARE:

.1 Hinges: Helix style 78 inches (1981 mm) edge mounted continuous hinge.

.1 Stainless steel: 0.074 inch (1.88 mm) thick 304-2B stainless steel using a stainless-steel pin in 0.234 inch (5.94 mm) diameter.

.2 Closing degree: Set hinges so that doors stay open min. 15 degrees and max. 30 degrees when compartment is not in use.

.2 Occupancy Indicator Latch and Housing: Satin stainless-steel showing green and red occupancy indicators.

.1 Latch housing: Satin stainless steel.

.2 Slide bolt and button: Satin stainless steel.

.3 Door Pulls: Satin stainless steel.

.3 Coat Hook and Bumper:

.1 Combination type, chrome plated Zamak.

.2 Equip outswing handicapped doors with second door pull and door stop.

.4 Hardware:

.1 Stainless steel surface-mounted slide latch and keeper.

.2 Continuous stainless steel spring-loaded hinge.
.3 Continuous stainless steel brackets.
.4 Door pull: Barrier-free type suited for out-swinging doors stainless steel.

2.4 MATERIAL DESCRIPTION

.1 1.6 mm high pressure laminate facings and edging on phenolic core, and complete with stainless steel hardware and fittings.

.2 Doors, pilasters and partitions to be min, 25 mm thick.

.3 headrails to be 24 x 41 anodized aluminum anti-grip type with sloped top configured and installed to prevent swinging or concealment of small items.

.4 pilasters to have 3.2 mm core and integral leveling device concealed by 100 mm high stainless steel shoe.

.5 all doors to have rubber tipped bumper and slide bar latch, combination door stop and keeper, all attached with stainless steel sleeve bolts with theft proof heads.

.6 coat hooks to be provided as noted above.

.7 provide stops on top and bottom of all doors

.8 All partitions to be anchored to wall by means of stainless steel channel bracket for full height of partition.

Acceptable Materials: as manufactured by Scranton Products and other companies providing full height partitions meeting or exceeding these exact specifications if reviewed and approved by the Consultant during the tender period.

2.5 COMPONENTS

.1 Safety Release Coat Hook (SCH):

2 High strength polycarbonate coat hook with safety release weight under downward pressure to not exceed 12 kg (26 lbs.)

.3 Supply all suitable mounting hardware for a vandal proof, secure installation using stainless steel sleeve bolts on partition doors or panels. Do not supply standard Robertson or Phillips head screws.

.4 Colours: white

.5 Acceptable Materials: “Model 1150 – Safety Coat Hook” with stainless steel base as manufactured/distributed by Frost.

.6 Locations: Refer to drawings for locations.

.1 Samples: submit test data and samples for review as specified in Section 013330 – Submittal Procedures.

2.6 FABRICATION

.1 Fabricate pilasters and stiles minimum 25 mm thick, and panels and doors minimum 25 mm thick, of materials as specified.

.2 Supply steel floor inserts and locations to Contractor for placing prior pouring of floor slab.

.3 Provide pilasters with 2.9 mm, stainless steel leveling bar, rod and anchor concealed by one-piece 102 mm high stainless steel.

.4 Include panel brackets, hinges, door stops, latches, safety release coat hooks for metal partitions, fastening devices, bumpers, and pull on the outside of doors to handicapped accessible compartments.

.5 Coat hooks to be mounted in ALL washroom toilet stalls and shall be safety release style and mounted on the side wall or to consultant direction.

Part 3 Execution

3.1 INSTALLATION

.1 Install compartments in accordance with reviewed shop drawings and in a neat, rigid manner free of defects.

.2 Provide anchors, inserts and fixings necessary for attachment of supports. Supply steel floor inserts and locations to Contractor for placing prior pouring of floor slab. Elsewhere, drill supports as required to receive attachment of compartments.

.3 Install units secure, accurately positioned, plumb, level, square and free from sag and distortion. Provide 3 brackets per partition.

.4 Perform drilling of steel, masonry and concrete necessary to install this work.

.5 Ensure spaces between panels and pilasters, between panels and walls and between pilasters and walls are of uniform consistent width and sized to ensure it is not possible to see persons using the compartments.

.6 Coordinate installation with the work of trades providing ceilings, wall and floor finishes, shower accessories and other adjacent components and construction.

.7 Use stainless steel anchors and fasteners; ferrous metals are not acceptable.

.8 Provide for adjustment of ceiling variations with screw jack through steel saddles made integral with pilaster. Conceal fixings with stainless steel shoes.

.9 Do work in accordance with CAN/CSA-B651.

3.2 ADJUSTMENT

.1 Upon completion of the work or when directed, remove all traces of protective coating or paper.

.2 Clean exposed surfaces and fittings.

.3 Test safety release Coat Hooks, hinges, locks and hatches and where necessary, adjust and lubricate.

.4 Set hinges so that doors stay open min. 15 degrees and max. 30 degrees when compartment is not in use. Ensure that partitions are in working order.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 05 50 00 – Metal Fabrications.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.1 ASTM E90-[99], Standard Test Method for Laboratory Measurement of Airborne-Sound Transmission Loss of Building Partitions and Elements.

.2 ASTM E336-[97], Standard Test Method for Measurement of Airborne Sound Insulation in Buildings.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-11.3-[M87], Hardboard.

.3 Canadian Standards Association (CSA)

.1 CSA O115-[M1982(R2001)], Hardwood and Decorative Plywood.

.2 CSA O151-[M1978(R1998)], Canadian Softwood Plywood.

.4 Underwriters Laboratories' of Canada (ULC)

.1 CAN/ULC-S102-[1998R2000], Surface Burning Characteristics of Building Materials and Assemblies.

1.3 DESIGN REQUIREMENTS

.1 Use carpet finish for covering with maximum

.1 flame spread -[25];

.2 fuel contributed -[35];

.3 smoke developed -[50]; when tested to CAN/ULC-S102.

1.4 WELDING

.1 Welding of structural components shall be done only by fabricators certified by CSA Welding Qualification Codes, CSA W47 or W55.3 as applicable, for welding of steel, and who shall perform welding to meet specified requirements of CSA W55.2 or W59.1, as may apply.

.2 Weld all connections where possible, and bolt where not possible. Provide method to prevent loosening of nuts. Ream holes drilled for fastenings. Make welded joints tight, flush, and in true planes with base metals. Make welds continuous at joints. Grind welds in exposed locations smooth in a manner that will not leave blemishes on exposed surfaces. Join members generally by inert metal arc welding where practicable, using materials recommended by manufacturers of metals being welded. Remove flux completely following welding, and grind and polish joints smooth and clean.

1.5 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

1.6 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

1.7 MAINTENANCE DATA AND OPERATING INSTRUCTIONS

.1 Provide maintenance and operating instructions for incorporation into maintenance manual in accordance with Section 01 33 30- Submittal Procedures.

1.8 TEST DATA

.1 Submit test reports to the Consultant from ULC confirming that carpet and vinyl fabric conforms to these Specifications.

.2 Submit tests to confirm STC ratings based on ASTM E90-04.

.3 Submit test reports from an independent laboratory confirming that the partition meets the flame spread and STC ratings specified.

.4 Submit test data indicating compliance with design criteria regarding sound transmission and fire hazard classification.

1.9 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal [paper] [plastic] [polystyrene] [corrugated cardboard] packaging material [in appropriate on-site bins] for recycling.

.3 Divert unused [wood] [and] materials from landfill to recycling facility as approved by Consultant.

.4 Fold up metal banding, flatten and place in designated area for recycling.

Part 2 Products

2.1 DESIGN CRITERIA

.1 Use finish for partition covering with maximum flame spread 25; fuel contributed 35; smoke developed 50; when tested to ASTM E84-81a.

.2 Specifications in this Section are based upon products and systems as manufactured by Modernfold. It is understood that certain aspects of partition systems by other manufacturers are slightly different than those specified. The Consultant will make some allowances for differing designs when reviewing shop drawings but will insist that the overall system present features and performance which are at least equal to those specified.

2.2 DESCRIPTION OF PARTITIONS

.1 Stage/Gymnasium Partition:

.1 Location: Gymnasium / Stage - One required.

.2 Type: Modernfold 931 - STC 50 or approved equivalent by Moderco, Hufcor or C.S.I. Sales and Manufacturing, Aluflex and Moduflex by Panelfold.

.3 Features: Manually operated, single panels, acoustically rated system. Panel facing shall be roll formed steel welded to panel frame. Integral whiteboards and recessed marker tray on stage side of partition on all panels, head and floor retractable seals; end panel modified; end panel modified to suit end wall condition. Carpet finish both sides, colour selection by Consultant from full range.

.4 Opening Size: Refer to floor plan and confirm on site.

2.3 MATERIALS

.1 General: Metals shall be free from defects which impair strength or durability, or which are visible. Metals shall be new, of best quality, and free from rust, or waves, or buckles, clean, straight, and with sharply defined profiles.

.2 Metals:

.1 Steel: Structural: hot rolled to meet requirements of CAN3-G40.21, Grade 50W for tubes and Grade 44W for flat shapes. Sheet: cold-rolled furniture steel, double annealed, mill stretched and levelled, and fully pickled. Otherwise, steel shall be hot-rolled or cold-rolled of alloy to suit needs of fabrication, use, and appearance.

.3 Carpet: Acoustical, non-woven needle punch carpet, with fused fibers to prevent unravelling or fray of material.

.4 Provide min. 100mm high stainless steel kickplates on stage side of all panels.

2.4 COMPONENTS

.1 Overhead suspension system.

.1 Track: manufacturer's standard cold rolled steel channel housing designed to support partitions.

.1 Equip track with brackets for hanger attachment.

.2 Provide threaded steel rods and nuts type hangers and stabilizers.

.2 Trolley: nylon wheels with ball bearings, equipped with thrust bearing and steel pendant bolt at each wheel assembly for height adjustment.

.2 Hardware.

.1 Equip partition with manufacturer's standard hardware. Hardware finish selected from manufacturer's [standard] [special] finishes.

.3 Sound seals.

.1 Provide sound seals to manufacturer's standard.

.2 Use head and floor retractable compression type floor and head seals.

.3 Design retractable seals to secure panel in position.

.4 Use manufacturer's standard astragal inserts for jamb and panel joint seal. Finish in Satin Black.

2.5 ACCESSORIES

.1 Provide manufacturer's standard closure panel, with lever operator.

Part 3 Execution

3.1 INSTALLATION

.1 Secure and level track.

.2 Install folding partitions in accordance with manufacturer's printed instructions.

.3 Touch up damaged finishes, repair damage to partitions to match original finish.

.4 Clean folding partition system and protect from damage.

.5 Adjust and leave partitions in smooth operating condition.

3.2 SITE TESTS

.1 Provide demonstration of operation to the Owner and his representatives.

.2 Provide training for operation, maintenance and repairs.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures.

.2 Section 10 21 14 – Metal Toilet Compartments.

.3 Section 10 28 10 – Plastic Toilet Compartments.

.4 Section 08 80 50 – Glazing: Mirrors.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.1 ASTM A167-[99], Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

.2 ASTM B456-[95], Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.

.3 ASTM A653/A653M-[99], Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.4 ASTM A924/A924M-[99], Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.81-[M90], Air Drying and Baking Alkyd Primer for Vehicles and Equipment.

.2 CAN/CGSB-1.88-[92], Gloss Alkyd Enamel, Air Drying and Baking.

.3 CAN/CGSB-12.5-[M86], Mirrors, Silvered.

.4 CGSB 31-GP-107Ma-[90], Non-inhibited Phosphoric Acid Base Metal Conditioner and Rust Remover.

.3 Canadian Standards Association (CSA)

.1 CAN/CSA-B651-[95], Barrier-Free Design.

.2 CAN/CSA-G164-[M92], Hot Dip Galvanizing of Irregularly Shaped Articles.

1.3 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures

.2 Shop drawings of units for use by the handicapped shall be distinctly marked and cross-referenced to the corresponding article in the specifications.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

Part 2 Products

2.1 MATERIALS

.1 Ferrous Steel: Sheet, cold-rolled furniture steel, double annealed, mill stretched and leveled, and fully pickled. Otherwise, steel shall be hot-rolled or cold-rolled of alloy to suit needs of fabrication, use, and appearance.

.2 Galvanized Steel: For sheet, Z275 zinc coating designation in accordance with ASTM Specification A525. For irregular sections, hot dip galvanized to comply with CSA G164.

.3 Stainless steel sheet metal: to ASTM A167, Type 304, with No. 4 finish.

.4 Anchors and Fastenings: Where exposed, use stainless steel and otherwise to match metal anchored. Where non-exposed, use the same as that specified for exposed, or use galvanized steel. Anchors and fastenings shall be of the type appropriate for the substrate to which accessory unit is secured.

2.2 COMPONENTS

.1 Hand Dryers – Semi-recessed (HD): refer to Electrical specifications.

.2 Fixed Grab Bars (GB): 32 mm outside diameter; 1.2 mm thick stainless steel; pended non-slip finish; round or oval concealed flange attachments, as described below:

.1 Straight Profile - horizontal: e.g. Frost Model 1001-NP-24.
.2 Straight Profile – vertical at shower: e.g. Frost Model 1001-NP-48.
.3 L-Shaped Profile at water closet: e.g. Frost Model 1003-NP-30x30.
.4 L-Shaped Profile at shower: e.g. Frost Model 1003-SP-40x30.
.5 All bars to have concealed mounting hardware
.6 Quantity: refer to drawings
.7 All bars to withstand horizontal and vertical pull of 2.2 Kn
.8 Location: Washrooms, refer to contract drawings.

.3 Handicapped Grab Bars - Flip-Up (GBF)
.1 18 gauge stainless steel, 32 mm diameter, 800 mm long flip-up grab bar with white wall mounting bracket, automatic locking system.
Model: Flip-up by Dunleavy Cordun Associates (Tel: 905-470-6685)
.2 If locking grab bar not required, provide Bobrick B4998.99 and/or 812825 (with toilet paper holder)
.4 Location: Orthopedic Washrooms, refer to drawings for locations and quantities.

.4 Toilet Backrest (BR)
.1 Model: Shallow Depth Toilet Backrest, Model # 1028-5 1/12 by Frost.
.2 Quantity and locations: washrooms. Refer to drawings

.5 Convenience Shelves (CS): Model B295x16 by Bobrick
.1 Quantity: refer to drawings
.2 Location: washrooms, refer to drawings where noted.

.6 Toilet Paper Dispenser (TD): Model 150 by Frost
- .1 Quantity: refer to drawings
- .2 Location: Washrooms , refer to drawings.

.7 Paper Towel Dispenser (PTD): Model F101-1 by Frost
- .1 Quantity: refer to drawings
- .2 Location: refer to drawings.

.8 Soap Dispenser (SD): Model 710A, by Frost
- .1 Quantity: refer to drawings
- .2 Location: refer to drawings.

.9 Sanitary Napkin Disposal (SN): Model 620, by Frost
- .1 Quantity: refer to drawings
- .2 Location: Washrooms, refer to drawings

.10 Sanitary Napkin Dispenser (recessed) : Model 615-5, by Frost
- .1 Quantity: refer to drawings
- .2 Location: Washrooms, refer to drawings

.11 Janitorial Shelf (JS):
- .1 0.9 mm thick stainless steel, 914 x 203 mm size, surface mounted; complete with 3 mop/broom holders, 2 pail hooks and an 8 mm OD chrome plated drying rod
- .2 Model 1115, by Frost
- .3 Quantity: refer to drawings
- .4 Location: Custodian Rooms, Storage Rooms & Receiving Room, where noted.

.12 Safety Release Coat Hook (SCH):
- .1 Refer to drawings for locations.
- .2 High strength polycarbonate coat hook with safety release weight under downward pressure to not exceed 12 kg (26 lbs.)
- .3 Supply all suitable mounting hardware for a vandal proof, secure installation using stainless steel sleeve bolts on partition doors or panels. Do not supply standard Robertson or Phillips head screws.
- .4 Colours:
  - .1 Allow for two (3) colours from Manufacturers standard line
- .5 Acceptable Materials: “Henkel Hook” as manufactured/distributed by Henkel Diversified Inc, London ON, tel (519) 641-5872.
- .6 Locations:
  - .1 Washrooms
  - .2 Change Room benches and shower rooms
  - .3 Refer to drawings for locations
- .7 Samples: submit test data and samples for review as specified in Section 013330 – Submittal Procedures”

.13 Shower Curtain & Rod (SC+R):
- .1 Refer to drawings for locations.

.2 Rod: No. B6047 extra heavy duty, by Bobrick or Frost F-1145-S, 18 gauge stainless steel

.3 TA-15 204-1 Shower Curtain Rod Hooks /type-304 Stainless Steel

.4 Curtain: 8 gauge vinyl fabric No. B204-3 (1780mm width) B204-1 shower curtain hook by Bobrick; 1830 mm high, 300 mm wider than opening.

.14 Mirrors

.1 Fixed Mirrors (designation Type M):

.1 Best quality, 6 mm thick float glass, with concealed tamperproof clip fasteners.
.2 24 ga., Type 302 or 304 No 4 finish stainless steel frames on all edges and galvanized iron backing with concealed mounts.
.3 Sizes: each unit 457 mm x 610 mm.
.4 Locations: as shown on Drawings.
.5 Acceptable Materials: Frost ‘Stock series’ model 941TG Tempered Glass; 18” x 24” each.
.6 Acceptable alternate: Model 5440 by Twin Cee; or "Tamperproof" model by Pilkington Ford

.2 Fixed Mirrors (designation Type ML):

.1 Best quality, 6 mm thick float glass complete with concealed, tamperproof clip fasteners
.2 24 ga., Type 302 or 304 No 4 finish stainless steel frames on all edges and galvanized iron backing with concealed mounts.
.3 Sizes: each unit 610 mm x 1520 mm.
.4 Locations: as shown on Drawings.
.5 Acceptable Materials: Bobrick Model B-290 2460; 24” x 60” each.
.6 Acceptable alternate: equivalent size and details by Bobrick or Twin Cee

.3 Barrier-Free/Tilt Mirrors (designation Type TM):

.1 Acceptable Materials: Frost ‘Stock series’ model 941FG Tempered Glass; Bobrick 290 series or Frost F974FT series
.2 18” x 24” each..
.3 Locations: as shown on drawings.
.4 Frames: Type 302 or 304 No. 4 finish stainless steel.
.5 Mirror Cushioning: PVC pressure-sensitive foamed tape, 6 mm thick with adhesive on one side.

.15 Folding Shower Seat (FSS):

.1 Folding Shower Seats (FSS): Model B5181 by Bobrick or F974-P by Frost.
.2 Stainless Steel fasteners/retaining clips.
.3 Location: Universal Washroom 152.

.16 Recessed Soap Dish:

.1 Heavy duty stainless steel recessed soap holder and grip bar.
.2 Frost model ‘1133-HD’
.3 Location: Universal Washroom.

.17 Acceptable Alternates to those items listed above as manufactured by Bradley Corp. & Supplied by Wentworth Assoc. Ltd., Frost Products Ltd., Watrous (ASI) or Bobrick Washroom Equipment Co. and Saferail meeting or exceeding these specifications.

2.3 FABRICATION

.1 Construction**:** Fabricate with materials, component sizes, metal gauges, reinforcing, anchors and fasteners of adequate strength to withstand intended use.

.2 Where specified as frameless, provide stainless steel accessories with one-piece fronts having 90 degree formed returns at their edges and openings.

.3 Where accessory fronts are framed, frame edges, both inside and outside, with 90 degree formed returns continuously welded and ground smooth at the corners. Doors shall also have 90 degree formed returns as specified.

.4 Unless otherwise specified, hinges shall be semi-concealed stainless steel piano hinges extending full-length of hinged element. Provide hinged elements with concealed, mechanically-retained rubber bumpers for silent closing, and shall close flush with faces of fronts or frames.

.5 Ensure that work will remain free of warping, buckling, opening of joints and seams, distortion and permanent deformation.

.6 No exposed fixings permitted. Cut edges and openings square and smooth. Chamfer corners of edges and cut-outs 1.6 mm.

.7 Assembly: Accurately cut, machine and fit joints, corners, copes and mitres so that junctions between components fit together tightly and in true planes.

.8 Fasten work with concealed methods, unless otherwise indicated on Drawings.

.9 Weld all connections where possible, bolt where not possible and cut off bolts flush with nuts. Countersunk bolt heads, and provide method to prevent loosening of nuts. Ream holes drilled for fastening.

.10 Welded joints shall be tight, flush, and in true planes with base metals. Make welds continuous at joints where entry of water into voids of members or assemblies is possible.

.11 Provide for differential movements within assemblies and at junctions of assemblies with surrounding work.

.12 Welds in exposed locations shall be ground and polished smooth.

.13 Finish Work**:** Provide holes and connections for related work installed under other Sections of this specification, if applicable.

.14 Cleanly and smoothly finish exposed edges of materials, including holes.

Part 3 Execution

3.1 INSPECTION OF SECTION

.1 Take site measurements to ensure that work is fabricated to fit surrounding construction around obstructions and projects in place, or as shown on drawings, and to suit service locations.

3.2 INSTALLATION

.1 Install all accessories in accordance with manufacturers' instructions at their recommended mounting heights unless noted otherwise on drawings.

.2 Securely fasten accessories plumb, true, square, straight, level, and accurately and tightly fitted together and to surrounding work. Install in locations shown and specified herein. Mounting heights as shown or in accordance with the OBC in the case of barrier-free accessories.

.3 Work shall include anchor bolts, bolts, washers and nuts, lag screws, expansion shields, toggles, straps, sleeve brackets, clips, and other items necessary for secure installation, as required by loading and by Jurisdictional Authorities.

.4 Attach work at wood by screws through countersunk holes in metal.

.5 Attach work to masonry with lead plugs and non-corrosive fastenings, to support load with a safety factor of 3. Perform all drilling necessary to install the work.

.6 Insulate between dissimilar metals or between metals and masonry or concrete with bituminous paint, to prevent electrolysis.

.7 Coordinate installation with the work of other trades adjacent to accessories to achieve the reveals or other edge conditions shown, where their front faces are flush with the finished wall surfaces.

.8 Owner to supply and install remainder of washroom accessories not specified here (toilet paper dispensers, etc.). Cooperate with Owner as required.

3.3 CLEANING UP AND ADJUSTMENT

.1 Upon completion of the work, or when directed, remove all traces of protective coatings or paper.

.2 Test mechanisms, hinges, locks and latches, and where necessary, adjust and lubricate and ensure that accessories are in perfect working order.

END OF SECTION

Part 1 General

1.1 RELATED WORK

.1 Section 01 33 00 - Submittal Procedures.

1.2 WORK INCLUDED

.1 Supply and install prefabricated unit as specified in location shown on drawings.

.2 Supervision, inspection and checking of unit as installed on site.

1.3 REFERENCES

.1 Drawing designation: “Precast Concrete Storage Shed”. Refer to Site Plan drawing.

1.4 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

1.5 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

1.6 GUARANTEE

.1 Submit a written Guarantee to the Board, that all work of this Tender shall be free from defects in workmanship and materials for a minimum period of one (1) year from date of approved completion.

.2 All defects (excluding vandalism) in materials and workmanship that become apparent during the Guarantee period shall be made good or material replaced at no cost to the Board.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material in appropriate on-site bins for recycling.

.3 Place materials defined as hazardous or toxic in designated containers.

.4 Divert unused metal materials from landfill to metal recycling facility as approved by Consultant.

.5 Unused paint or coating material must be disposed of at an official hazardous material collections site as approved by Consultant.

.6 Fold up metal banding, flatten and place in designated area for recycling.

.7 Do not dispose of unused paint material into sewer system, into streams, lakes, onto ground or in any other location where it will pose health or environmental hazard.

1.8 LOCATION

.1 Provide two (2) units in outdoor Kindergarten Play Area. Refer to site drawing for location.

Part 2 Products

2.1 MATERIALS

.1 Outdoor Storage Unit as manufactured by RM Products/ Fiberglass Structures (Orillia), 1-800-363-0867 | 705-326-5580.
.2 Description: 3/12 pitch roof with lockable man door.
.3 Location: Kindergarten outdoor play area (not childcare).
.4 Size: 8’ x 8’

Part 3 Execution

3.1 INSTALLATION

.1 For concrete or asphalt surface: Bearing pads to be provided if levelling is required

.2 For grass site: 11'0" x 11'0" x 6" thick compacted stone chip base with 2" loose stone chips on top.

.3 Comply manufacturer's installation instructions and approved shop drawings.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 03 30 00- Cast-in-Place Concrete.

.3 Section 04 21 13 – Masonry.

.4 Section 05 21 10 – Steel Joists Framing.

.5 Section 05 50 00 – Metal Fabrications.

.6 Electrical Connections : Division 26 (16)

1.2 REFERENCE STANDARDS

.1 All gymnasium equipment shall meet all regulatory requirements of the International Amateur Athletics Federation (I.A.A.F.) for official tournament play as well as all safety standards as set forth by CSA and/or CGSB for the applicable equipment item and/or category, as well as all local codes and regulations.

1.3 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 As part of Shop Drawings, details of attachment to the building structure (walls and roof structure) must bear stamp of a professional engineer licensed to design structures in the Province of Ontario certifying their strength and safety.

.3 Clearly indicate fabrication details, plans, deviations, hardware and installation details.

.4 Take measurements on site of spaces and conditions to which work must conform.

.5 At completion of installation provide written certification from professional engineer that the installation is structurally safe and in accordance with approved shop drawings.

1.4 PROTECTION

.1 Protect work from damage during storage, handling, installation and until building is turned over to the Owner.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material [in appropriate on-site bins] for recycling Divert unused metal materials from landfill to metal recycling facility as approved by Consultant.

.3 Unused paint or coating material must be disposed of at an official hazardous material collections site as approved by Consultant.

.4 Fold up metal banding, flatten and place in designated area for recycling.

1.6 PROTECTION

.1 Protect work from damage during storage, handling, installation and until building is turned over to the Owner.

Part 2 Products

2.1 MATERIALS

.1 Motorized Basketball Backstops to Main Court:

.1 Location: Ceiling mounted at Main Court. Total of two complete assemblies required.

.2 Steel frame: 3mm thick steel tubing, 50x50mm size, eg. BB-15RG by Gymnasium & Health Equipment Ltd.

.3 Safety Belt: BB-48 Auto-Loc by Gymnasium & Health Equipment Ltd. One required for each ceiling suspended backstop assembly.

.4 Backboard: 1067 x 1829mm size, 13mm thick tempered glass set in extruded aluminum frame, official border and target area fired into glass, BB-29-RGII by Gymnasium & Health Equipment Ltd.

.5 Cushion Edge Padding: pre-moulded urethane foam, purpose made to fit along lower edge of glass backboard, c/w fixing hardware, colour shall be selected by Consultant, BB-44 by Gymnasium & Health Equipment Ltd.

.6 Goal: 457mm OD, front mounted shock absorber goal, with completely enclosed positive locking mechanism, BB-33B by Gymnasium & Health Equipment Ltd.

.7 Net: 120 count nylon, hourglass design, official anti-whip net, BB-41 by Gymnasium & Health Equipment Ltd.

.8 Electric winch: model TW1000 for electrically-operated ceiling-suspended backstops, complete with flush wall-mounted key switch mounted 1350mm above finished floor.

.2 Basketball Backstops at Cross Courts:

.1 Location: At cross courts. A total of four (4) complete assemblies are required.

.2 Backstops: BB-12 with BB-3 height adjustor by Gymnasium and Health Equipment, Markham.

.3 Backboard, Goal and Nets: Model BB-22 backboard with target orange border area, Model BB-30 and net BB-40 and hardware all by Gymnasium and Health Equipment, Markham.

.4 Operator: Not required.

.5 Safety Straps: not required.

.6 Supply all framing, wall anchor bolts, stringers, mounting hardware for a complete operating installation. Framing finish: enamel paint, custom colour.

.3 Co-ordination for Items 2.1 and 2. 2:

.1 Provide Section 04 22 00- Masonry with all mounting locations, types and hardware for wall-mounted backstops.

.2 Co-ordinate design of swing up type to permit maximum clear height in up position.

.4 Floor Sockets:

.1 Supply and install Model MA Series, 47.6 mm (1-7/8") I.D. By Murray Anderson Ltd. complete with retainer ring, removable cap and threaded assembly. Refer to Drawings for detail.

.2 Locations: As located on Drawings (designation FS).

.3 Provide six (6) additional floor sockets in Gym Storage 154. Location to be confirmed by Owner prior to installation.

.5 Gymnasium Divider Curtain:

.1 Type: Electrically operated, vertically folding divider curtain. Curtain is to fold accordion style.

.2 Curtains: Abrasion resistant polyester reinforced vinyl for the lower 3m, the remaining upper section being 1¼" net.

.1 curtain weight 25 oz/sq yd minimum.

.2 Tensile strength: 300 lb minimum.

.3 Tear strength: 100 lb minimum

.4 Vinyl curtain and net to meet ULC S109, S102.2 and NFPA 701, flame spread not to exceed 75. Fire label to be fixed permanently to the curtain.

.5 Curtain to have vertical welded seams at 1.5 m interval and side shall be hemmed and quadruple sewn to provide clean and durable edge. Seam strength to equal fabric strength.

.6 Colour: To later selection by Consultant from manufacturer's full range.

.3 Valence: same material as curtain fabric on each side of retracted curtain and motor mechanism so as to fully conceal curtain and motor.

.4 Raising mechanism:

.1 motor drive unit, 3 phases, 208V, equipped with magnetic contractor to reverse movement of the curtain at any point, an emergency break and travel limit switches for up and down position.

.2 Lifting pullies at 3 m o.c. attached to the structure, lifting cables to be 5 mm aircraft type.

.3 All roller chains tension shall be monitored by safety switches.

.4 Hydraulic emergency stopping device shall be installed to prevent the free fall of the curtain or to limit the descending speed.

.5 The operating control shall be spring leader type key switch.

.5 Mounting Hardware:

.1 include all mounting hardware for a complete installation

.2 Refer to structural drawings and include all subframing required to fasten to structure. The curtain mount is to be designed to allow the curtain to be raised within the centre joist space.

.6 Warranty: Total warranty for a period of 5 years

.7 Acceptable products: noting or exceeding these specifications 1100 Series by Corflex Partitions Inc. or Moderco Inc., Arpro Folding partitions, Porter, Hufcor, or Quad.

.6 Acceptable Alternates to Specified Products:

.1 Products and complete systems meeting or exceeding the quality and features specified as manufactured by Porter and supplied by Hussey Seating Co.; or Laurentian Gymnastics Industries Ltd.; or Sheridan Gym Equipment or Centaur Products Inc; or Ash-Stevenson or Forum Athletic Products Inc.

Part 3 Execution

3.1 FABRICATION

.1 Fix and assemble work in shop where possible.

.2 File and grind exposed welds, smooth and flush. Make exposed welds continuous.

.3 Workmanship shall be best grade of modern shop and field practice known to recognized manufacturers specializing in this work. Accurately fit joints and intersecting members and made in true planes with adequate fastening.

3.2 INSTALLATION

.1 Install work square, plumb, straight, true and accurately fitted.

.2 Included anchors, dowels and fastenings necessary to anchor work together or to work of other trades.

.3 Where installing in masonry, centre equipment between masonry block joints unless indicated otherwise on details. Verify location mounting heights, and dimensions of all units before installation. Anchor in accordance with manufacturer’s printed instructions.

.4 Insulate where necessary to prevent electrolysis between dissimilar materials.

.5 Co-ordinate installation of floor sockets with Section 09 65 19.

.6 Install, connect, make operational and adjust all electrically operated components for proper function.

.7 Deliver to Owner all special tools, accessories, controls, spare parts, etc. which are related to the work of this Section.

3.3 DEMONSTRATION AND CLEANING

.1 Provide demonstration of operation to the Owner and his representatives.

.2 Provide training or maintenance and repairs to the Stage Rigging and Drapery.

END OF SECTION

Part 1 GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1 Section 06 40 00 - Architectural Woodwork:

1.3 DESIGN

.1 Design and construct metal storage shelving for minimum rated shelf capacity of 180 kg.

.2 Design shelving to accommodate vertical adjustment of shelves in 25mm increments and to permit easy assembly, expansion, dismantling and re-use of shelving component parts.

1.4 SHOP DRAWINGS

.1 Submit detailed shop drawings.

.2 Indicate shelving layouts, number of bays, number of shelves, system of bracing and anchoring devices.

Part 2 Products

2.1 OPEN SHELVING

.1 Product: boltless, clipless system: North American Steel “Easy-Up 5000 Shelving”, or equivalent system by other manufacturer approved by Consultant.

.2 Sizes, unless otherwise shown:

.1 Height of bay: 2100 mm

.2 Length of bay: 915 mm

.3 Depth of bay: 460mm and 600 mm.

.3 Provide seven shelves, including top and bottom, at each by, unless otherwise indicated.

.4 Uprights: 2 mm thick square tubular posts with slots at 25 mm o.c.

.5 Shelves: full panel steel shelves with U-shaped front edge.

.6 Beams: 2 mm thick, with double locking, V-type clip, 25 mm high.

.7 Base plate: 2 mm thick, similar to beam, 40 mm high.

.8 Foot plates: square steel, designed to clip onto posts.

.9 Beam safety clips: designed to lock beam to post, easily removable.

.10 Post caps: plastic.

.11 Provide a total of 17 units in rooms as follows:

- 4 qty. (Depth: 600) units in Recycling & Custodian Storage Areas 114
- 5 qty. (Depth: 460) units in Art Storage 313A.
- 4 qty. (Depth: 600) units in Applications 312
- 2 qty. additional 600 deep units and 2 qty. additional 460 deep units to be turned over to the Board for future installation by school.

2.2 FINISHES

.1 Finish all shelving components to manufacturer's standard.

.2 Suitably pretreat metal surfaces, apply primer and two coats of metal enamel and bake on.

.3 Where more than one colour is available from manufacturer, Consultant will make selection.

.4 Manufacturers or brand names acceptable if not prominently displayed.

Part 3 EXECUTION

3.1 INSTALLATION

.1 Assemble and install metal storage shelving in accordance with reviewed layout, and in accordance with manufacturer's direction.

.2 Provide beams at front and back of each shelf and lock shelf in place.

.3 Provide base plate at bottom of units.

.4 Provide foot plate and cap at each post.

.5 Make good baked enamel surfaces damaged during shipment or installation.

END OF SECTION

Part 1 General

1.2 RELATED WORK

.1 Section 08 44 13 – Glazed Aluminum Curtain Walls
.2 Section 08 50 00 – Aluminum Windows

1.3 SUBMITTALS

.1 Product data:
  .1 Submit duplicate copies of manufacturer's Product data in accordance with Section 01 33 00 indicating:
    .1 Performance criteria, compliance with appropriate reference standard(s), characteristics, limitations, and finishes.
    .2 Product transportation, storage, handling and installation requirements.

.2 Shop drawings:
  .1 Submit shop drawings in accordance with Section 01 33 00.
  .2 Provide layout, details of track and operating hardware, installation details.

.3 Samples: Submit 600 mm x 600 mm duplicate samples of Dual Sun Shade material and colour.

.4 Closeout submittals:
  .1 Submit following for each Product for incorporation into Operations and Maintenance Manuals in accordance with Section 01 78 00:
    .1 Functional description detailing operation and control of components.
    .2 Performance criteria and maintenance data.
    .3 Operating instructions and precautions.
    .4 Safety precautions.
  .2 Submit maintenance data, wrenches or specialty tools, cleaning and maintenance instructions

1.5 QUALITY ASSURANCE

.1 Shades and track shall be installed by a qualified specialist with 5 years proven experience in this type of work.

Part 2 Products

2.1 MATERIALS

.1 **Motorized Shading System (MWC):**
  .1 Extruded aluminum hanger and closure using a linear motor, fabloc tube and necessary electrical accessories for a single switch or Motor group control operated as indicated on the Shading Schedule. Internal limit switches are adjusted by two hex keys to allow for exact stop positions. Solenoid activated disc brake stops and holds in any position. Asynchronous motor with built in reversible capacitor start

and run, 95-125V-AC at 60Hz CSA and UL approved.

.2 Specifications are based on 300 Series Solarblock 3%, colour to be selected later by Consultant.

.3 Locations: Gym and Library.

.4 'Motorized Shade with wall mount fascia' by Solarfective or approved alternative.

.5 Manufactured by Solarfective Products Ltd., Rep: Patri Products, Kevin Booth (416)421-3800 Fax: (416)421-8424, or Silent Gliss Model 4110 by Architectural Products, Rep. Tim MacCallum Tel: (905)507-1275 Fax: (905)507-1282 or Mecho/5 Model by CartsPlus Healthcare Products Ltd., Rep. Eva Speziale Tel: (905) 602-6794.

.6 All shades systems specified in this section shall be provided by one manufacturer who shall take full responsibility for the total individual school project.

.7 The above electric powered shades are to be included in base contract. Manual blinds to other windows are to be purchased through the project's Cash Allowance.

.2 **Manual Shading System (WC):**

.1 Manual operated window shades. Refer to Cash Allowance.

2.2 Solarfective Shading blackout fabric:

.1 Shade cloths shall be woven of .018 opaque, vinyl coated polyester yarn consisting of approx. 79% vinyl and 21% 500 dernier polyester core yarn. The fabric shall be tensioned in the finishing range prior to heat setting to keep the warp ends straight and minimize or eliminate weave distortion to keep the fabric flat. The fabric shall be dimensional stable. Colour will be selected from standard range. It shall be tear resistant meeting NFPA 701.

.2 Meet or exceed the following statistics:

Openness Factor			3%+0.0%-0.5%
Weight per sq.yd.			21 oz.
Warp ends per inch			42
Fill ends per inch			31
Stretch % (271lb.wt.):	warp		2%
	fill		3%
Set %	warp		1.5%
	fill		1.5%
Abrasion Resistance		YARN	none
(500 Tarber Cycles)		RAPTURE	none
		WEAR	TRACE
U.V. Deterioration		Fade	none
(200 Sun Fade Hours)			
Tensile Retention			96%

2.2 FABRICATION

.1 Fabricate shades in accordance with reviewed shop drawings and manufacturer's written instructions.

Part 3 Execution

3.1 INSTALLATION

.1 Securely install shades and track adding brackets as required but in no case less than four brackets.

.2 After installation fabric shall hang flat, without buckling or distortion. The edge when trimmed, shall hang straight without ravelling. An unguided roller shade cloth shall roll true and straight, without shifting sideways more than 3mm in either direction due to warp distortion, or weave design.

3.3 ASSEMBLY – MOTORIZED SHADE

.1 Extruded Aluminum Shade Tube: 1.52 mm thick, 75 mm diameter with three internal, continuous fins 4.82 mm high for strength and drive capabilities when attached to the nylon sprocket. The fins shall be spaced 120 degrees apart.

.2 Fascia: 1.7 mm thick, extruded aluminum cover, clear anodized finish. To cover front of shade and return at underside to conceal roller and hardware.

.3 Internal Limit switches: adjustable with two hex keys to allow exact setting of stop position. Micro switches to provide circuit breaking at end of run. Switch setting not to be disturbed by roller tube action.

.4 Brake: solenoid activated disc brake mechanism stops and holds any position, brake to disengage when motor is running.

.5 Motor: Built-in reversible capacitor start and run. Single phase 95-125V-AC, 60 Hz motor with thermally protected class A temperature rating.

.6 Gear box: Satellite gears with 3 levels for load distribution with planetary type gears machined to close tolerance of tempered steel.

.7 Controls: Motors will be operated by white three position rocker switch, located remotely.

.8 Exterior Hembar: Extruded aluminum in clear anodized finish with plastic end finials.

.9 Dynamic Hembar: At sill locations, in lieu of bottom channel, provide aluminum Dynamic Hembar with same finish as side channels. Upon contact with sill, it shall provide a light seal even if the sill is slightly out of level.

.10 Colour: Exposed surfaces (excluding fabric) shall be colour selected by Consultant, and not necessarily from manufacturer's full colour range. Metal components shall be pretreated and finished with an acceptable baked enamel finish.

.11 Fasteners: Non-corrosive metal screws for attachment to windows or curtain wall framing, concealed in completed installation.

.12 Shade and mounting system to be designed to allow air between shade and glass.

.13 Fabric shall hang flat, without buckling or distortion. Trimmed edges shall hang straight without curling or raveling.

.14 Unguided vertical shades shall not drift sideways more than 3 mm in total run.

.15 Provide stops at highest and lowest shade positions to prevent over winding and unrolling.

.26 Design and fabricate shades so that there is a maximum 12 mm gap both sides of fabric.

3.4 CLEAN UP

.1 At conclusion of work remove all debris, dirt; clean surfaces like glass, floor, stools, heating units if soiled. Test each re-installed drape, each sunshade numerous times and make adjustments to assure trouble-free installation and operation.

.2 Brief maintenance staff regarding proper care, cleaning, lubricating, adjusting, etc.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 11 00 – Summary of Work: Protection of openings; temporary power and lighting.

.2 Section 01 52 00 – Construction Facilities: Protection of openings; temporary power and lighting.

.3 Section 03 30 00 - Cast-in-Place Concrete: Elevator pit, elevator motor and pump foundation, and grouting thresholds

.4 Section 05 50 00 - Metal Fabrications: Divider beams, support for entrances and rails, hoisting beam at top of hoistway.

.5 Section 04 21 13 – Masonry: Masonry hoistway enclosure, building-in and grouting hoistway door frames, grouting thresholds.

.6 Section 05 50 00 – Metal Fabrications: Divider beams, support for entrances and rails, hoisting beam at top of hoistway.

.7 Division 26: Electrical service to elevator components.

1.2 SUMMARY

.1 This specification is based on a 2500lb capacity, hydraulic double-sided elevator for a three storey building (min. 12m travel distance) with additional stop (4 stops).

.2 Acceptable Alternates: Elevators meeting or exceeding these base specifications by Otis Elevator Company, TKE, Thyssen, Kone, Delta Elevator, Southwestern Elevator or others providing they meet this specification and complete data is submitted to the Architect's office not later than 10 business days prior to close of Tender and approved and formally accepted in writing by the Consultant during the tender period.

.3 Tender price shall include the complete price for supply and install and the **2 year** maintenance contract specified herein.

1.3 REFERENCES

.1 ADAAG, Americans with Disabilities Act Accessibility Guidelines.

.2 ANSI/NFPA 70, National Electrical Code.

.3 ANSI/NFPA 80, Fire Doors and Windows.

.4 ANSI/UL 10B, Fire Tests of Door Assemblies.

.5 CAN/CSA C22.1, Canadian Electrical Code.

.6 CAN/CSA-B44, Safety Code for Elevators and Escalators.

.7 Model Building Codes.

.8 Ontario Building Code and all other local applicable codes.

.9 American National Standards Institute (ANSI)

.1 ANSI/NEMA MG1-[1993], Motors and Generators.

.10 Canadian Standards Association (CSA)

.1 CAN/CSA-B44-[M94], Safety Code for Elevators.
.2 CAN/CSA-B651-[95], Barrier-Free Design - Public Safety.

.11 National Building Code (NBC)

1.4 SYSTEM DESCRIPTION

.1 Performance Requirements for Elevators:

.1 Quantity & Elevator Numbers: 1 Elevator
.2 Type: Twin telescopic hydraulic cylinders without well holes
.3 Number of Stops: 4 stops (three stories + Stage)
.4 Number of Openings: 2 (front and back)
.5 Rise: As per drawings
.6 Rated Capacity/Speed: 2500 pounds, 100/ fpm (1361 kg, 0.50/ m/sec.)
.7 Minimum Car Inside: Front Opening: Model 2500: 6’ 8” wide x 4’ 3” deep (2032 mm x 1295 mm)
.8 Inside Cab Height: 8’0” (2438 mm); Height Under Ceiling: 7’ 4 1/2” (2223mm)
.9 Entrance Width & Type: Model 2500: Single-Slide Door 3’ 6” x 7’ 0” (1067 mm x 2134 mm)
.10 Main Power Supply: 208 Volts + or - 5% of normal, 3 Phase, with a separate equipment grounding conductor.
.11 Lighting Power Supply: 120 Volts, 1 Phase, 15 Amp, 60 Hz.
.12 Stopping Accuracy: ±1/4" (6.4 mm) under any loading condition or direction of travel.
.13 Door Opening Time for 7ft. painted hoist way and car doors: Model 2500: 4.0 seconds – Single Slide 42” door.

.2 Simplex Collective Operation: Using a microprocessor-based controller, operation shall be automatic by means of the car and hall buttons. If all calls in the system have been answered, the car shall park at the last landing served.

.3 Provide microprocessor-based control system, which utilizes on-board diagnostics for servicing, trouble-shooting, and adjusting without requiring the use of an outside service tool. If an on-board diagnostic system is not provided, a handheld service tool (or laptop), owner’s license, operation manual, and tool instructions must be provided in addition to the control system.

.4 Car Operating Features

.1 Full Collective Operation.

.2 Single Speed Fan.

.3 On/Off Light Switch.

.4 Solid State Starting

.5 Remote elevator monitoring REM® ready.

.6 Car-Stall Protection.

.7 Top of Car Inspection.

.5 Door Control Features:

.1 Closed Loop Door Operator is a closed loop, microprocessor based door operator system. The door operator will facilitate smooth operation under varying environmental influences such as, temperature, wind, friction, and component variation. The processor will monitor the door's actual position and velocity compared to its desired position and velocity. If variations are detected in the profile the command will be automatically corrected. The Closed Loop Door Operator control system shall not require machine room door control equipment.

.2 Door noise not to exceed 58dBA.

.3 Door control to open doors automatically when car arrives at a landing in response to a normal hall or car call.

.4 Door control to open doors automatically when car arrives at a landing in response to a normal hall or car call.

.5 Elevator doors shall be provided with a reopening device that will stop and reopen the car door(s) and hoistway door(s) automatically should the door(s) become obstructed by an object or person.

.6 Primary door protection shall consist of a two dimensional, multi-beam array projecting across the car door opening. Under normal operation and for any door position, the system shall detect as a blockage an opaque object that is equal to or greater than 1.3 inches (33 mm) in diameter when inserted between the car doors at vertical positions from within 1 inch (25 mm) above the sill to 71 inches (1800 mm) above the sill. Under degraded conditions (one or more blocked or failed beams), the primary protection shall detect opaque objects that are equal to or greater than 4" (100 mm) in diameter for the same vertical coverage. If the system performance is degraded to the point that the 4" object cannot be detected, the system shall maintain the doors open or permit closing only under nudging force conditions.

.7 The door reopening device shall also include a secondary, three dimensional, triangular infrared multi-beam array projecting across the door opening and extending into the hoistway door zone. The door opening device will cause the doors to reopen when it detects a person(s) or object(s) entering or exiting the car in the area between the hoistway doors or the entryway area adjacent to the hoistway doors.

.8 The size of the secondary protection zone shall vary as the door positions vary during opening and closing. The width of the zone shall be approximately one-third the size of the separation between the doors (or door and strike plate for single-slide doors) and shall be approximately centered in the door separation. In order to minimize detection of hallway passers-by who are not entering the elevator, the maximum zone penetration into the entryway shall not exceed 20" for any door separation. Normal penetration depth into the entryway from the car doors shall be ~14" for a door separation of 42". The penetration shall reduce

proportionally as the doors close. At door separations of 18" or less the secondary protection system may cease its normal operation since the depth of the zone recedes to where it is inside the hoistway doors. The vertical coverage of the secondary protection shall be ~19" (480 mm) above the sill to ~55" (1400 mm) above the sill (mid-thigh to shoulder of a typical adult).

.9 The secondary protection shall have an anti-nuisance feature which will ignore detection in the secondary zone after continual detection occurs for a significant time period in the secondary zone without corresponding detection in the primary protection zone; i.e. a person/object is in the entryway but does not enter. Normal secondary protection shall be re-enabled whenever detection occurs in the primary zone.

.10 The reaction time of the door detector sub-system shall not exceed 60 milliseconds when both primary and secondary protection capabilities are active; nor 40 milliseconds when the secondary protection is disabled.

.11 Door nudging operation to occur if doors are prevented from closing for an adjustable period of time.

.6 Provide equipment according to Seismic zone: zone 0

.7 Design and construct elevator in accordance with CAN/CSA-B44, local codes and regulations.

1.5 SUBMITTALS

.1 Product Data: Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.1 Signal and operating fixtures, operating panels and indicators.

.2 Cab design, dimensions and layout.

.3 Hoistway-door and frame details.

.4 Electrical characteristics and connection requirements.

.2 Shop Drawings: Submit in accordance with Section 01 33 00 - Submittal Procedures.

.1 Submit shop drawings to indicate project layout, including details and the following information:

.1 Car, guide rails, buffers and other components in hoistway.

.2 Maximum rail bracket spacing.

.3 Maximum loads imposed on guide rails requiring load transfer to building structure.

.4 Loads on hoisting beams.

.5 Clearances and travel of car.

.6 Clear inside hoistway and pit dimensions.

.7 Location and sizes of access doors, hoistway entrances and frames.

.2 Operation and Maintenance Data

.1 Provide 4 copies manufacturer's standard operations and maintenance manual.

1.6 QUALITY ASSURANCE

.1 Manufacturer: Provide elevators manufactured by a firm with a minimum of 10 years experience in fabrication of elevators equivalent to those specified. Elevator manufacturer shall be ISO9002 certified.

.2 Installer: Elevators shall be installed by the manufacturer.

.3 Regulatory Requirements: Elevator system design and installation shall comply with the latest versions of CAN/CSA-B44 -00.

.1 Elevator shall be designed to meet to Americans with Disabilities Act Accessibility Guidelines (ADAAG)

.4 Permits and Inspections: Provide licenses and permits and perform required inspections and tests.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Manufacturer shall issue delivery schedule within 7 days of issuance of purchase order. Manufacturer shall maintain regular contact with the contractor and Consultant regarding expediting shop drawings and delivery.

.2 At least 3 weeks in advance of delivery, manufacturer's representative shall visit the site to discuss site preparedness. Manufacturer's rep. shall make a second visit one week in advance of the delivery and again liaise with General Contractor and Consultant to ensure site preparation.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Deposit packaging materials in appropriate container on site for recycling or reuse.

.2 Avoid using landfill waste disposal procedures when recycling facilities are available.

.3 Collect and separate plastic, paper packaging and corrugated cardboard.

.4 Dispose of corrugated cardboard, polystyrene and plastic packaging material in appropriate on-site bin.

1.9 WARRANTY

.1 The elevator warranty shall cover defective functionality, programming, materials and workmanship for a period of One Year from the date of Substantial Completion of the contract. The guarantee includes ordinary wear but excludes improper use, vandalism, abuse, and misuse by the owner.

.2 Project Warranty: Refer to CCDC 2 for project warranty provisions.

1.10 MAINTENANCE SERVICE

.1 Included in the Tender price is the maintenance service consisting of regular examinations, adjustments and lubrication of the elevator equipment shall be provided by the elevator contractor for a period of three (3) years after the elevator has been turned

over for the customer's use. This service shall not be subcontracted but shall be performed by the elevator contractor. All work shall be performed by competent employees during regular working hours of regular working days and shall include emergency 24-hour callback service. This service shall not cover adjustments, repairs or replacement of parts due to negligence, misuse, abuse or accidents caused by persons other than the elevator contractor. Only genuine parts and supplies as used in the manufacture and installation of the original equipment shall be provided.

Part 2 Products

2.1 MATERIALS

.1 Materials: As required to achieve specified performance criteria; functionally compatible with adjacent materials and components.

2.2 ACCEPTABLE MANUFACTURERS

.1 This specification is based on a **Model 2500** hydraulic elevator as manufactured by Otis Elevator Company.

.2 Acceptable Alternates: Elevators meeting or exceeding these base specifications by Thyssen, Kone, Delta Elevator or Southwestern Elevator, **or Vertechs.**

2.3 EQUIPMENT:

.1 The hydraulic system shall be of compact design suitable for operation under the required pressure. The power component shall be mounted in the hydraulic-fluid storage tank. The control valve shall control flow for up and down directions hydraulically and shall include an integral check valve. A control section including control solenoids shall direct the main valve and control: up and down starting, acceleration, transition from full speed to leveling speed, up and down stops, pressure relief and manual lowering. All of these functions shall be fully adjustable for maximum smoothness and to meet contract conditions. System to be provided with a muffler, low-pressure switch and a shut-off valve.

.2 A microprocessor-based controller shall be provided, including necessary starting switches together with all relays, switches, solid-state components and hardware required for operation, including door operation, as described herein. A three (3) phase overload device shall be provided to protect the motor against overloading.

.3 A manual lowering feature shall permit lowering the elevator at slow speed in the event of power failure or for adjusting purposes.

.4 Pressure Switch

2.4 EQUIPMENT: HOISTWAY COMPONENTS

.1 Plunger(s) and Cylinder(s): Each cylinder shall be constructed of steel pipe of sufficient thickness and suitable for the operating pressure. The top of each cylinder shall be equipped with a cylinder head with a drip ring to collect any oil seepage as well as an internal guide ring and self-adjusting packing. Each plunger shall be constructed of

selected steel tubing or pipe of proper diameter machined true and smooth with a fine polished finish. Each plunger shall be provided with a stop ring electrically welded to it to prevent the plunger from leaving the cylinder. Each plunger and cylinder shall be installed plumb and shall operate freely with minimum friction.

.2 Car Guide Rails: Tee-section steel rails with brackets and fasteners.

.3 Spring Buffer: Helical coil spring type.

.4 Wiring: Wiring for hoistway electrical devices included in scope of the elevator system, hall panels, pit emergency stop switch, and the traveling cable for the elevator car, operating telephone handset call system in Cab.

.5 Hoistway Entrances

.1 Frames: Entrance frames shall be of bolted construction for complete one-piece unit assembly. All frames shall be securely fastened to fixing angles mounted in the hoistway and shall be of 14-gauge (2 mm) sheet steel. Additional sill angle support will be provided with 4'0" and 4'6" two speed opening door arrangements (4500 & 5000 lb. cars). Sills shall be extruded aluminum.

.2 Doors: Entrance doors shall be of hollow metal construction with vertical internal channel reinforcements.

.3 Fire Rating: Entrance and doors shall be UL fire rated for 1-1/2 hour.

.4 Entrance Finish: stainless steel. All doors & frames, stainless steel.

.5 Entrance Markings: Entrance jambs shall be marked with 4" x 4" (102 mm x 102 mm) plates having raised floor markings with Braille adjacent. Markings shall be provided on both sides of the entrance.

.6 Sight Guards: Black sight guards will be furnished with any metal finish door. Powder paint matching sight guards will be furnished with powder paint doors.

2.5 EQUIPMENT: CAR COMPONENTS

.1 Car Frame: A suitable car frame shall be provided with adequate bracing to support the platform and car enclosure. The buffer striking plate on the underside of the car-frame platform assembly must fully compress the spring buffer mounted in the pit before the plunger reaches its lower limit of travel.

.2 Platform, Heavy Loading Type: The car platform shall be arranged to accommodate one-piece loads weighing up to 25% of the rated capacity, such as wheeled food carts, stretchers, x-ray equipment, etc. The platform shall be recessed 5/16" for flooring by others.

.3 Cab walls to have attached vertical non-removable panels, laminated front and back with plastic laminate.

.4 Car Door Finish: Car front(s) and door finish can be independent elevators. Satin stainless steel

.5 Car top to be of wood material clad on both sides with a natural finish aluminum panel.

.6 Ceiling Type:

.1 Aluminum Eggcrate [DC22E Ceiling] suspended ceiling shall consist of aluminum eggcrate diffusers set in frame of extruded aluminum with fluorescent lighting fixtures.

.7 Emergency Car Lighting: An emergency power unit employing a 6 volt, sealed rechargeable battery and totally static circuits shall be provided to illuminate the elevator car and provide current to the emergency siren in the event of building power failure.

.8 Emergency Pulsating Siren: Siren mounted on top of the car that is activated when the Alarm button in the car operating panel is engaged. Siren shall have a rated sound pressure level of 80 dba at a distance of 3.0 m from the device. Siren shall respond with a delay of not more than 1 second after the switch or push button has been pressed

.9 Exhaust Fan: An exhaust fan shall be mounted on the car top.

.10 Utility Outlet: A 125V 15 amperes utility outlet with ground-fault circuit-interrupter protection shall be furnished on top of the cab.

.11 Handrail:

.1 Rectangular Tubular Metal Bar DH50 Handrails 1/2” (13 mm) x 1-1/2” (38 mm) in stainless steel.

.12 Threshold: aluminum.

2.6 EQUIPMENT: SIGNAL DEVICES AND FIXTURES

.1 Car-Operating Panel: A panel shall be provided which contains all push buttons, key switches, and message indicators for elevator operation. Raised markings Braille markings shall be provided for each push-button.

.2 Car Fixture Finish: satin stainless steel.

.1 [Series 2 Fixtures] Applied car operating panel shall be furnished. It shall contain a bank of round mechanical illuminated buttons marked to correspond to the landings served, an emergency call button, door open and door close buttons, and switches for lights, inspection and the exhaust fan. The emergency call button shall be connected to a bell that serves as an emergency signal. All buttons to have both raised and Braille markings. LED (red) button illumination with 1/8” projecting target. All buttons to be stain stainless steel.

.3 Car Position Indicator: A 16-segment, digital, vacuum fluorescent car position indicator shall be integral to the car operating panel.

.4 An ADA compliant communication device shall be provided which has been designed in response to ADAAG requirements integral with the car operating panel.

.5 Car Lantern and Chime: A directional lantern visible from the corridor shall be provided in the car entrance. When the car stops and the doors are opening, the lantern shall indicate the direction in which the car is to travel and a chime will sound.

.6 Hall Fixtures: Hall fixtures shall be provided with necessary push buttons and key switches for elevator operation. Raised markings shall be provided for each push-button. Otis series 5.

.7 Fixture Finish**: satin stainless steel.**

.8 Landing Passing Signal: A chime bell shall sound in the car to tell a passenger that the car is either stopping at or passing a floor served by the elevator.

.9 Security Lockout Key switches to disable activation of hall buttons.

Part 3 Execution

3.1 MANUFACTURER□S INSTRUCTIONS

.1 Compliance: Comply with manufacturer□s written data, including product technical bulletins, product catalog installation instructions, product carton installation instructions, and data sheet.

3.2 PREPARARTION

.1 Take field dimensions and examine conditions of substrates, supports, and other conditions under which this work is to be performed. Do not proceed with work until unsatisfactory conditions are corrected.

3.3 INSTALLATION

.1 Installation of all elevator components except as specifically provided for elsewhere by others.

3.4 SITE TESTS

.1 Perform and meet tests required by CAN/CSA-B44.

.2 Supply instruments and execute specific tests.

.3 Furnish test and approval certificates issued by jurisdictional authorities.

3.5 CLEANING

.1 Remove protective coverings from finished surfaces and components.

.2 Clean surfaces and components ready for inspection.

3.6 ADJUSTMENTS

.1 The elevator contractor shall make a final check of each elevator operation with the Owner or Owner’s representative present prior to turning each elevator over for use. The elevator contractor shall determine that control systems and operating devices are functioning properly.

.2 Adjust door opening and closing times to suit handicapped users in accordance with Engineer's instructions.

.3 Adjust control system to cause elevators to answer hall calls during working day within performance criteria specified.

.4 Adjust for smooth acceleration and deceleration of car as so not to cause passenger discomfort.

.5 Adjust automatic floor levelling feature at each floor.

END OF SECTION

1. GENERAL

1.1. General Requirements

1. Conform to the requirements stated in the General Conditions, Supplementary General Conditions of this Specification and all addenda for all work, including work outside the property line including work within Regional and Municipal right of way unless otherwise noted.

1.2. Related Work

1.	Site Grading	Section 31 23 13
2.	Excavation, Trenching and Backfilling	Section 31 23 10
3.	Granular Base	Section 32 11 23
4.	Granular Sub-Base	Section 32 11 19
5.	Asphalt Paving	Section 32 12 16

1.3. References

1. ASTM D4791-10, Test Method for Flat or Elongated Particles in Coarse Aggregate.
2. Ontario Provincial Standard Specification 1001.

1.4. Samples

1. Submit samples in accordance with Section 01 33 00.
2. Allow continual sampling by Consultant during production.
3. Provide Consultant with access to source and processed material for sampling.
4. Install sampling facilities at discharge end of production conveyor, to allow Consultant to obtain representative samples of items being produced. Stop conveyor belt when requested by Consultant to permit full cross section sampling.

2. PRODUCTS

2.1. Materials

1. Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, or other substances that would act in deleterious manner for use intended.
2. Flat and elongated particles of coarse aggregate: to ASTM D4791.
    1. Greatest dimension to exceed five times least dimension.
3. Fine aggregates satisfying requirements of applicable section to be one, or blend of following.
    1. Natural sand.
    2. Manufactured sand.
    3. Screenings produced in crushing of quarried rock, boulders or gravel.
4. Coarse aggregates satisfying requirements of applicable section to be one of or blend of the following:
    1. Crushed rock.

2. Gravel and crushed gravel composed of naturally formed particles of stone.

2.2. **Source Quality Control**

1. Inform Consultant of proposed source of aggregates and provide access for sampling at least four weeks prior to commencing production.
2. If, in opinion of Consultant, materials from proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, locate an alternative source or demonstrate that material from source in question can be processed to meet specified requirements.
3. Advise Consultant four weeks in advance of proposed change of material source.
4. Acceptance of material at source does not preclude future rejection if it fails to conform to requirements specified, lacks uniformity, or if its field performance is found to be unsatisfactory.

3. EXECUTION

3.1. **Preparation**

1. Aggregate source preparation
    1. Prior to excavating materials for aggregate production, clear and grub area to be worked, and strip unsuitable surface materials. Dispose of cleared, grubbed and unsuitable materials as directed by Consultant.
    2. Where clearing is required, leave screen of trees between cleared area and roadways as directed.
    3. Clear, grub and strip area ahead of quarrying or excavating operation sufficient to prevent contamination of aggregate by deleterious materials.
    4. When excavation is completed, dress sides of excavation to nominal 1.5:1 slope, and provide drains or ditches as required to prevent surface standing water.
    5. Trim and dress slopes and leave site in neat condition.
2. Processing
    1. Process aggregate uniformly using methods that prevent contamination, segregation and degradation.
    2. Blend aggregates, if required, to obtain gradation requirements, percentage of crushed particles, or particle shapes, as specified. Use methods and equipment approved by Consultant.
    3. Wash aggregates to meet specifications. Use only approved equipment.
    4. When operating in stratified deposits use excavation equipment and methods that produce uniform, homogeneous aggregate.
3. Handling
    1. Handle aggregates to avoid segregation, contamination and degradation.
4. Stockpiling
    1. Stockpile aggregates on site in locations as indicated unless directed otherwise by Consultant. Do not stockpile on completed surfaces.
    2. Stockpile aggregates in sufficient quantities to meet project schedules.

3. Stockpiling sites to be level, well drained, and of adequate bearing capacity and stability to support materials and handling equipment.

4. Except where stockpiled on acceptably stabilized areas, provide compacted sand base not less than 300 mm in depth to prevent contamination of aggregate. Stockpile aggregates on ground but do not incorporate bottom 300 mm of pile into work.

5. Separate different aggregates by strong, full depth bulkheads, or stockpile far enough apart to prevent intermixing.

6. Do not use intermixed or contaminated materials. Remove and dispose of rejected materials as directed by Consultant within 48 h of rejection.

7. Stockpile materials in uniform layers of thickness as follows:

    1. Max. 1.5 m for coarse aggregate and base course materials.

    2. Max. 1.5 m for fine aggregate and sub-base materials.

    3. Max. 1.5 m for other materials.

8. Uniformly spot-dump aggregates delivered to stockpile in trucks and build up stockpile as specified.

9. Do not cone piles or spill material over edges of piles.

10. Do not use conveying stackers.

11. During winter operations, prevent ice and snow from becoming mixed into stockpile or in material being removed from stockpile.

3.2. **Cleaning**

1. Leave aggregate stockpile site in tidy, well drained conditions, free of standing surface water.

2. Leave any unused aggregates in neat stockpiles as directed by Consultant.

END OF SECTION

Part 1 General

1.1 A copy of the following investigations are enclosed in Binder C.

1.2 GEOTECHNICAL INVESTIGATIONS

.1 **Geotechnical Investigation**

Proposed Oakville No. 5 Public School
Settlers Road West & Preserve Drive
Oakville, Ontario
Prepared by: Forward Engineering
Project No. : G7507, Rev. 2
Date: November 26, 2025

.2 **Soil Chemical Testing Report**

Oakville # 5 Public School
Settlers Road West & Preserve Drive
Oakville, Ontario
Prepared by: Forward Engineering
Project No. : 7507
Date: September 30, 2024

.3 **Field Percolation Rate Assessment Report**

Oakville # 5 Public School
Settlers Road West & Preserve Drive
Oakville, Ontario
Prepared by: Forward Engineering
Project No. : 7507
Date: October 01, 2025

1.3 DISCLAIMER

.1 The Geotechnical Report is not part of the Contract Documents prepared by the Architect or his sub consultants. It is bound into the Specifications set for convenient reference only. The Geotechnical report was not prepared by or under the supervision of the Architect. While every effort has been made to attempt to provide comprehensive geotechnical information for the purposes of design and tendering, the Architect claims no responsibility for the accuracy of the information contained in the report.

.2 Refer to Section 00 21 13 – 'Instruction to Bidders', article 1.24-Examination of the Site.

1.4 CAUTIONARY NOTE REGARDING SITE FILL

.1 The investigation referenced above took place after the site was filled by the subdivision developer.

.2 Report of the analysis for chemical testing of soil is included in Binder C.

Part 2 **Products**

2.1 **NOT USED**

.1 Not used.

.2

Part 3 **Execution**

3.1 **NOT USED**

.1 Not used.

.2

END OF SECTION

Part 1 General

1.1 RELATED WORK

.1 Site Grading — Section 31 23 13

.2 Excavating, Trenching and Backfilling — Section 31 23 10

1.2 SCOPE and PREVIOUS FILL BY DEVELOPER

.1 Refer to drawings and other sections regarding extent of previous grading completed by the subdivision developer.

1.3 EXAMINATION

.1 Examine the Drawings, Specifications, and Geotechnical Report data which show soil conditions at boreholes, after the site was filled by the developer**,** in locations shown on Drawings. Visit the site and determine the work extent and nature of the existing conditions. In no circumstances will any claims against the Owner be allowed resulting from failure to ascertain the work herein described or implied.

.2 Report to the Consultant in writing any conditions which will prejudice the proper completion of the work of this Section. Commencement of work constitutes acceptance of existing conditions.

1.4 BURIED SERVICES

.1 Before commencing work confirm no buried services remain on the site and locate all services adjacent to the site. Engage private locate firm for underground scan for all areas of work outside the property lines.

.2 Arrange with appropriate authority for relocation of buried services that interfere with execution of work. Pay costs of relocating services.

1.5 PROTECTION

.1 Establish locations of all electrical, telephone, or other service installations existing in the areas of site preparation by contacting the service owners and obtaining their approval to work in such areas. Contact the Municipality, the Region of Halton and local utilities to review proposed scheduling, work activities and regulations pertaining to all work beyond the limits of the property including but not limited to parking areas, storm water outlet and headwall and asphalt driveway entrances. Provide adequate markers or take protective measures to ensure that no damage will be caused under this Section. Repair or replace damaged work as required without cost to the Owner.

.2 Electronically locate, map and record location of services prior to doing any excavation.

1.6 DUST CONTROL

.1 Provide and maintain to the Consultant’s satisfaction, adequate system to avoid any nuisance caused by dust and dirt rising throughout the area of operations.

1.7 SILT CONTROL

.1 Provide and maintain to the Consultant's and to the Authorities' satisfaction, control systems to prevent silt from entering any storm drainage system.

Part 2 Products

2.1 NOT APPLICABLE

Part 3 Execution

3.1 DISPOSAL OF WASTE AND SURPLUS MATERIALS

.1 Except where specified or indicated on Drawings to be retained on site, or to be reused, remove from the site, all waste and surplus materials resulting from site preparation work on a daily basis. Dispose of as required in accordance with local or provincial regulations. Under no circumstances shall the burning of rubbish be permitted on the site. Where items are to be reused, store on site where designated and provide temporary protection to same to prevent damage by construction operations.

.2 It is the Contractor's responsibility to refer to the Soil Chemical Report provided by the Geotechnical Consultant, included for convenience in Binder C.

.3 All nine (9) soil samples met the MECP Table 1 RPIICC Standards for metals and ORPs analysis except 2 samples which exceeded the SCS for electrical conductivity (EC). Soil in the area of samples BH22-9 SS3 and BH22-13 SS3 that exceeded the Table 1 RPIICC SCS for EC is to remain on site under paved area planned in this location, or be disposed of at a receiving landfill site that accepts this type of material.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 56 00 - Temporary Barriers and Enclosures.

.3 Section 01 35 43 - Environmental Procedures.

.4 Section 31 23 13 - Rough Grading.

.5 Section 32 91 21 – Top soil and Finish Grading.

.6 Section 31 05 17 - Aggregate Materials.

.7 Section 32 93 10 - Landscaping and Plant Maintenance.

.8 Section 33 46 20 – Foundation and Underslab Drainage.

.9 Section 32 12 17 – Asphalt Paving.

1.2 REQUIREMENTS OF REGULATORY AGENCIES

.1 Work of this Section shall include protection measures, consisting of materials, constructions, and methods required by the Occupational Health and Safety Act, 1987, of the Province of Ontario, and as otherwise imposed by Jurisdictional Authorities to save persons and property from harm.

.2 Submit shop drawings required by authorities.

1.3 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.1 ASTM C117-95, Standard Test Method for Material Finer Than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.

.2 ASTM C136-96a, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.3 ASTM D422-98, Standard Test Method for Particle-Size Analysis of Soils.

.4 ASTM D698-00a, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft ^{3}) (600 kN-m/m ^{3}).

.5 ASTM D1557-00, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft ^{3}) (2,700 kN-m/m ^{3}).

.6 ASTM D4318-00, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.

.2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

.3 Canadian Standards Association (CSA)

.1 CAN/CSA-A3000-98-A5-98, Portland Cement.

.2 CAN/CSA-A23.1-00, Concrete Materials and Methods of Concrete Construction.

1.4 DEFINITIONS

.1 Excavation classes: two classes of excavation will be recognized; common excavation and rock excavation.

.1 Rock : any solid material in excess of 0.25 m^3 and which cannot be removed by means of heavy duty mechanical excavating equipment with 0.95 to 1.15 m^3 bucket. Frozen material not classified as rock.

.2 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.

.2 Unclassified excavation: excavation of deposits of whatever character encountered in Work.

.3 Topsoil: material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.

.4 Waste material: excavated material unsuitable for use in Work or surplus to requirements.

.5 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.

.6 Unsuitable materials:

.1 Weak and compressible materials under excavated areas.

.2 Frost susceptible materials under excavated areas.

.3 Frost susceptible materials:

.1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 and ASTM C136 : Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.

.2 Coarse grained soils containing more than 20 % by mass passing 0.075 mm sieve.

.7 Unshrinkable fill: very weak mixture of Portland cement, concrete aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.

1.5 SUBMITTALS

.1 Samples:

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Inform Consultant at least 2 weeks prior to commencing Work, of proposed source of fill materials and provide access for sampling.

.3 Submit 25 kg samples of type of fill specified including representative samples of excavated material.

.4 Ship samples prepaid to Inspection firm, in tightly closed containers to prevent contamination.

1.6 QUALITY ASSURANCE

.1 Qualification Statement: submit proof of insurance coverage for professional liability.

.2 Where Consultant/Engineer is employee of Contractor, submit proof that Work by Consultant/Engineer is included in Contractor's insurance coverage.

.3 Submit design and supporting data at least [2] weeks prior to commencing Work.

.4 Design and supporting data submitted to bear stamp and signature of qualified professional engineer registered or licensed in Province of Ontario, Canada.

.5 Keep design and supporting data on site.

.6 Engage services of qualified professional Engineer who is registered or licensed in Province of Ontario, Canada in which Work is to be carried out to design and inspect cofferdams, shoring, bracing and underpinning required for Work.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate plastic, paper packaging and corrugated cardboard and place in designated containers.

.2 Place materials defined as hazardous or toxic in designated containers.

.3 Ensure emptied containers are sealed and stored safely.

1.8 PROTECTION OF EXISTING FEATURES

.1 Refer to *Section 01 11 00 – 'Summary of Work – article 1.5 Existing Conditions'* and *Section 31 21 13 – 'Rough Grading'* for requirements to provide underground scan in addition to service locates for all areas of work beyond the property lines.

.2 Protect existing features in accordance with Section 01 56 00 - Temporary Barriers and Enclosures and applicable local regulations.

.3 Existing buried utilities and structures:

.1 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.

.2 Prior to commencing excavation Work, notify applicable Owner or authorities having jurisdiction, establish location and state of use of buried utilities and structures. Owners or authorities having jurisdiction to clearly mark such locations to prevent disturbance during Work.

.3 Confirm locations of buried utilities by careful test excavations.

.4 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered as indicated.

.5 Ensure that adjacent property is not damaged in any way by excavating and grading work; by the removing, stockpiling and transporting of materials; by blown sand and dust or by spillage during the removing, stockpiling and transporting of materials; by the collapse or movement of excavated banks and stockpiles; or by storm water from altered drainage course.

.6 Ensure that no damage is caused by earthwork to existing structures, trees, buried and above-ground services, bench marks, and survey monuments on the site, or adjacent property. Arrange or ensure that all damage which occurs is repaired completely and immediately.

.7 Protect newly-graded areas from the action of the elements. Repair settlement and washouts that occurs before acceptance of the work, and re-establish grades to the required elevations and slopes. Fill to required subgrade levels any area where settlement occurs.

.8 Bail or pump all water out of excavation, from whatever cause, as it accumulates. Take all necessary measures to prevent flow of water and earth fines into the excavation.

.9 Support existing buildings, walks, roads, and services, and prevent cave-ins of excavated banks. A Professional Engineer specializing in this work shall design all protection. Provide shop drawings for authorities as required.

.10 Temporarily cover all existing catchbasins and manholes to prevent entry of earth or debris.

.11 Electronically locate underground services such as electrical and telephone lines, gas and water and sewer lines. Mark line of services with yellow ribbons or stakes with tip fluorescent painted, and indicating both plan location and depth.

.12 Protect the bottom and sides of the excavated pits and trenches from exposure to sun and rain to prevent cave-ins and softening of the bed upon which concrete and drains rest.

1.9 DUST CONTROL

.1 Provide and maintain adequate system to avoid any nuisance caused by dust and dirt rising throughout the area of operations. The use of calcium chloride is prohibited.

1.10 UNIT PRICES REQUESTED IN TENDER FORM

.1 For excavation, prices shall include excavation and disposal and units shall represent material measured in its original position by cross-sectioning of the area excavated. Volumes will be computed from the cross-section measurements by average end area method.

.2 For fill, prices shall include material, compacted to specified degree and measured in place.

Part 2 Products

2.1 MATERIALS

.1 Fill "A": Granular material meeting OPSS Material Specification for Aggregates, Form 1010, Granular "A". Minimum compaction density 98% Standard Proctor. For use primarily as bedding material.

.2 Fill "B": Granular material meeting OPSS Material Specification for Aggregates, Form 1010, Granular "B"-Type 2 or imported 50mm crusher run limestone, type 2. Minimum compaction density 100% Standard Proctor. For use primarily as fill under building slab on grade areas.

.3 Fill "C": Site (native) material, containing no organic or foreign matter, and which the Contractor can demonstrate is compactable to a density of 98% to 100% Standard Proctor. Minimum compaction density: 98% SPDD. For use primarily as fill under playfields areas and under paved areas up to underside of sub-base elevation.

.4 Fill "D": Refer to Section 32 12 17 –'Asphalt Paving' for 50 mm Crushed limestone sub-base and 19 mm crushed limestone base course used under paved areas.

.5 Crushed Stone Fill Under Slabs on Grade: Clean, Graded 20mm angular, natural clear crushed stone from approved source, free from shale, clay and friable materials and organic matter and containing no more than 10% passing the No.4 sieve

.6 Impervious Fill: Fine grain material such as clay, which is relatively impervious to the flow of water.

.7 Granular Bedding: OPSS Granular "A", concrete sand (CAN/CSA A23.1-M90) or crusher-run limestone. Minimum compaction 100% Standard Proctor density.

Part 3 Execution

3.1 SITE PREPARATION

.1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.

.2 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.

3.2 EXAMINATION

.1 Ensure in examination of the site that all possible factors concerning earthwork are investigated, and that the following are known in particular:

.1 Methods and means available for material handling, disposal, storage, and transportation.

.2 Physical conditions of site, including ground water table and drainage courses.

.3 Conformation and condition of ground surfaces.

.4 Character, quality, and quantity of surface and subsurface materials.

3.3 SOIL INVESTIGATION

.1 Soil investigation of the site was carried out by other consultants engaged by the Owner for the purpose of guidance in design and construction. A report and bore hole log on this investigation were prepared and are provided for information purposes. No responsibility is assumed by the Owner or Architects for the scope, accuracy, or interpretation of the

soil investigation report. Be responsible for adjusting estimates to incorporate conditions identified or reasonably inferred in the report, as documented in the Geotechnical Data.

3.4 STOCKPILING

.1 Stockpile fill materials in areas designated by Engineer Stockpile granular materials in manner to prevent segregation.

.2 Protect fill materials from contamination.

3.5 COFFERDAMS, SHORING, BRACING AND UNDERPINNING

.1 Obtain permit from authority having jurisdiction for temporary diversion of water course.

.2 Construct temporary Works to depths, heights and locations as directed by Engineer.

.3 During backfill operation:

.1 Unless otherwise as indicated or as directed by Engineer, remove sheeting and shoring from excavations.

.2 Do not remove bracing until backfilling has reached respective levels of such bracing.

.3 Pull sheeting in increments that will ensure compacted backfill is maintained at an elevation at least 500 mm above toe of sheeting.

.4 When sheeting is required to remain in place, cut off tops at elevations as indicated.

.5 Upon completion of substructure construction:

.1 Remove cofferdams, shoring and bracing.

.2 Remove excess materials from site and restore water courses as indicated and as directed by Engineer.

3.6 DEWATERING AND HEAVE PREVENTION

.1 Keep excavations free of water while Work is in progress.

.2 Dewater the site as necessary for the installation of the work, by providing a series of temporary trenches/pits and pumping as necessary. Backfill temporary trenches/pits and restore area when dewatering is no longer required.

.3 At no additional cost to the Owner, dewater the site as necessary to maintain the schedule and protect the work. Ensure the water pumped from site does not contaminate sewers municipal or on site sewer system. If required, arrange and pay for the cost of flushing sewers used for dewatering drainage routes.

.4 Submit for Engineer's approval details of proposed dewatering or heave prevention methods, such as dikes, well points, and sheet pile cut-offs.

.5 Avoid excavation below groundwater table if quick condition or heave is likely to occur. Prevent piping or bottom heave of excavations by groundwater lowering, sheet pile cut-offs, or other means.

.6 Protect open excavations against flooding and damage due to surface run-off.

.7 Dispose of water in accordance with Section 01 35 43 - Environmental Procedures and in manner not detrimental to public and private property, or any portion of Work completed or under construction.

.8 Provide flocculation tanks, settling basins, or other treatment facilities to remove suspended solids or other materials before discharging to storm sewers, water courses or drainage areas.

3.7 EXCAVATION

.1 Advise Engineer at least 7 days in advance of excavation operations for initial cross sections to be taken.

.2 Refer to Geotechnical Investigation Report included in Binder C for instructions on soil removal, reuse, imported material and compaction.

.3 Remove top layer of soil and fill containing organics.

.4 Excavated material will be very sensitive to moisture content and handling. Granular B to be used to backfill areas and raise grades as required.

.5 Refer to Supplementary Information Form, Geotechnical Report and structural drawings for Alternate Trench and Pour foundation information.

.6 Perform bulk excavation and detailed excavation for construction of building (and for installation of mechanical and electrical services). Excavate beyond wall faces sufficiently to allow removal of forms, if applicable, but generally no more than 900 mm beyond centre of wall. Do not re-fill over excavated areas with materials removed, nor any other material without the approval of the Consultant. Excavation and disposal of boulders is part of this section.

.7 Remove disturbed earth displaced by adjacent construction.

.8 Notify the Consultant of completion of excavation work and before any concrete or fill is placed on the bearing strata, in order that he may inspect the exposed bearing surfaces.

.9 If the Consultant requires additional excavation below the elevation indicated or specified, such additional excavation and disposal will be paid for on the basis of unit prices quoted in the Bid Form. Units of measurements will be those given for the unit prices, and shall be measured in their original position and computed by the method of average end areas.

.10 Remove excess and unsuitable excavated materials from the site. Comply with the MOE regulations and those of other regulating bodies, regarding disposal of contaminated soil.

.11 Blasting is prohibited, except upon written permission of Consultant. Rock removal, if required, shall be by means of Ram Splitting equipment only.

.12 Keep all surfaces against which concrete, unit masonry or fill is to be placed free from frost. Thaw out frozen surfaces against which concrete or fill is to be placed to unfrozen depth.

.13 Excavation must not interfere with bearing capacity of adjacent foundations.

.14 Do not disturb soil within branch spread of trees or shrubs that are to remain. If excavating through roots, excavate by hand and cut roots with sharp axe or saw.

.15 Keep excavated and stockpilled materials a safe distance away from edge of trench as directed by Engineer.

.16 Restrict vehicle operations directly adjacent to open trenches.

.17 Do not obstruct flow of surface drainage or natural watercourses.

.18 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.

.19 Notify Engineer when bottom of excavation is reached.

.20 Obtain Engineer approval of completed excavation.

.21 Hand trim, make firm and remove loose material and debris from excavations. Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil. Clean out rock seams and fill with concrete mortar or grout to approval of Engineer.

3.8 COMPACTION

.1 Provide, operate and maintain compacting equipment necessary to achieve the compaction densities specified.

.2 Compact fill until the required density is achieved. Do not compact material containing frost.

.3 Fill hollows and depressions which develop under compaction with matching backfill material. If the base becomes rutted or displaced due to any cause, regrade the surface.

.4 Compact backfill by means of vibratory type equipment capable of achieving the desired degree of compaction. Use manually operated vibratory tampers in the proximity of foundations and in areas not readily accessible to roller equipment. Make good damage to the structure due to compaction and settlement of fill. Report damage to foundations promptly to the Consultant. Obtain approval of remedial procedures.

3.9 BACKFILLING

.1 Plug unused services such as drains, sewers, field tile, and service pipes uncovered by excavation.

.2 Backfill at foundation walls only after they have been approved by Consultant.

.3 Backfill with 200 mm deep layers of fill or as specified, each consolidated before the next is placed.

.4 Backfill to mechanical and electrical service trenches as specified in the electrical and mechanical specifications.

.5 When backfilling both sides of walls, place fill simultaneously on both inner and outer faces to balance pressure on wall.

.6 Where walls are to be backfilled on one side only, commence backfilling only when the ground floor structural members are in place, if applicable, or adequate bracing is provided for top and bottom of foundation walls.

.7 Compact fill to densities specified for material requirements.

.8 Do not proceed with backfilling operations until [Engineer] [Consultant] has inspected and approved installations.

.9 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.

.10 Do not use backfill material which is frozen or contains ice, snow or debris.

.11 Place backfill material in uniform layers not exceeding 150 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.

.12 Backfilling around installations.

- .1 Place bedding and surround material as specified elsewhere.
- .2 Do not backfill around or over cast-in-place concrete within 24 hours after placing of concrete.
- .3 Place layers simultaneously on both sides of installed Work to equalize loading.
- .4 Where temporary unbalanced earth pressures are liable to develop on walls or other structures:
  - .1 Permit concrete to cure for minimum 14 days or until it has sufficient strength to withstand earth and compaction pressure and approval obtained from Engineer.
  - .2 If approved by Engineer erect bracing or shoring to counteract unbalance, and leave in place until removal is approved by Engineer.

.13 Install drainage system in backfill as directed by Consultant.

3.10 FILL UNDER FLOOR SLABS

.1 Prior to filling, proof-roll existing earth subgrade in order to identify inconsistencies or soft areas. Proceed with filling operations only after inconsistencies or soft areas have been reworked and compacted or excavated, backfilled and compacted as required to eliminate such conditions.

.2 Avoid proof-rolling close to caissons, columns, walls and other structures within the confines of the proof rolling operations.

.3 Prior to placing fill, ensure existing ground is compacted to 98% Standard Proctor density.

.4 Place approved fill under floor slabs as soon as foundation walls are completed to floor level and mechanical and electrical services are installed in trenches.

.5 Place fill in layers of 150mm maximum, and consolidate each before placing next layer.

.6 Compact fill to density specified for material requirements with a heavy vibrating roller. Compact fill adjacent to walls, piers, or wherever else heavy roller equipment cannot approach, with mechanical tampers to equivalent density. Dig out soft spots and re-fill and compact to specified density.

.7 Where undisturbed soil surface is low below areas of slab-on-grade, bring level up to within 200 mm of underside of slab fill with Fill "B". Do not use fill “C” within building area.

.8 Backfill trenches to within 200 mm of underside of slab fill with Fill "B".

.9 The final 200 mm layer under slabs shall be clear crushed stone, as specified. Place crushed stone in maximum 100 mm layers and compact to 100% Standard Proctor Density.

3.11 FILL UNDER PAVED AREAS

.1 Prior to filling, proof-roll existing earth subgrade in order to identify inconsistencies or soft areas. Proceed with filling operations only after inconsistencies or soft areas have been reworked and compacted or excavated, backfilled and compacted as required to eliminate such conditions.

.2 Avoid proof-rolling close to caissons, columns, walls and other structures within the confines of the proof rolling operations.

.3 Prior to placing fill, ensure existing ground is compacted to 98% Standard Proctor density.

.4 Place specified granular fill in layers of 150mm maximum, and consolidate each before placing next layer, up to underside of pavement sub-base elevation.

.5 Compact fill to density specified for material requirements with a heavy vibrating roller. Compact fill adjacent to walls, piers, or wherever else heavy roller equipment cannot approach, with mechanical tampers to equivalent density. Dig out soft spots and re-fill and compact to specified density.

3.12 FILL UNDER PLAYFIELDS AND LANDSCAPED AREAS

.1 Construction access, contractor parking areas and Portables Area are intended to be reinstated in time for sod to have a minimum of 6 weeks to “take” prior to Fit for Occupancy. Identify this target date on the project schedule. Conduct site work and schedule accordingly to complete work related to sodding these areas as early as possible prior to contract completion.

.2 Use Fill “C” native site material for fill under the landscaped areas as indicated on drawings.

.3 Prior to placing fill, ensure existing ground is compacted to 95% Standard Proctor Density.

.4 Place fill in layers of 200 mm maximum and consolidate each before placing next layer.

.5 Compact Fill “C” to minimum 95% Standard Proctor Density under playfields.

3.13 RESTORATION

.1 Upon completion of Work, remove waste materials and, trim slopes, and correct defects as directed by Consultant.

.2 Place topsoil as directed by Consultant.

.3 Reinstate lawns to elevation which existed before excavation.

.4 Reinstate pavements and sidewalks disturbed by excavation to thickness, structure and elevation which existed before excavation.

.5 Clean and reinstate areas affected by Work as directed by Consultant.

.6 Use temporary plating to support traffic loads over unshrinkable fill for initial 24 hours.

.7 The Owner will engage the services of an Inspection and Testing Company to verify that work conforms to the requirements of the specifications.

.8 The Contractor shall cooperate fully with the testing and inspection company.

.9 The Contractor shall maintain its own quality control program to ensure that its work conforms to the drawings and specifications.

.10 Submit 4 kg. samples of the fill materials to the inspection and testing company at least 10 days prior to commencement of backfill operations. Materials tested and approved shall constitute a standard for the acceptance of material delivered to the site.

.11 The inspection and testing company shall be responsible for the following work:

.12 Determine the depth of unsatisfactory material, if any, to be removed.

.13 Inspect and approve the sub-grade prior to commencement of backfill operations.

.14 Test and approve the proposed backfill materials.

.15 Be present full time during operations in order to inspect and approve the methods of placing and compacting and to carry out the necessary tests to determine the Proctor Density of the backfill and the actual field densities being obtained. Take sufficient tests to ensure that adequate information is obtained to judge the uniformity of compaction. Inspect all piping and conduit in place in trenches prior to backfilling to ensure correct slope and placement as designed.

.16 Check the quality of backfill being delivered to the site.

.17 Check the depth of granular fill.

.18 Confirm bearing elevations. Confirm and record spot elevations of all piping at critical locations to confirm design depths and slopes.

.19 Check installation of weeping tile.

.20 Issue reports to the Consultant tabulating test results and giving final approval and suggestions as to the backfilling and compaction operation.

.21 The cost of such inspection and testing shall be paid for under the Fill and Compaction Testing Allowance specified in Section 01 11 00- Summary of Work. The cost of retesting unacceptable compaction shall be borne by this Section.

3.14 INSPECTION AND TESTING

.1 Refer to Section 01 11 00- Summary of Work, Section 1.29.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 013543 – Environmental Protection.

.2 Section 329121 – Topsoil and Finish Grading.

.3 Section 329310 – Planting of Trees, Shrubs and Ground Covers.

.4 Section 31 23 10 - Excavation, Trenching and Backfilling.

.5 Section 33 46 20 – Foundation and Underslab Drainage .

.6 Section 033000 – Cast-in-Place Concrete.

.7 Section 32 12 17 – Asphalt Paving.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.1 ASTM D698-[91(1998)], Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m ^{3}).

1.3 EXISTING CONDITIONS

.1 Refer to Drawings and other sections regarding extent of fill and rough grading completed previously be the subdivision developer.

.2 Contractor shall coordinate and obtain required separate Permits for all work to public boulevard areas outside the property line. Refer to *Section 00 11 00 – 'Summary of Work, article 1.5 Existing Conditions*' and *Section 00 21 13 – 'Instructions to Bidders, article 1.26'* for additional permit requirements prior to construction.

.3 Refer to Geotechnical Report. Note that boreholes refer to data recorded prior to previous bulk rough grading contract being executed. Note that depth of previous excavation prior to backfill is provided for areas within the building envelope. Contractor is responsible to coordinate with Structural Drawings and Specifications to determine depths of foundations.

.4 Contractor is responsible to quantify all on-site material to achieve design grades and is responsible for the importation or exportation of material from the site as required.

.5 Known underground and surface utility lines and buried objects are indicated on site plan. Confirm exact locations of utility lines and buried objects prior to machine excavation or grading. In addition to all utility locates, contractor shall conduct engage a private locate company to conduct an underground scan for all areas of grading and excavation outside the property lines.

1.4 PROTECTION

.1 Protect and/or transplant existing trees, landscaping, natural features, bench marks, pavement, surface or underground utility lines which are to remain as directed by Consultant. If damaged, restore to original or better condition unless directed otherwise.

.2 Maintain access roads to prevent accumulation of construction related debris on roads.

Part 2 Products

2.1 MATERIALS

.1 Fill material to all parking and driveway areas, asphalt and concrete paving areas and building pad: OPSS Granular B-Type 2 in accordance with of Section 31 23 10 - Excavating, Trenching and Backfilling.

.2 Excavated or graded material existing on site may be suitable to use as fill for grading work if approved by Consultant and uncontaminated type of existing materials meets the requirements herein for stated locations.

Part 3 Execution

3.1 STRIPPING OF TOPSOIL

.1 There is no reusable topsoil on this site. Topsoil has already been generally stripped and removed from the site as part of previous fill and rough grading operations.

.2 Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected as determined by Consultant

.3 Examine the site and determine the extent of areas previously stripped and approximate depth of remaining topsoil, if any.

.4 Strip the remaining topsoil from the site as part of the work in this Section.

.5 Remove any remaining top soil that may exist from areas to be excavated, paved and regraded.

.6 Strip top soil when dry enough to prevent contamination of subgrade.

.7 Contractor is responsible to quantify all on-site material to achieve design grades and is responsible for the importation or exportation of material from the site as required. Existing excess topsoil, if any, must be quantified before tender and may be re-used for general sodded areas as described in Section 32 91 21 Topsoil Placement and Grading.

.8 Remove from site existing grass and vegetation and surplus top soil, if any.

3.2 GRADING

.1 Grading Plan includes the existing, as-built conditions of the site within the property limits.

.2 The Contractor shall use the information shown on the site plan, the grading plan, the Geotechnical Report, as well as the information observed during visits to the site during the Tender Period, as the. basis for the "Existing Conditions" of the site.

.3 Rough grade to levels, profiles, and contours allowing for surface treatment as indicated. Ensure that rough grading operations to not promote water ponding in construction areas.

.4 Perform construction grading to allow proper construction access to the work.

.5 Grade to prevent water ponding on site during construction period. Create additional ditches, swales, slopes, ponds, etc. as required by Contract Documents and Municipal Authorities for control of drainage, sedimentation and topsoil retention.

.6 Unless suitable uncontaminated fill or cut has been completed by previous contract, rough grade to following depths below finish grades:

.1 150 mm for grassed areas.
.2 400 mm for flowerbeds.
.3 450 mm for shrub beds.
.4 600 mm for heavy asphalt paving.
.5 540 mm for medium duty asphalt paving.
.6 275 mm for concrete walks.
.7 Maximum tolerance for rough grade elevation : .+- 25 mm

.7 Slope rough grade away from building 1:50 2 % minimum.

.8 Grade swales and ditches to depths as indicated.

.9 Prior to placing fill over existing ground, scarify surface to depth of 150 mm. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.

.10 Compact filled and disturbed areas to maximum dry density to ASTM D698, as follows:

.1 95% under landscaped areas.
.2 98 % under paved and walk areas.

.11 Do not disturb soil within branch spread of trees or shrubs to remain.

3.3 TESTING

.1 Inspection and testing of soil compaction will be carried out by testing agency hired by the owner.

.2 Tests to be conducted on imported soils and provided by a ULC designated laboratory prior to bringing to and placing on the site.

.3 Costs of tests will be paid under a Cash Allowance. Refer to Section 01 11 00 – Summary of Work.

.4 Submit testing procedure, frequency of tests, [testing laboratory as designated by ULC or certified testing personnel to Consultant for approval and review.

3.4 SURPLUS MATERIAL

.1 Remove surplus material and material unsuitable for fill, grading or landscaping as directed by Consultant and Municipal Authorities.

.2 Include for removal and disposal of asphalt driveways, excess fill, rubble, etc. beyond property lines within work areas shown on SG.1 and SS.1

.3 Confirm locations on site prior to tender.

END OF SECTION

1. GENERAL

1.1. General Requirements

1. Conform to the requirements stated in the General Conditions, Supplementary General Conditions of this Specification and all addenda for all work.

1.2. Related Work

1. Aggregates — Section 31 05 17

1.3. References

1. ASTM D4791-10, Test Method for Flat or Elongated Particles in Coarse Aggregate.
2. Ontario Provincial Standard Specification 1001.

2. PRODUCTS

2.1. Materials

1. Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, or other substances that would act in deleterious manner for use intended.
2. Geotextile for siltation control fence shall be Class I non-woven geotextile fabric in accordance with OPSS PROV 1860.

2.2. Source Quality Control

1. Inform Consultant of proposed source of aggregates and provide access for sampling at least four weeks prior to commencing production.
2. If, in opinion of Consultant, materials from proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, locate an alternative source or demonstrate that material from source in question can be processed to meet specified requirements.
3. Advise Consultant four weeks in advance of proposed change of material source.
4. Acceptance of material at source does not preclude future rejection if it fails to conform to requirements specified, lacks uniformity, or if its field performance is found to be unsatisfactory.

3. EXECUTION

3.1. Installation

1. Silt Control Fence
    1. Install silt control fence along construction site perimeter including tee bars, geotextile filter fabric, clear stone along the upstream side of the fence in the instance the ground is frozen.

3.2. Maintenance

1. Maintain silt control fencing for the duration of the construction and replace as required until the site is stabilized.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 31 23 13 - Rough Grading.

.3 Section 31 23 10 – Excavation, Trenching and Backfilling.

.4 321613 Concrete Curbs and Gutters

.5 Section 32 17 23 – Pavement Markings

.6 Section 03 30 00 – Cast-in-Place Concrete.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)

.1 ASTM D698-[00a], Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3)).

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.5- [M91 (March 1999)], Low Flash Petroleum Spirits Thinner (Reaffirmation of December 1991).

.2 CAN/CGSB-1.74- [2001], Alkyd Traffic Paint.

.3 Government of Québec, Minister of Transport

.1 Cahier des charges et devis généraux (CCDG)-[97].

.4 Ontario Provincial Standard Specifications (OPSS)

.1 OPSS 302-[April 1999], Construction Specification for Primary Granular Base.

.2 OPSS 310-[March 1993], Construction Specification for Hot Mixed, Hot Laid Asphaltic Concrete Paving and Hot Mix Patching.

.3 OPSS 314-[December 1993], Construction Specification for Untreated Granular, Subbase, Base, Surface Shoulder and Stockpiling.

.4 OPSS 1010-[March 1993], Material Specification for Aggregates, Granular A, B, M and Select Subgrade Material.

.5 OPSS 1103-[February 1996], Material Specification for Emulsified Asphalt.

.6 OPSS 1150-[May 1994], Material Specification for Hot Mixed, Hot Laid Asphalt Concrete.

1.3 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit to Consultant, samples of material for sieve analysis at least 2 weeks before beginning Work.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

.2 Place materials defined as hazardous or toxic in designated containers.

.3 Divert unused aggregate materials from landfill to facility for reuse as approved by Consultant.

.4 Dispose of unused paint and paint thinner materials at official hazardous material collections site as approved by Consultant.

.5 Fold up metal banding, flatten and place in designated area for recycling.

.6 Do not dispose of unused paint and paint thinner material into sewer system, into streams, lakes, onto ground or in other location where it will pose health environmental hazard.

.7 Divert unused asphalt from landfill to facility capable of recycling materials.

1.5 EXTENDED WARRANTY

.1 Submit a warranty for asphalt paving installation, covering materials and labour and the repair or replacement of defective work in accordance with the Contract, but for two (2) years total.

Part 2 Products

2.1 MATERIALS

.1 Sub-Base**:** Suitably compacted native material only where approved density and drainage is achieved**.** Otherwise in upfill locations use Fill type"B" where required to reach design elevations.

.2 Base: 50 mm and 19 mm graded, crusher run limestone to depths indicated on AD details.

.3 Heavy Duty Pavement for Parking and Driveways**:** Hot mix, hot laid asphaltic concrete HL8 and HL3, mixture conforming to O.P.S.S. #1150.05.

.4 Medium Duty Pavement for Play Areas and Walkways**:** Hot mix, hot laid asphaltic concrete HL8 and HL3, mixtures conforming to O.P.S.S. #1150.05.

.5 Joint Painting Material**:** SS-1 emulsion in accordance with O.P.S.S. #1103.05.

Part 3 Execution

3.1 PREPARATION

.1 Regard locations and instructions on drawings. Report any discrepancies or questions to the Consultant prior to proceeding with the work. In particular pay attention to the exact delineation of all edges of pavement and types of pavement;

.2 Set out work in accordance with lines and levels shown on Drawings. Maintain such lines and levels through duration of work. Ensure positive drainage toward catch basins is maintained in all areas.

.3 Compact sub-grade to a minimum of 98% Standard Proctor density.

.4 Ensure the granular base extends beyond the proposed edge of asphalt where otherwise unsupported.

.5 Paint exposed edge of asphaltic joints, edge of manhole and catchbasin frames, curbs and similar items with SS-1 emulsion.

3.2 INSTALLATION

.1 Inspect site grades prior to installation. Review the precise grade requirements required on the grading plan. Review with the Consultant prior to installation if any conditions exist that may cause deviations from grades shown on Drawings. Coordinate catchbasin elevations with those shown on Mechanical site plan.

.2 Pavement Section:

.1 Heavy Duty: at all parking and driveway areas (refer also to AD drawings)

- .1 minimum 300 mm compacted thickness of Granular B or 50 mm crusher run limestone compacted to 100% Standard Proctor Maximum Dry Density (SPMDD), ASTM-D698 .
- .2 150 mm compacted thickness Base course of 19 mm crusher run limestone compacted to 100% SPMDD.
- .3 60 mm compacted thickness of granular asphalt HL8.
- .4 40 mm compacted thickness of granular asphalt HL3.

.2 Medium Duty: at parking areas & at rear and side yard play and walkway areas noted on Site Plans.(refer also to AD drawings)

- .1 200 mm compacted thickness of Granular B or 50 mm crusher run limestone Sub-Base compacted to 100% Standard Proctor Maximum Dry Density (SPMDD), ASTM-D698.
- .2 150 mm compacted thickness Base course of 19 mm crusher run limestone compacted to 100% SPMDD..
- .3 40 mm compacted thickness of granular asphalt HL8.
- .4 40 mm compacted thickness of granular asphalt HL3.

.3 Placing Granular Materials:

.1 Exercise due care at all times to prevent granular materials from being contaminated by clay or other types of deleterious materials.

.2 Place materials immediately after sub-grade is inspected by the Architect and as follows:

- .1 To required width and thickness indicated on Drawings in layers not exceeding 100 mm compacted thickness crusher run limestone.
- .2 Grade each layer and compact to a minimum 100% standard Proctor density to a smoother surface conforming to required cross-section.

.4 Finished surface of granular material must not deviate more than 10 mm from designed grade.

.5 Placing Asphaltic Pavement:

.1 Obtain Consultant's inspection of compacted granular base before commencing asphalt paving.

.2 Air temperature during placing of mixture must be minimum 7 deg. C and rising. Temperature of mixture when spread must be not less than 120 deg. C nor more than 150 deg. C. Do not increase temperature of mixture to offset long distance hauling.

.3 Compact asphaltic mixture as soon as it can bear roller without undue displacement and hairline cracking and continue until all roller marks are eliminated. Speed of roller must at all times be slow enough to avoid displacement of mixture. Keep roller wheels slightly moistened by water to prevent adhesion of mixture. Excess water will not be permitted. Compact mixture with hot tampers in locations that are not easily accessible to machine roller.

.4 Rolling Procedure:

.1 Initial and final rolling must be accomplished using self-propelled Class "B" roller.

.2 Intermediate rolling must be carried out using self-propelled Class "C" roller or "D" roller. Intermediate roller must follow breakdown roller as closely as possible.

.5 Upon completion of compaction each pavement course must be:

.1 Smooth and true to crown and grade with variation not more than 6 mm from thickness shown on Drawing. Do not place any asphaltic course less than 25 mm thick nor more than 75 mm thick.

.2 Free from depressions exceeding 3 mm as measured with 3 m straight edge paralleling centre line of driveways/aisles.

.3 Compacted to a density not less than 97% Marshall.

.6 Finishing:

.1 Backfill all curbs.

.7 Joints:

.1 Cut back bituminous course to its full depth in straight or curved lines as required to expose fresh, straight, vertical surface. Remove broken and loose material.

.2 Asphalt must be placed in such a manner that joint must not be allowed to cool before adjacent asphalt course is applied.

.3 Where paving is comprised of two or more courses, joints must overlap by not less than 600 mm.

.4 Carefully place and compact hot asphaltic material against joints. Correct any unsatisfactory joint before proceeding with work.

.5 Feathering of joints will not be permitted.

.8 Inspection and Testing:

.1 Refer to Section 01 11 00 – Summary of Work, section 1.29.

.2 Field inspections during installation and core samples of all asphalt areas will be taken as part of Inspection and Testing. **If tests show asphalt to be substandard to that specified, all asphalt shall be removed and replaced at the Contractor's expense. Cash credits will not be accepted for work which does not fully comply with drawings and specifications.**

3.3 CERTIFICATION OF GRADES

.1 The Contractor is required to provide as-constructed elevations of the parking area by an O.L.S. surveyor to verify that the parking lot has been constructed in accordance with the contract drawings.

END OF SECTION

1 General

1.1 RELATED SECTIONS

.1 Section 32 12 16 – Asphalt Paving

1.2 QUALITY ASSURANCE

.1 All materials must conform to CSA CAN A.23.1-M90, latest edition (metric).

.2 Furnish the owner with a certificate prepared by the Ready-Mix concrete suppliers stating that all requirements regarding strength, slump, air entrainment, mix, materials and ration have been maintained.

.3 When required by the owner, have core tests taken at not less than 30 metre intervals, to determine the actual thickness of the paving. Pay all costs incurred. Patch pave to satisfaction of the owner at no extra cost.

.4 When required by the owner, have all concrete tested for compressive strength, slump and air content, in accordance with CSA CAN A.23.2-M90. Submit test reports in duplicate and pay all costs incurred.

1.3 PRODUCT DELIVERY, STORAGE & HANDLING

.1 Store all materials in accordance with CSA CAN A.23.1-M90 latest edition.

.2 Store reinforcing steel on racks or skids. Protect from contamination by dirt or other materials. Maintain steel in its fabricated form.

.3 Store forms off the ground and sufficiently supported to prevent warping or distortion. Protect from contamination by oil, grease, water, earth, etc.

.4 All concrete is to be ready-mixed at plant and transported to the site by truck in accordance with CSA CAN A.23.1-M90. Hand mixed concrete is not allowed unless approved in writing by the owner prior to starting any work.

.5 Place concrete in final position at such a rate that it remains plastic at all times and flows readily between reinforcement, into all corners and crevices and around all embedded fixtures. Pour in a continuous operation between expansion joints.

.6 Do not allow concrete to be contaminated by foreign materials or hardened concrete. Do not use retempered concrete unless approved in writing by the owner.

1.4 JOB CONDITIONS

.1 Protect all concrete surfaces from damage or harmful effects of weather, water, mechanical shock or trespassers until concrete is properly cured.

.2 If temperature is expected to drop below 5° below, place and protect concrete in accordance with ACI.605.

1.5 INSPECTION

.1 Obtain the approval of the owner of the layout, compacted sub-grade, compacted granular base, formwork and reinforcing before proceeding with subsequent work.

2 Products

2.1 MATERIALS

.1 Fill, if required: earth fill imported to the site, free from organic and foreign matter, capable of being compacted to 98% SPD.

.2 Granular base: 19mm diameter crusher run limestone.

.3 Portland Cement: Standard grey Portland cement, conforming to CSA CAN-A5-M88, latest edition.

.4 Aggregates: Nominal size as specified and conforming to CSA CAN-A23.1-M90 latest edition.

.5 Water: Clean and free from oil, acid, alkali, organic matter and other deleterious substances.

.6 Air entraining admixtures: Conforming to CSA CAN-A266.1-M78 and of approved manufacturer.

.7 Reinforcing steel: Conforming to CSA G30.12-M1977 for bars and CSA G.30.5-M1983 for welded steel wire mesh.

.8 Synthetic reinforcing: Maximum 25mm long synthetic fibres such as “Fibrin 23”, “Fibremesh” or approved equal.

.9 Expansion joint filler: As specified, either moulded composition joint filler conforming to A.S.T.M. D-1752-60T (Type II) or self expanding cork (Code 4324) conforming to A.S.T.M. D-1752-60T (Type III).

.10 Curbing Compounds: Conforming to C.G.S.B. 90-GP-1.

.11 Formwork: Conforming to CSA CAN-A23.1-M90 and ACI-347 and of sound wood, in good condition and equal or better than No. 1 grade construction spruce or 19mm Douglas Fir plywood, with a smooth surface treatment.

2.2 MIXES

.1 Mix concrete materials in accordance with CSA CAN-A23.1 M90, in the proper proportions and ratios to provide a finished product as specified.

.2 Concrete mix shall meet the following requirements: Compressive strength – minimum 25Mpa at 28 days, exposure A, unless otherwise noted on drawings and details; slump – 75mm maximum at point of deposit; air entrainment – 6% (±1%).

.3 With the exception of air entraining agents, other admixtures may only be used with the written approval of the Owner. The use of agents to lower the freezing point of the mix will not be permitted.

.4 The contractor is responsible for ensuring concrete mixes shall conform to the above noted specifications. No concrete mix approvals will be issued by the consultant.

3 Execution

3.1 PREPARATION

.1 Fine grade bulk rough graded surface eliminating uneven areas and filling low spots to achieve the sub-base for the specific paving profile. Remove all debris.

.2 Compact finished sub-grade to 98% Standard Proctor Dry Density

3.2 GRANULAR BASE

.1 Spread the specified granular materials in horizontal layers not exceeding 100mm loose depth and compact to 98% Standard Proctor Dry Density.

.2 In areas where compaction by roller is not possible, compact with approved mechanical or hand tamping devices to the specified density.

.3 Correct all irregularities or depressions resulting from rolling and compact until the granular surface is smooth, uniform and true to line and grade.

3.3 FORM WORK

.1 Erect forms true to line and level in accordance with the drawings, and sufficiently braced to maintain their shape and alignment when pouring concrete.

.2 Prior to each pouring operation, coat affected form surfaces with an approved form separating material.

.3 Provide for all openings, sleeves, hangers, anchors and ties to be case into the concrete.

3.4 REINFORCEMENTS

.1 Before placing reinforcement, clean all loose scale, dirt and any other coating that would reduce bonding to concrete.

.2 Place all reinforcement accurately in accordance with the drawings and/or approved shop drawings. Use approved spacers, hangers or ties to secure the reinforcing in position.

.3 Unless directed otherwise, provide the following minimum concrete cover over reinforcing:

.1 75mm cover where concrete is deposited against soil.
.2 50mm for bars 10m and larger and 40mm for bars smaller than 10m where concrete surface is exposed.

3.5 JOINTS

.1 Locate expansion joints as shown on the drawings and between new concrete and all new or existing structures. Joints must be case in place. Sawcut joints will not be allowed.

.2 Execute construction joints in accordance with ACI-301 and as detailed on the drawings. Thoroughly clean the joint surface, wet thoroughly and slush with a coat of cement grout

immediately before placing new concrete.

.3 Except for expansion joints, continue reinforcing uninterrupted through joints, unless shown otherwise on the drawings or directed by the owner.

.4 Stop reinforcing on each side of expansion joints. Where dowels are indicated, cast one half into one side of the joints. The exposed half shall be machined smooth and heavily greased before placing adjoining sections.

.5 Locate control joints as shown on the drawings. Ensure joints are to a minimum depth of ¼ the thickness of the concrete. Make joints by one of the following methods:

.1 Sawed joints.
.2 Hand formed and hand tooled.
.3 Inset joints paced in plastic concrete.

.6 No offsets will be allowed between adjacent sections of joint fillers and no plugs of concrete will be permitted anywhere within an expansion joint.

.7 Apply joint sealant in accordance with the manufacturer's directions. Ensure joints are clean and free of any foreign substances before sealing. Clean any sealant spilled on concrete surface immediately.

3.6 PLACING OF CONCRETE

.1 Do not place concrete until formwork and grades have been inspected and approved by the owner.

.2 Convey concrete from the mixer to the place of final deposit as rapidly as possible, with as little re-handling as is practical. Avoid separation and/or loss of material.

.3 While placing concrete, compact thoroughly and uniformly by approved means to ensure a dense homogeneous structure free of air pockets or honeycombs and closely bonded with reinforcement.

.4 Do not over vibrate to a point where segregation of the mix occurs.

3.7 FINISHING

.1 Finish all surfaces in accordance with CSA CAN-A23.1-M90.

.2 Strike off and float all exposed paving surfaces as soon as possible after consolidation and in accordance with recommendations of the Portland Cement Association.

.3 Walkways shall have a broom finish, evenly swept perpendicular to length of walkway. Other concrete shall be finished as shown on drawings and details.

.4 Ensure finished surface is true to line and level as shown on the drawings. Walks adjacent to curbs will have a pitch of 20mm per meter towards the curb. Other walks will be pitched as shown on the drawings.

.5 All irregularities greater than 3mm under a 3m straight edge, operated parallel to the centre line must be repaired.

.6 Immediately after stripping form work, obtain the approval of the owner before commencing patching, finishing or curing operations.

.7 The intent, method and type of mix for patching shall have the approval of the owner before commencing work. Ensure patching mix contains an approved bonding and waterproofing agent and that it is installed in accordance with the manufacturer's specifications.

.8 Backfill all curbs and pathways in accordance with section 31 23 33

3.8 CURING

.1 Keep concrete moist for at least three days after placement, in accordance with CSA CAN-A23.1-M90.

.2 Moist curing: Use burlap or approved equal. Ensure it is thoroughly wet when applied and kept continuously wet and in full contact with the surface during the curing period.

.3 Waterproof paper or white polyethylene sheeting: Ensure sheet is large enough to cover entire concrete surface. Secure to prevent displacement during curing period. Immediately repair any tears or holes.

.4 White liquid membrane compound: Apply at the rate of 1 litre per five square metres after final finishing and all free water has disappeared. Keep membrane compound agitated to prevent settling of compound. Apply membrane compound to edges immediately after form work is removed. Ensure a continuous and unbroken membrane cover is applied.

3.9 CLEAN-UP

.1 Clean and remove all concrete spills from the site.

END OF SECTION

1. **GENERAL**

1.1 **Related Sections**

1.1.1 Site Plan drawings and Binder C detail drawings.

1.2 **Samples**

1.2.1 Submit a sample panel in accordance with Section 01 33 00 - Submittal Procedures.

1.3 **Warranty**

1.3.1 5 years after the date of installation that the panels purchased shall be free from defects in material and workmanship and shall not split or crack under normal use and conditions.

2. **PRODUCTS**

2.1 **Materials**

2.1.1 Detectable Warning Panels

.1 600mm x 600mm Detectable Warning Tactile Panels made with reinforced high strength concrete, polymer composite or ceramic.

.2 CASTinTACT® as manufactured by Masons Supply Company 2637 SE 12th Ave., Portland, Oregon 97202. Telephone (503) 234-4321.

.3 Approved Alternates: Armor-Tile dist. by Engineered Plastics Inc. or approved alternates.

.4 Install to be approx. 24" x 60" – 72" wide.

3. **EXECUTION**

3.1 **Installation**

3.1.1 Panels are to be cast in concrete at top of all pedestrian depressed curbs (whether shown on drawings or not) and additional locations where shown on drawings and where required by municipal by-law.

3.1.2 The work shall consist of all labor, material, tools, equipment and services necessary to satisfactorily complete the installation of detectable/tactile warning surfaces in non-vehicular areas, at curb ramps and other locations such as depressed corners, raised crosswalks, raised intersections, borders of medians and islands, the edge of transit platforms, and sidewalks where railroad tracks cross to warn pedestrians of an upcoming change from pedestrian to vehicular way.

3.1.3 Install per manufacturers recommendations.

3.1.4 Expansion joints and control joints shall be located in compliance with manufacturer's recommendations. Joint materials shall follow manufacturer's directions and instructions.

3.1.5 Protect installed products until completion of project. If necessary, protect panels with plywood and an underlayment layer of non-staining, non-woven curing blanket until acceptance of work. Secure plywood if needed.

END OF SECTION

1. GENERAL

1.1. General Requirements

1. Conform to the requirements stated in the General Conditions, Supplementary General Conditions of this Specification and all addenda for all work, including work outside the property line including work within Regional and Municipal right of way unless otherwise noted.

1.2. Related Work

1.	Excavating, Trenching and Backfilling	Section 31 23 10
2.	Granular Base	Section 32 11 23
3.	Granular Sub-Base	Section 32 11 19
4.	Asphalt Paving	Section 32 12 16

1.3. References

1. Canadian Standards Association (CSA)
    1. CAN/CSA-A23.1-94, Concrete Materials and Methods of Concrete Construction.
2. Canadian General Standards Board (CGSB)
    1. CAN/CGSB-1.2-M89, Boiled Linseed Oil
    2. CAN/CGSB-3.3-M89, Kerosene
3. American Society for Testing and Materials (ASTM).
    1. ASTM D698-12e2, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-1lf/ft^3) (600 kN-m/m^3)
4. Ontario Provincial Standard Specification 353.

2. PRODUCTS

2.1. Materials

1. Concrete mixes and material shall conform to Ontario Provincial Standard Specifications 1301, 1302, 1303, 1305, 1306, 1308, 1315, and 1350. Concrete for curb and toe wall construction shall have a minimum compressive strength of 30 MPa after 28 days.
2. Granular Base and Sub-Base: to Section 32 11 23and 32 11 19 respectively.
3. Non-staining mineral type form release agent: chemically active release agents containing compounds that react with free lime to provide water soluble soap.
4. Fill material: to Section 31 23 10.
5. Boiled linseed oil: to CAN/CGSB-1.2.
6. Kerosene: to CAN/CGSB-3.3.

3. EXECUTION

3.1. Grade Preparation & Sub-Base Course

1. Grading: to Section 32 23 13.

2. Place sub-base course of OPSS Granular 'B', Type I in maximum 150 mm loose lifts and compact to a minimum of 100% of SPMDD.

3.2. **Granular Base**

1. Obtain Consultant's approval of subbase before placing granular base.
2. Place compacted OPSS Granular 'A' to depth, lines and widths as indicated.
3. Compact granular base to a minimum of 100% of SPMDD.

3.3. **Concrete**

1. Obtain Consultant's approval of granular base.
2. Do concrete curb construction in accordance with OPSS MUNI 353.
3. Provide 1.0m. wide depressions in curb where specified on the drawings as required to allow surface drainage to be conveyed to adjacent bio-swale areas.

3.4. **Tolerances**

1. Finish surfaces to within 3 mm in 3 m as measured with 3 m straightedge placed on surface.

3.5. **Expansion and Contraction Joints**

1. Joints are to be constructed in accordance with OPSS 353.07.07

3.6. **Curing**

1. Cure concrete by adding moisture continuously in accordance with CAN/CSA-A23.1 to exposed finished surfaces for at least 1 day after placing or sealing moisture in by curing compound approved by Consultant.
2. Where burlap is used for moist curing, place two prewetted layers on concrete surface and keep continuously wet during curing period.
3. Apply curing compound evenly to form continuous film. In accordance with manufacturer's requirements.
4. Concrete curing is to be in accordance with OPSS MUNI 904.

3.7. **Linseed Oil Treatment**

1. After concrete has cured for specified curing time and when surface of concrete is dry, apply two coats of linseed oil mixture uniformly to surfaces of curbs, walks and gutters.

3.8. **Backfill**

1. Allow concrete to cure for 7 days prior to backfilling.
2. Backfill to designated elevations with material approved by Consultant. Compact and shape to required contours as indicated or as directed by Consultant.

3.9. **Defective Concrete**

1. Concrete is defective when:
    1. Containing excessive honeycombing or embedded debris.
    2. Concrete damaged by freezing or which is unsatisfactory due to placement at too high a temperature.
    3. Average 28-day strength of any three consecutive strength tests is less than specified minimum 28-day strength.
    4. Any 28-day strength test result is more than 3.5 MPa below the specified minimum 28-day strength.

2. Repair of defective concrete work:

    1. Repair defective areas while concrete is still plastic, otherwise wait until curing is completed. Use repair methods approved by Consultant.

    2. Grind off high surface variations where directed by Consultant.

3. Remove and replace defective concrete where directed by Consultant:

    1. Remove between joints by sawing through concrete across full width.

    2. Replace with new concrete to this Section as directed by Consultant.

    3. Construct contraction joint between sawn face of existing concrete and face of new concrete.

    4. Install tie bars between old and new concrete as directed by Consultant.

3.10. **Field Quality Control**

1. Inspection and testing of concrete and concrete materials will be carried out by a Testing Laboratory designated by Consultant in accordance with CAN/CSA-A23.1.

2. Consultant may take additional test cylinders during cold weather concreting. Cure cylinders on job site under same conditions as concrete which they represent.

END OF SECTION

1. GENERAL

1.1. General Requirements

1. Conform to the requirements stated in the General Conditions, Supplementary General Conditions of this Specification and all addenda for all work, including work outside the property line including work within Regional and Municipal right of way unless otherwise noted.

1.2. Related Work

1.	Excavating, Trenching and Backfilling	Section 31 23 10
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4.	Asphalt Paving	Section 32 12 16

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    2. CAN/CGSB-3.3-M89, Kerosene
3. American Society for Testing and Materials (ASTM).
    1. ASTM D698-12e2, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-1lf/ft^3) (600 kN-m/m^3)
    2. Ontario Provincial Standard Specifications 1301, 1302, 1303, 1306, 1308, 1315, and 1350.
    3. Ontario Provincial Standards Drawing No. 310.010

2. PRODUCTS

2.1. Materials

1. Concrete mixes and material: to Section 03 30 00.
2. Joint filler and Curing Compound: to Section 03 30 00.
3. Granular Base and Sub-Base: to Section 32 11 23 and 32 11 19 respectively.
4. Non-staining mineral type form release agent: chemically active release agents containing compounds that react with free lime to provide water soluble soap.
5. Fill material: to Section 31 23 10.
6. Boiled linseed oil: to CAN/CGSB-1.2.
7. Kerosene: to CAN/CGSB-3.3.

3. EXECUTION

3.1. Grade Preparation & Sub-Base Course

1. Grading: to Section 31 23 13.

2. Compact subgrade to 95% of Standard Proctor Maximum Dry Density (SPMDD). Excavate and fill all weak and soft spots as required and backfill with compacted granular 'B', Type I to 100% SPMDD.

3.2. **Concrete**

1. Obtain Consultant's approval of granular base and reinforcing steel prior to placing concrete.
2. Do concrete work in accordance with Section 03 30 00.
3. Immediately after floating, give concrete walkway surface uniform broom finish to produce regular corrugations not exceeding 2 mm deep, by drawing broom in direction normal to centre line.
4. Provide edging as indicated with 10 mm radius edging tool.
5. Slip-form pavers equipped with string line system for line and grade control may be used if quality of work acceptable to Consultant can be demonstrated. Hand finish surfaces when directed by Consultant.

3.3. **Tolerances**

1. Finish surfaces to within 3 mm in 3 m as measured with 3 m straightedge placed on surface.

3.4. **Expansion and Contraction Joints - Concrete Walkways**

1. Install tooled transverse contraction joints after floating, when concrete is stiff, but still plastic, at intervals of 1.5 m.
2. Install expansion joints at intervals of 6 m.
3. Install expansion joints around manholes and catch basins and along length adjacent to concrete curbs, catch basins, buildings, or permanent structure.
4. Seal expansion joints with sealant approved by Consultant.

3.5. **Curing**

1. Cure concrete by adding moisture continuously in accordance with CAN/CSA-A23.1 to exposed finished surfaces for at least 1 day after placing, or sealing moisture in by curing compound approved by Consultant.
2. Where burlap is used for moist curing, place two prewetted layers on concrete surface and keep continuously wet during curing period.
3. Apply curing compound evenly to form continuous film. In accordance with manufacturer's requirements.

3.6. **Linseed Oil Treatment**

1. After concrete has cured for specified curing time and when surface of concrete is dry, apply two coats of linseed oil mixture uniformly to surfaces of curbs, walks and gutters.

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1. Allow concrete to cure for 7 days prior to backfilling.
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3. Remove and replace defective concrete where directed by Consultant:

1. Remove between joints by sawing through concrete across full width.

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END OF SECTION