Northeastern Catholic District School Board

Pope Francis Elementary School

Addition & Renovation
387 Balsam Street North
Timmins, Ontario

SPECIFICATIONS
Project No.: R121
Issued for Tender
May 26, 2017



BORTOLOTTO architecture • interior design

Alex Horber, OAA
Project Architect

alex@bortolotto.com
Tel: 416-324-9951 x22
Fax: 416-324-9719
533 College Street, Suite 401
Toronto, Ontario M6G 1A8

Section Number	Section Title	No. of Pages
Division 00-01 – General Requirements		
00 00 00	Cover Page	1
00 01 10	Table of Contents	3
00 01 11	Project Team	2
00 01 15	List of Drawings	2
00 21 13	Instruction to Bidders	13
00 30 00	Bid Form	4
00 30 20	Supplemental Bid Form	5
01 00 00	General Instructions	4
01 21 00	Allowances	2
01 29 00	Payment Procedures	5
01 31 19	Project Meetings	3
01 33 00	Submittal Procedures	6
01 41 00	Regulatory Requirements	1
01 45 00	Quality Control	3
01 51 00	Temporary Utilities	4
01 52 00	Construction Facilities	5
01 56 00	Temporary Barriers and Enclosures	3
01 61 00	Common Product Requirements	6
01 71 00	Examination and Preparation	3
01 73 00	Execution	3
01 74 11	Cleaning	3
01 77 00	Closeout Procedures	3
01 78 00	Closeout Submittals	9
01 79 00	Demonstration & Training	2
Division 02 – Existing Conditions		
02 41 16	Structure Demolition	4
Division 03 – Concrete		
03 41 00	Precast Structural Slabs	7
Division 04 – Masonry		
04 04 99	Masonry	5
Division 05 – Metals		
05 50 00	Metals Fabrications	5
Division 06 – Wood, Plastics & Composites		

06 40 00	Architectural Woodwork	6
Division 07 – Thermal & Moisture Protection		
07 21 13	Thermal Insulation	4
07 21 19	Sprayed Insulation	4
07 26 00	Vapour Retarders	5
07 42 40	Aluminum Composite Panels	10
07 45 19	Polyvinyl Chloride (PVC) Roofing	16
07 47 56	Fibre Reinforced Cementitious Panels	11
07 62 00	Sheet Metal Flashing & Trim	6
07 81 00	Applied Fireproofing (Intumescent Paint)	6
07 84 00	Fire Stopping	5
07 92 00	Joint Sealants	7
Division 08 – Openings		
08 11 00	Metal Doors and Frames	8
08 14 16	Flush Wood Doors	5
08 44 00	Aluminum Work	13
08 80 50	Glazing	10
08 71 00	Door Hardware	6
Division 09 – Finishes		
09 21 99	Partitions	6
09 31 00	Tile	4
09 51 99	Acoustical Ceilings	3
09 65 99	Resilient Flooring	4
09 91 99	Painting	8
Division 10 – Specialties		
10 10 00	Miscellaneous Specialties	2
Division 31 – Specialties		
31 62 00	Earthwork	7
Division 32 – Exterior Improvements		
32 12 16	Asphalt	5
32 31 13	Chainlink Fences & Gates	6

Appendices

Appendix A

Recommended Supplementary Conditions for the Stipulated Price Contract – CCDC 2, 2008 7
Dated August 11, 2009, prepared by the Ontario Association of Architects

Appendix B
Summary of Sampling Analysis, Various Buildings 14
Dated March 6, 2017, prepared for the Northeastern Catholic District School Board by Pinchin Ltd.

Appendix C
Hazardous Building Materials Assessment; Methodology 2
Dated February 23, 2017, prepared for the Northeastern Catholic District School Board by Pinchin Ltd.

Appendix D
Hardware Schedule 14
Dated May 4, 2017, prepared by Allegion

Appendix E
Hardware Catalogue Cuts 63
Dated May 4, 2017, prepared by Allegion

END OF SECTION

PROJECT MANAGER / OWNER REP.

Northeastern Catholic District School Board
David Horton
Manager of Plant & Maintenance
Tel: 705-268-7443 x3212
dhorton@ncdsb.on.ca

383 Birth Street North
Timmins, Ontario
P4N 6E8

ARCHITECT – PRIME CONSULTANT
Notify for issues regarding drawings, Consultants and construction

Bortolotto Design Architect Inc.
Alex Horber, OAA
Project Architect
Tel: 416-324-9951 x22
alex@bortolotto.com

533 College Street, Suite 401
Toronto, Ontario
M6G 1A8

CIVIL ENGINEER
Notify Project Architect

Counterpoint Engineering Inc.
Charlotte Bush
Project Engineer
Tel: 905-326-3172
cbush@counterpointeng.com

8395 Jane Street
Vaughan, Ontario
L4K 5Y2

STRUCTURAL ENGINEER
Notify Project Architect

Engineering Link Inc.
Craig Nicoletti
Associate
Tel: 416-599-5465
craig.n@englink.ca

207 Adelaide Street East, Suite 200
Toronto, Ontario
M5A 1M8

MECHANICAL & ELECTRICAL ENGINEERS
Notify Project Architect

John R. Hamalainen Engineering Ltd.
John Hamalainen
Principal
Tel: 705-522-5745 x22
john@consultingengineers.ca

2166 Armstrong Street
Sudbury, Ontario
P3E 5G9

END OF SECTION

Drawing No.	Drawing Title
0.0	Cover
Architectural	
A0.1	General Notes, OBC Data & Legends
A0.2	Schedules
A0.3	Assembly Schedule
A1.1	Site Plan
A2.1	Life Safety Plans
A3.1	Demolition Plans
A4.1	Foundation Plan
A4.2	Ground Floor Plan - Renovation
A4.3	Ground Floor Plan - Addition
A4.4	Second Floor Plan - Renovation
A4.5	Second Floor RCP - Addition
A4.6	Roof Plan
A5.1	Ground Floor RCP - Renovation
A5.2	Ground Floor RCP - Addition
A5.3	Second Floor RCP - Renovation
A5.4	Second Floor RCP - Addition
A5.1	Reflected Ceiling Plan
A6.1	Sections
A6.2	Sections
A7.1	Elevations
A7.2	Elevations
A8.1	Interior Elevations
A8.2	Interior Elevations
A8.3	Interior Elevations
A9.1	Details
A9.2	Details
A9.3	Details
A10.1	Interior Details
A11.1	Millwork
Civil	
SW-ND	Notes & Details Plan
SW-SG	Service and Grading Plan
Structural	
S1.1	General Notes
S1.2	Typical Details
S1.3	Typical Details

S1.4	Typical Details
S1.5	Typical Details
S1.6	Typical Details
S2.1	Foundation Plan
S2.2	Second Floor Framing Plan
S2.3	Roof Framing plan
S2.4	Roof Diaphragm & Second Floor Diaphragm Connection Plan
S3.1	Concrete Beam Schedule
S4.1	Sections and Details
S4.2	Sections and Details
S4.2B	Sections and Details
S4.3	Sections and Details
S5.1	Elevations and Details
S5.2	Sections and Details

Mechanical

ME1.1	Site Plan Mechanical/Electrical
M0.1	Mechanical Notes, Legends & Specifications
M0.2	Mechanical Notes, Legengs & Points Lists
M1.1	Ground Floor Plan Reno - Plumbing Layout
M1.2	Second Floor Plan Reno - Plumbing Layout
M1.3	Roof Plan Plumbing Layout
M2.1	Ground Floor Plan Reno - HVAC Layout
M2.2	Second Floor Plan Reno - HVAC Layout
M2.3	Ground Floor Plan Reno - Heating Piping layout
M2.4	Second Floor plan Reno - Heating Piping layout
M2.5	Roof Plan - HVAC Layout

Electrical

E0.1	Electrical Notes, Legends & Specifications
E1.0	Electrical Demolition Plan
E1.1	Ground Floor plan Reno - Power, Data & Fire Alarm
E1.2	Second Floor Plan Reno - Power, Data & File Alarm Layout
E1.3	Roof Plan - Power & Data Layout
E2.1	Ground Floor Lighting Layout
E2.2	Second Floor Lighting Layout

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

.1 The full scope of work is prescribed in detail in the attached tender documents. Without limiting the specifics of these requirements, the work generally consists of but it not limited to:

- .1 Construction of a two storey addition to the west side of the existing Pope Francis Elementary School
- .2 Renovations to the existing Pope Francis Elementary School
- .3 Site servicing and site work.
- .4 The site of the work is located at 387 Balsam Street North, Timmins, Ontario.

1.2 INVITED SUB-CONTRACTORS

.1 Bidders shall contact only the following pre-qualified sub-contractors for the scope of work noted. The remainder of the scope of work is open to any qualified subcontractor:

- .1 Millwork
  - .1 Baywood Interior Millwork Ltd.
  - .2 Harris Corporate Interiors Inc.
  - .3 Savignac General Wood Work Ltd.
  - .4 Gus Cabinet Shop
- .2 Mechanical
  - .1 Action Refrigeration & Electrical
  - .2 Gerry's Enterprises
  - .3 Metal Air
  - .4 N.Lacroix Plumbing & Lighting
  - .5 Pro Pipe Construction Inc.
- .3 Electrical
  - .1 All North Electrical
  - .2 Dacey Electric

1.3 INVITATION

.1 Bid Call:

- .1 Ensure offers are signed under seal, executed, and dated and are received by Owner at 383 Birch Street North, Timmins, Ontario, before 2:30 pm local time on 21st day of June 2017.
- .2 Submit Bids only to the address of the Northeastern Catholic District School Board Office at 101 Spruce Street South, Timmins, Ontario. Bids submitted to the address of Bortolotto Design Architect Inc. will not be opened and will be declared informal.

.3 Offers submitted after above time will be returned to Bidder unopened.
.4 Submit Bid Supplementary Form information with Bid Form at Bid closing time.
.5 Offers will be opened publicly immediately after time for receipt of Bid.
.6 The use of the fax, email or by other electronic means for delivery of a tender will not be accepted.
.7 Amendments to submitted offer will be permitted if received in writing prior to Bid closing and if endorsed by same party or parties who signed and sealed offer.
.8 Amendments must be submitted as a hard copy to the address above.

1.4 INTENT

.1 The intent of this Bid call is to obtain an offer to perform Work to complete the addition and renovations at Pope Francis Elementary School by way of a CCDC-2 2008 Stipulated Price contract, in accordance with Contract Documents.

.2 Perform Work within time stated in 'Bid Supplementary Form, Statement A'.

.3 Initiate Work within the time indicated in Appendix A Recommended Supplementary Conditions, Item GC 3.5 Construction Schedule.

1.5 CONTRACT DOCUMENTS

.1 Contract Documents Identification
.1 Contract / Bid Documents are identified as Project No. R121 – Pope Francis Elementary School – Addition & Renovation, including these specifications, appendices and drawings as listed in section 00 01 15 – List of Drawings.

.2 Availability
.1 Documents in .pdf format will be available to the pre-qualified bidders only via Biddingo.
.2 Bid Documents are made available only for the purpose of obtaining offers for specific Work in this project, in accordance with the Contract Documents, as requested in the Bid Call. Their use does not confer a license or grant for other purposes.

1.6 EXAMINATION

.1 Bid Documents will also be on display at:

.1 The North Bay Plan Room
2750 Hwy. 11N, North Bay
Phone number: (705) 494-7446

.2 Construction Documents Depository
925 Stockdale Road, 2nd floor
North Bay, ON
Phone number (705) 495-2515

.3 Sudbury Construction Association
257 Beatty Street
Sudbury, ON
Phone number (705) 673-5619

.4 Timmins Construction Association
76 McIntyre Rd
Schumacher, ON P0N 1G0
Phone number (705) 268-3757.

.2 Upon receipt of Bid Documents verify that documents are complete; notify Consultant should the documents be incomplete.

.1 Immediately notify the Consultant upon finding discrepancies or omissions in the Bid Documents.

.2 All tender documents are complementary and must be read together to ascertain a complete description of Work.

1.7 DESIGNATED SUBSTANCE SURVEY

.1 A Designated Substance Survey and methodologies have been prepared by Pinchin Environmental and are included as Appendix B and Appendix C

.2 The designated substance survey and methodologies are provided by the Owner.

.3 In case of discrepancies between the recommendations contained in the designated substance survey and requirements of the Contract Documents, the documents provided by the Owner shall govern. Should discrepancies be discovered, advise the Prime Consultant in writing prior to proceeding with Work.

.4 Contractor shall not be entitled to an adjustment in Contract Price and / or Contract Time for conditions that are reasonably inferable from the designated substance survey.

1.8 INQUIRIES AND ADDENDA

.1 If in doubt about meaning or intent of any part of Tender Documents, notify Consultant in writing. If no questions are received, it will be assumed that work is clearly defined and that Tenderers are in no doubt as to meaning or intent of Tender Documents.

.1 Direct questions in writing to Bortolotto Design Architect Inc.; contact person:

.1 Brian Muthaliff; brian@bortolotto.ca

.2 If Consultant and/or Owner should consider it necessary, a written addendum will be sent to each Tenderer.

.3 Clarifications requested by Tenderers must be in writing not less than seven (7) business days before date set for receipt of Tender closing. The reply will be in the form of an addendum, a copy of which will be forwarded to known Bidders no later than five (5) business days before Tender closing.

.4 No oral interpretation made to a Tenderer as to the meaning of any of the Tender Documents will be effective to modify any of the provisions of the Tender Documents.

.5 Changes to Tender Documents communicated to Tenderers in form of written addenda are to be considered as an integral part of Tender Documents.

1.9 SITE ASSESSMENT

.1 Each Bidder must visit the site of the work before submitting his Tender and satisfy himself by personal examination as to the local conditions affecting construction of the work. He is not to claim at any time after submission of his Tender that there was any misunderstanding of the terms and conditions of the Contract relating to site conditions.

.2 No plea for ignorance of conditions that exist or that may hereafter exist or of conditions or difficulties that may be encountered in execution of Work under this Contract as a result of failure to make necessary examinations and investigations will be accepted as an excuse for any failure or omission on part of Contractor to fulfill in every detail all requirements of said Contract Documents, or will be accepted as a basis for any claims whatsoever for extra compensation or extension of time.

.3 A mandatory site visit will be held at the lobby of the existing school, 387 Balsam Street North, Timmins, Ontario, on June 13, 2017 at 1:00 p.m.

1.10 NOT ACCEPTANCE OF ALTERNATE PRODUCTS

.1 Alternate products to that specified may be accepted by the Owner / Consultant for use in the Work by the following method:

.1 Bidder request for alternates products to that specified: Where the Bid Documents stipulate a particular product, alternate products will be considered by the Consultant in the following manner:

.1 Requests for alternate products will only be considered if request are made by Contractor and must include cover page clearly indicating Contractors name, address, signature and what product is being submitted as an alternate, product manufacture name, and model number followed by the complete product data indicating equivalency. Only one product will be reviewed per submission multiple products within one submission will be rejected.

.2 Requests for alternate products will only be considered by the Consultant if issued in writing up to seven (7) full business days prior to receipt of bids. Include in the written request, the specified product and specification section number where the product is specified, and provide sufficient information to enable the Consultant to determine acceptability of such products.

.3 When a request for an alternate product is made

and accepted by the Owner / Consultant, the Consultant will issue an Addendum to known Bidders to formalize acceptance. Alternate products requested by the Bidder during the Tender process that are not formalized by and Addendum will be deemed as not approved.

.4 In the submission of request to use alternate products to products specified, Bidders shall include in their Bid, any changes required in Work to accommodate such alternate products. A later claim by the Bidder for an addition to the Contract Price and/or Contract Time because of changes in Work necessitated by use of alternate products that are accepted and formalized by Addendum, will not be considered.

.2 Unless alternate products are submitted in this manner and subsequently accepted, provide only the products as specified. Alternate products will not be accepted after tender closing.

1.11 LOCAL TRADES, LABOUR, SUPPLIERS

.1 Contractor and / or Subcontractors are encouraged to contract and employ local trades people, suppliers, labourers, machine operators and equipment in the construction of this facility and to purchase from local suppliers.

.2 Responsibility for Work, Construction Schedule and supply of materials in employing local labourers, trades people, machine operators, equipment, suppliers, etc., remain entirely with the Contractor.

1.12 BID ENCLOSUERS / REQUIREMENTS

.1 Form of Agreement
- .1 The Agreement which will be executed between the Owner and the successful Tenderer will be CCDC 2, Stipulated Price Contract, 2008
- .2 Supplementary Conditions of the Agreement will be as per Appendix A – Recommended Supplementary Conditions for the Stipulated Price Contract CCDC 2, 2008

.2 Construction Lien Act
- .1 Comply with regulations of the Construction Lien Act R.R.O. 1990, Regulation 175.

.3 'Bid Form'
- .1 The 'Bid Form' shall be signed under corporate seal by the Bidder.
- .2 Sole Proprietorship: Signature of Sole Proprietor in the presence of a witness who will also sign. Insert the words "Sole Proprietor" under the signature.
- .3 Partnership: Signature of all Partners in the presence of a witness who will also sign. Insert the word "Partner" under each signature.
- .4 Limited Company: Signature of a duly authorized signing officer(s) in their normal signatures. Insert the officer's capacity in which the signing officer acts, under each signature. If the Tender is signed by officials other than the President and Secretary of the company, or the President-Secretary-Treasurer of the company, a copy of the by-law resolution of the Board of Directors authorizing them to do so, must also be submitted with the Tender in the Bid envelope.
- .5 Joint Venture: Each party of the joint venture shall execute the Bid, with their respective signatures, in a manner appropriate to such party as described above, similar to the requirements of a Partnership.

.4 'Bid Supplementary Form'
- .1 Intent: The 'Bid Supplementary Form' is submitted as additional information to the 'Bid Form'. Its contents, under signature and seal, shall form an integral part of the complete offer being made by the Bidder.
- .2 Statement 'A' – Duration: The Bidder offers to carry out Work on a continuous basis and to achieve Substantial Performance of the Contract, barring delays as prescribed in the Contract Documents, within the time indicated.
- .3 Statement 'B' – Construction Project Manager and Site

Superintendent: Name and telephone number of the Construction Project Manager and fulltime on Site Superintendent that will be used to perform the Work as described in the Contract Documents.

.4 Statement 'C' – Bidder Proposed Alternates: Prices offered by the Bidder to add or delete to the Bid Price for the use of methods and / or materials as an alternate to that specified. The Bidder Proposed Alternates include all associated Work that the substitution may have on the Contract Price and/or Contract Time. These alternates as proposed by the Bidder are not included in the Base Bid, and shall only be incorporated into Contract if accepted by the Owner in writing. Prices for Bidder Proposed Alternates do not include Harmonized Sales Tax (HST).

.5 Statement 'D' – Schedule of Subcontractors / Work by Own Forces:

.1 Provide a completed Schedule of Subcontractors, identifying all listed Subcontractors.

.2 Do not indicate "Own Forces" or the like where this is clearly not the intent. Where the trade work in question is clearly beyond the Contractors' experience and/or capabilities, Own Forces or the like will be taken as non-responsive.

.3 Should the Bidder be awarded the Contract, parties named (including those pre-qualified sub-contractors), including Bidder's Own Forces, shall be used to perform Work they are scheduled to perform and shall not be changed without written consent from Owner and Consultant.

.4 Owner reserves the right to request a change in proposed Subcontractor(s) provided the preferred alternative is acceptable to the Bidder and any cost difference is accounted for in a mutually acceptable manner.

.6 Statement 'E' – Separate Prices:

.1 Separate prices shall include all work for the supply and installation of the work and mark-ups and applicable taxes and duties excluding HST.

.2 Tenderers shall complete and fill in blank spaces as requested or tenders may be considered null and void.

.3 Note that the base tender price DOES NOT include separate prices and alternate prices.

.4 Should the owner accept of any of these separate and alternate prices, then the prices will be added to the base tender price.

.5 The lowest base tender price does not necessarily

indicate the successful bidder. The forgoing will be analyzed to arrive at a figure which will be considered by the owner with regard to awarding the Contract and thereby determine the successful bidder.

.5 Security Deposit:

.1 Bids are to be accompanied by security deposit in the form of a Bid Bond from a surety company licensed to carry on business in the Province of Ontario in amount 10 percent of Bid price.

.1 In lieu of a Bid Bond, the Owner will accept a certified cheque or an Irrevocable Letter of Credit from a financial institution licensed to carry on business in the Province of Ontario in the amount of 10 percent of Bid price as prescribed within.

.2 Endorse Bid Bond or certified cheque or irrevocable letter of credit in name of Owner as obligee, signed and sealed by principal Contractor and surety.

.3 Use most current edition CCDC approved bond forms.

.4 Security deposit will be retained without interest by Owner until the following, whichever comes first:

.1 a Contract is entered into and after delivery to Owner of required Performance and Labour and Materials Payment Bond(s) by accepted Bidder, *or*

.2 sixty (60) days after Tender Closing.

.5 If no contract is awarded, security deposits will be returned.

.6 Each Tenderer understands and agrees that, if his Tender is withdrawn before Owner considers Tenders, or before he has been notified that his Tender has been accepted by Owner, or if he fails for any reason to execute an Agreement and provide other documents as specified herein, the Owner may retain his security deposit for the Owner's use.

.6 Consent of Surety/Agreement to Bond

.1 Tender submission must include a clear and unqualified commitment from a surety company licensed to carry on business in the Province of Ontario, to provide Labour and Material Payment and Performance Bonds, in a format acceptable to the Owner, if the Tenderer is successful in his Tender to the Owner.

.2 The Agreement to Bond must reference:

.1 The project and Owner.

.2 The monetary value of each of the bonds.

.3 Include all associated costs of bonds in the Bid Price.

.4 If no contract is awarded, all security deposits will be returned.

.5 Required Bonds

.1 The following Bonds are required to be provided by the successful Tenderer following execution of the Agreement.

.1 Labour and Material Payment Bond in the amount of 100% of the contract value.

.2 Performance Bond in the amount of 100% of the contract value.

.6 Alternatively, the Contractor may provide in his tender submission a clear and unqualified commitment from a financial institution licenced to carry on business in the Province of Ontario to provide a certified cheque or an Irrevocable Letter of Credit to the Owner from a financial institution in a format acceptable to the Owner in the amount of 20 percent of contract value in lieu of a performance and a labour and material payment bond. Such a Certified Cheque of Letter of Credit shall be kept in place until the expiry of the 45 day Construction Lien Act period following the Work being declared Totally Performed by the Consultant / Payment Certifier.

.7 Insurance

.1 The Bidder shall provide with this Bid, and if successful from time to time thereafter, proof that their personnel are fully covered under Section 9 (3) of the Workers' Compensation Act.

.2 Submit with the a signed "Undertaking of Insurance" on a standard form provided or as provided by the Insurance Company stating their intention to provide insurance to the Bidder that their company and workers carry a minimum of $5,000,000.00 in public liability in accordance with the insurance requirements of the Contract Documents and Standard Construction Document CCDC 2, 2008.

.3 The Insurance Policy shall include endorsements for insurance of the Owner and the Consultant.

.1 Contractor's General Liability Policy Form CCDC 2, 2008.

.2 All Risk Property Policy Form CCDC 2, 2008. The proof of insurance including above endorsements shall be submitted prior to commencement of Work on site.

.4 Include the cost of insurance in the Bid Price.

.1 Submit a signed and valid Workplace Safety and Insurance Board Clearance Certificate.

1.13 SUBMISSION / BID OPENING FORMAT

.1 Bidders shall be solely responsible for the delivery of their Bids in the manner and time prescribed.

.2 Submit Bids in a sealed envelope.

.1 Sealed within a closed opaque envelope, include one (1) copy of each of the following documents:

.1 Bid Bond, certified cheque or Irrevocable Letter of Credit as prescribed above under Security Deposit,

.2 Consent of Surety Agreement to Bond, or letter from a financial institution as prescribed above in Consent of Surety/Agreement to Bond,

.3 Signed Undertaking of Insurance or Certificate of Insurance,

.4 WSIB Clearance Certificate,

.5 One (1) copy of the 'Bid Form' provided, fully completed with and executed offer, signed and completed with corporate seal.

.6 One (1) copy of the 'Bid Supplementary Form' provided, fully completed, signed and complete with corporate seal.

.3 Improperly completed information, or irregularities within the 'Bid Form' and 'Bid Supplementary Form' form, may be grounds for the Owner to declare the Bid "informal".

1.14 WITHDRAWAL OR AMMENDMENT OF TENDER

.1 A Bidder who has already submitted a Tender may submit a further Tender at any time up to the official closing time.

.2 The last Tender received will supersede and invalidate all Tenders previously submitted by that Tenderer for this Contract.

.3 A Bidder may withdraw or amend his Bid amount at any time up to the official closing time by submitting a letter to this effect bearing his signature and seal as in his Tender.

1.15 OFFER ACCEPTANCE / REJECTION

.1 A Tender is accepted by the Owner and a Contract is made thereby between the Owner and a Bidder only when an Agreement is executed by the Owner and by the Bidder. The acceptance of a Tender and the execution of an Agreement by the Owner is subject to the express condition that the Owner receive a Performance Bond and Labour and Material Payment Bond, as required herein, and in a form satisfactory to the Owner, within seven (7) days after notification of the execution of the Agreement by the Owner has been mailed to the Bidder whose Tender has been accepted.

.2 Neither the Consultant, nor any officer or employee of the Owner, has authority to make or accept an offer or to enter into a Contract on behalf of the Owner, except by execution of an Agreement, or to create any right against or to impose any obligations on the Owner.

.3 Recommendation of a Tender to the Owner for acceptance does not constitute acceptance of the Tender by the Owner.

.4 The Owner will not be responsible for any liabilities, costs, expenses, loss or damage incurred, sustained or suffered by any Tenderer prior to, subsequent to or by reason of the acceptance or the non-acceptance by the Owner of any Tender, or by reason of any delay in the acceptance of a Tender save as provided in the Contract.

.5 The Owner reserves the right to reject any or all Tenders as the interests of the Owner may require without stating reasons therefore.

.6 Owners determination of which Bid, if any, to accept, will be based solely on 100% the lowest Base Bid price.

.7 After acceptance by the Owner, the Consultant, on behalf of the Owner, will issue to the successful Bidder a written Bid acceptance / letter of intent indicating that the Owner will enter into a Stipulated Price Contract with the Contractor.

.8 Under no circumstances will the Bid submissions be opened or considered which are received after the advertised closing time for tenders.

.9 The Owner reserves the right not to accept bids if 2 or less bids are submitted.

1.16 INFORMAL OR UNBALANCED TENDERS

.1 Tenders which are incomplete, conditional, illegible or obscure, or contain additions not called for, reservations, erasures, alterations or irregularities of any kind may be rejected as informal.

.2 Tenders that contain prices which appear to be so unbalanced as to affect adversely the interests of the Owner or Tenders which are based upon an unreasonable period of time for the completion of the works may be rejected.

.3 The Owner reserves the right to waive any and all informalities, as the interests of the Owner may require, without stating the reasons therefore.

1.17 TENDER INCONSISTENCIES

.1 In any instances where the total of individual prices of the Tender does not equal the total Tendered Price, the mathematical summation of the constituent tendered prices will be taken as the offered Tender Price.

.2 Whenever in a Tender the amount tendered for an item does not agree with the extension of the estimated quantity and the Tendered Unit Price, the Unit Price is to govern and the item amount and Tender Price will be corrected accordingly.

1.18 TENDER IRREVOCABILITY

.1 The Tenderer to hold in force and not revoke his Tender for a period of sixty (60) days following Tender Opening.

.2 If the Tenderer revokes his offer within this period, the Tenderer will forfeit his Bid Security, but this does not prohibit the Owner from pursuing any other legal remedy which the Owner may have.

END OF SECTION

Bidder: _____

_____

_____

_____
(Name and Address of Bidder)

To: Northeastern Catholic District School Board
101 Spruce Street North
Timmins, Ontario
P4N 6M9

.1 Base Bid Price:

I/We, the undersigned, hereby offer and agree to furnish all required labour, materials, equipment and supervision and to execute the work set out in the Tender Documents, including all Addenda, Cash Allowances as set out in section 01 21 00 – Allowances and including all fees, permits, and taxes, but excluding H.S.T., for the Stipulated Price of:

_____

_____ DOLLARS $(_____)

In addition to the above price, Harmonized Sales Tax will be charged at 13%, totaling:

HST $(_____)

.2 Addenda Acknowledgement:

I/We acknowledge receipt of and have included for in our Stipulated Price the requirements of the following Addenda:

Addendum No._____ Dated_____ Addendum No._____ Dated_____

Addendum No._____ Dated_____ Addendum No._____ Dated_____

Addendum No._____ Dated_____ Addendum No._____ Dated_____

3. Cash Allowance:

I/We have included the cash allowance amounts as noted and as listed under the heading Cash Allowance, in Section 01 21 00 General Requirements.

4. Understanding:

.1 I/We declare that this Tender signed under my/our corporate seal, included herewith 'Bid Form, is made without knowledge, comparison of figures or arrangement with any other Company, Firm or Person making a Tender for this same work and that no officer or employee of the Owner has any direct or indirect interest in the performance or work of this Contract.

.2 I/We recognize the right of the Owner to reject any or all Tenders and to waive informalities as the interests of the Owner may require.

.3 I/We have visited and carefully examined the site of the work and have satisfied and informed myself/ourselves as to all the existing conditions, limitations and difficulties which may arise and govern the completion of the work.

5. Bid Attachments:

.1 I/We include the following documents herewith, Bid Securities and understand and agree that should any part of these documents be missing or incomplete, and/or contain irregularities, the Owner may declare my/our Bid informal and my/our Bid may not be opened:

.1 Bid Bond: a security deposit in the form of a Bid Bond from a surety company licensed to carry on business in the Province of Ontario or a Certified Cheque or an Irrevocable Letter of Credit from a financial institution licenced to carry on business in the Province of Ontario. I/We understand that this Bid Security will be returned to me/us following the award of a Contract, if this Tender is not accepted by the Owner, or, if this Tender is accepted by the Owner, following my/our execution of the Agreement.

.2 Consent of Surety Agreement to Bond: an Agreement to Bond from an approved surety company licensed to carry on business in the Province of Ontario.

.3 Signed Undertaking of Insurance or Certificate of Insurance: a signed "Undertaking of Insurance" on a standard form provided or as provided by the Insurance Company stating their intention to provide insurance to the Bidder in accordance with the insurance requirements of the Contract Documents and Standard Construction Document CCDC 2.

.4 WSIB Clearance Certificate: proof that my/our personnel are fully covered under Section 9 (3) of the Workers' Compensation Act.

.2 Bid Supplementary Form:

.1 I/We agree to submit the statements as specified, in the 'Bid Supplementary Form' signed under my/our corporate seal.

6. Subsequent Tender Closing Agreement Dates:

.1 I/We agree to hold this Tender in full force and effect for a period of sixty (60) days from the closing date for Tenders and agree that if my/our Tender is revoked during this period, my/our Bid Security will be forfeited to the Owner to use for his purposes.

.2 I/We agree, if this Tender is accepted, to execute the specified Agreement and provide the specified Bonds within seven (7) days of notification by the Consultant to do so.

.3 I/We commit to attaining Substantial Performance of the work described in the Tender Documents by the duration date indicated in 'Bid Supplementary Form' Statement 'A' - Duration.

7. Signed, sealed and submitted on behalf of:

_____

_____

_____

_____
(Name and Address of Bidder)

_____
(Phone Number)

_____
(Email Address)

_____
(Name and Title) Corporate Seal

_____
(Signature of Bidder)

_____
(Name and Title of Witness)

_____
(Signature of Witness)

Dated at_____this_____day of_____20_____
(Town / City / Province) (Month)

END OF SECTION

Bidder: _____

_____

_____

_____
(Name and Address of Bidder)

To: Northeastern Catholic District School Board
101 Spruce Street North
Timmins, Ontario
P4N 6M9

.1 Intent:

I/We offer this 'Bid Supplementary Form' as additional information to the 'Bid Form'. Its contents, under signature and seal, shall form an integral part of the complete offer being made by the undersigned.

As prescribed in the Instructions To Bidders, I/we further understand and agree that the statements contained in this 'Bid Supplementary Form' will be used in combination with 'Bid Form' contents to determine and select the best overall value of which Bid, if any, the Owner may accept.

.2 STATEMENT 'A' - DURATION

Upon receiving Owner's written confirmation to proceed with Work, I/We offer to carry out the Work on a continuous basis and to achieve Substantial Performance of the Contract, barring delays as prescribed in the Contract Documents, by / within: July 31, 2018

3. STATEMENT 'B' – CONSTRUCTION PROJECT MANAGER AND SITE SUPERINTENDENT

I/We offer the name and telephone number of the Construction Project Manager and full-time on Site Superintendent that will be used to perform the Work as described in the Contract Documents.

	Name	Telephone Number
.1	_____	_____
.2	_____	_____

4. STATEMENT 'C' – BIDDER PROPOSED ALTERNATES:

I/We offer to add or delete to the Bid Price for the use of methods and / or materials as an alternate to that specified. These Bidder Proposed Alternates include all associated Work that the alternate may have on the Contract Price and/or Contract Time. These alternates as proposed are not included in the Base Bid, and shall only be incorporated into Contract if accepted by the Owner in writing. Prices for Bidder Proposed Alternates do not include Harmonized Sales Tax (HST).

	Description	Add	or	Delete
.1	_____	$_____		$(_____)
.2	_____	$_____		$(_____)
.3	_____	$_____		$(_____)
.4	_____	$_____		$(_____)

5. STATEMENT 'D' – SCHEDULE OF SUBCONTRACTORS / WORK BY OWN FORCES:

I/We offer the following Subcontractors, or work that will be performed by my/our Own Forces that will be engaged by the undersigned to complete the work described in the Contract Documents. Should I/We be awarded the Contract, parties named, including My/Our Own Forces, shall be used to perform the Work as indicated and will not be changed without written consent from the Owner and Consultant.

	Name	Telephone Number
Excavation	_____	_____
Site Servicing	_____	_____
Foundations	_____	_____
Structural Steel	_____	_____
Coreslab Structure	_____	_____
Masonry	_____	_____
Windows, Curtain Walls and Doors	_____	_____
Roofing	_____	_____

Cladding	_____	_____
Gypsum board and Ceilings	_____	_____
Millwork	_____	_____
Painting	_____	_____
Mechanical	_____	_____
Sprinklers	_____	_____
Electrical	_____	_____

6. STATEMENT 'E' – SEPARATE PRICES:

I/We submit the following alternate prices which **ARE NOT included** in the Bid Price. Prices include supply and installation and all related costs to the item listed.

.1 Separate and alternate prices shall include all work for the supply and installation of the work and mark-ups and applicable taxes and duties excluding HST

.2 Bidders shall complete and fill in blank spaces as requested or tenders may be considered null and void.

.3 Note that the base tender price DOES NOT include separate prices and alternate prices.

.4 Should the owner accept of any of these separate and alternate prices, then the prices will be added to the base tender price.

.5 The lowest base tender price does not necessarily indicate the successful bidder. The forgoing will be analyzed to arrive at a figure which will be considered by the owner with regard to awarding the Contract and thereby determine the successful bidder.

6.1 Separate Price 1: All costs associated with the supply and install of the asphalt parking area noted on drawing A1.1 Site Plan. Asphalt as per specification section 32 31 13 - Asphalt

Add $_____ dollars ($_____)

6.2 Separate Price 2: All costs associated with the supply and install of Washroom and millwork shown in room 124

Add $_____ dollars ($_____)

6.3 Separate Price 3: All costs associated with the supply and install of landscaping at the east side of the addition as noted on drawing A1.1 Site Plan.

Add $_____ dollars ($_____)

7. Signed, sealed and submitted on behalf of:

_____

_____

_____

_____
(Name and Address of Bidder)

_____
(Phone Number)

_____
(Email Address)

_____
(Name and Title) Corporate Seal

_____
(Signature of Bidder)

_____
(Name and Title of Witness)

_____
(Signature of Witness)

Dated at_____this_____day of_____20_____
(Town / City / Province) (Month)

END OF SECTION

PART 1 - GENERAL

1.1 WORK UNDER THIS CONTRACT

.1 It is intended that Work supplied under this Specification shall be complete in every detail for the purpose required. This Contract shall include by Contractor, materials not herein mentioned, but which may be found necessary to complete or perfect any portion of Work in accordance with requirements of this Specification.

.2 Designated Substances

.1 These specifications and drawings shall be read in conjunction with the designated substance survey and abatement procedures provided by the Owner, which are included as appendices 'B' and 'C' to these specifications. The contractor shall refer to these documents for all information regarding the location, handling and disposal procedures for designated substances.

1.2 SPECIFICATIONS

.1 Each Section of Division 1 is complementary to all other Sections of Division 1 and shall be read together with all other Sections.

.2 This Section co-ordinates, relates and governs Work of all other Section of the Specification.

.3 The Specifications are apportioned into Divisions and Sections for convenience but shall be read as a whole and neither such apportionment nor anything else contained in the Contract Documents places responsibility upon the Consultant to settle disputes among Sub-contractors in respect thereof.

1.3 QUANTITY OF ITEMS

.1 Where a component, device, item or part of materials or equipment is referred to in the singular number, such reference shall require the provision of as many components, devices, items or parts of material or equipment necessary to complete the Work.

1.4 STANDARDS AND CODES

.1 Contract forms, codes, specifications, standards, manuals and installation, application and maintenance instructions referred to in these Specifications, unless otherwise specified, amended or date suffixed, shall be the latest published editions.

1.5 DISCREPANCIES

.1 Advise Consultant of any contradictions, discrepancies or errors that are found or noted.

.2 Advise Consultant if there is any doubt as to the meaning or intent thereof in the Contract Documents.

.3 Do not proceed until instructions/clarifications have been confirmed by Consultant.

.4 Failure to notify Consultant shall result in the Contractor incurring responsibility for any resulting circumstances, conditions, expenses or cost.

1.6 DEFINITIONS

.1 Wherever words “approved”, “review”, “acceptance”, “acceptable”, “satisfactory”, “selected”, “directed”, “required”, “submit”, or similar words or phrases are used in standards of elsewhere in Contract Documents, it shall be understood, that words “by (to) the Consultant” follow, unless context provides otherwise.

.2 “Others” Defined: Others in contract Documents refers to other trades within framework of this Contract. Any Work or material executed outside Contract is designated “NIC’ (Not in Contract), “By Owner”, or “By Other Contractors”.

.3 “Provide” Defined: means the furnishing of all labour, materials equipment, transportation and all other services required, including costs in connection therewith, to complete the Work.

1.7 SETTING OUT OF WORK

.1 Assume full responsibility for and execute complete layout of work required locations, lines and elevations. Submit shop drawing, as prepared and signed by registered land surveyor which certify proposed foundation location is in accordance with Contract Documents.

.2 Provide devices needed to lay out and construct work.

.3 Supply such devices as straight edges, templates and as required to facilitate Consultant’s inspection of work.

1.8 OVERLOADING

.1 Take precautions and preclude overloading of any part of structure, false-work, formwork of scaffolding during progress of the Work, and make good damage resulting from such overloading.

1.9 INSERTS, ANCHORS AND FASTENERS

.1 Use only factory made, threaded or toggle type inserts as required for supports and anchors, properly sized for load to be carried.

Place inserts only in members of main structure and not in any finishing material.

.2 Where inserts cannot be placed, use factory made expansion shields for light weights only.

.3 Supply and locate all inserts, holes, anchor bolts and sleeves in time when walls, floors and roofs are erected.

.4 Fasteners stressed in withdrawal are not acceptable, except where otherwise specifically shown.

.5 Ensure that metal fastenings are of same materials as metal components being anchored or of a metal which will not set up a galvanic action causing damage to the fastening or metal component under moist conditions.

.6 Fastenings for prefinished materials shall be of concealed type unless otherwise indicated.

.7 Ensure that metal fastenings and accessories are of same texture, colour and finish as material on which they occur.

1.10 TRADEMARKS AND LABELS

.1 Trademarks and labels, including applied labels, shall not be visible in finished Work in finished areas.

.2 The exceptions to this requirement are trademarks and labels which are essential to obtain identification of mechanical, electrical or other equipment for maintenance and replacement purposes and for mandatory fire ratings.

1.11 POWDER ACTUATED FASTENERS

.1 Use powder actuated devices only after receipt of written permission from Owner.

.2 Do not use powder actuated fasteners which are stressed in withdrawal in finished Work.

.3 Do not use powder actuated fasteners within 100 mm of the edge of concrete.

.4 Powder actuated fasteners shall comply with PATM (Powder Actuated Tools Manufacturers Institute) and ANSI A10.3-1985.

1.12 INTERFERENCES

.1 Coordinate placement of equipment to ensure that components will be properly accommodated within the spaces provided prior to commencement of work.

.2 Take complete responsibility for any remedial work that results from failure to coordinate any aspect of the Work prior to its fabrication/installation.

.3 Ensure that accesses and clearance required by jurisdictional authorities and/or for easy maintenance of equipment are provided in the layout of equipment and services.

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 Cash Allowances

1.2 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)

.1 CCDC 2-2008, Stipulated Price Contract.

.2 Project Supplementary Conditions

1.3 CASH ALLOWANCES

.1 Refer to CCDC 2, GC 4.1

.2 Include in Contract Price, cash allowances stated herein.

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

.4 Contract Price, and not cash allowance, includes Contractor's overhead and profit in connection with such cash allowance.

.5 Contract Price will be adjusted by written order to provide for an excess or deficit to each cash allowance.

.6 Where costs under a cash allowance exceed amount of allowance, Contractor will be compensated for any excess incurred and substantiated plus an allowance for overhead and profit as set out in Contract Documents.

.7 Progress payments on accounts of work authorized under cash allowances shall be included in Prime Consultant’s monthly certificate for payment.

.8 Schedule shall be prepared jointly by Prime Consultant and Contractor to show when items called for under cash allowances must be authorized by Prime Consultant for ordering purposes so that progress of Work will not be delayed.

.9 Amount of each allowance, for Work specified in respective specification Sections is as follows:

.1 Include an allowance of $7,500.00 for Testing and Inspections.

.2 Include an allowance of $20,000.00 for supply and installation of Water Tables at Kindergarten Classrooms.

.3 Include an allowance of $10,000.00 for supply and installation of acoustic panels at Gymnasium

.4 Include an allowance of $25,000.00 for supply and installation of an exterior garbage enclosure.

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 Applications for progress payments.

.2 Substantial performance procedures.

.3 Release of hold-back procedures.

.4 Price adjustments.

1.2 RELATED SECTIONS

.1 Refer to CCDC 2-2008 and Supplementary Conditions (Appendix A) for specific requirements.

1.3 APPLICATION FOR PROGRESS PAYMENT

.1 Submit a CCDC 24 electronic form using an authorized electronic signature or printed copy with an authorized signature.

.2 Make applications for payment on account as monthly progress submissions, to be reviewed and revised as recommended by certifying consultant. Payment within 30 days after submission of reviewed and revised if necessary) progress draw and after successful clear) lien search.

.3 Progress payments shall be submitted with breakdowns from the sub-contractors represented in the amount being claimed. Trades shall include:

- .1 Site Servicing
- .2 Structural Steel
- .3 Pre-stressed Concrete Structure (Coreslab)
- .4 Masonry
- .5 Roofing
- .6 Cladding
- .7 Windows, Curtain Wall and Glazing
- .8 Millwork
- .9 Flooring
- .10 Painting
- .11 Sprinklers
- .12 Mechanical
- .13 Electrical

.4 Progress payments shall be accompanied with a letter from the sub-contractors indicating that their previous claim has been paid.

.5 Accompany applications with a CCDC 9A-2001 Statutory

Declaration form.

.6 Date applications for payment last day of agreed payment period and ensure amount claimed is for value, proportionate to amount of Contract, of Work performed and Products Delivered to Place of Work as of that date.

.7 Submit to Consultant for review, minimum fourteen (14) days before first application for payment, schedule of values for parts of Work, aggregating total amount of Contract Price, so as to facilitate evaluation of applications for payment.

.8 Submit required support documentation with applications for payment, including Workplace Safety and Insurance Board Clearance Certificate and a Statutory Declaration (where Sub-trades are involved) certifying that monies have been appropriately distributed. Failure to submit a current WSIB clearance Certificate will result in the invoice being returned. Holdback monies will be administered in accordance with provisions of the Construction Lien Act.

1.5 PROGRESS PAYMENT

.1 Submit a progress payment schedule on CCDC 24 printed copy with an authorized signature or electronic form using an authorized electronic signature.

.2 Accompany applications with a CCDC 9A-2001 - Statutory Declaration form.

.3 Consultant will issue to Owner, no later than ten (10) days after receipt of an application for payment, certificate for payment in amount applied for or in such other amount as Consultant determines to be properly due.

.4 If Consultant amends application, Consultant will give notification in writing giving reasons for amendment.

1.6 SUBSTANTIAL PERFORMANCE OF THE WORK

.1 Submit a schedule of payments on CCDC 24 printed copy with an authorized signature or electronic form using an authorized electronic signature.

.2 Accompany applications with a CCDC 9A-2001 Statutory Declaration form.

.3 Prepare and submit to Consultant a comprehensive list of items to be completed or corrected. Failure to include an item on the

list does not alter responsibility to complete the Contract.

.4 Request Consultant review to establish Substantial Performance of the Work.

.5 Where permitted by local lien legislation, Contractor may apply for substantial performance of a designated portion of the Work, subject to Owner acceptance of that portion of the Work being substantially performed.

.6 No later than ten (10) days after receipt of list and application, Consultant will review Work to verify validity of application, and no later than seven (7) days after completing review, will notify Contractor if the Work, or the designated portion of the Work, is substantially performed.

.7 Consultant will state in their certificate the date of Substantial Performance of the Work, or the date of the designated portion of the Work, as applicable.

.8 Immediately following issuance of certificate of Substantial Performance of the Work, in consultation with Consultant, establish reasonable date for finishing Work.

1.7 PAYMENT OF HOLD-BACK ON SUBSTANTIAL PERFORMANCE OF THE WORK

.1 After issuance of Certificate of Substantial Performance of the Work:

.1 Submit an application for payment of hold-back a mount.

.2 Submit sworn statement that all accounts for labour, subcontracts, products, construction machinery and equipment, and other indebtedness which may have been incurred in Substantial Performance of the Work and for which Owner might in any way be held responsible have been paid in full, except for amounts properly retained as hold-back or as identified amount in dispute.

.2 After receipt of application for payment and sworn statement, Consultant will issue certificate for payment of hold-back amount.

.3 Where hold-back amount has not been placed in a separate hold-back account, Owner will, within ten (10) days prior to expiry of hold-back period stipulated in lien legislation applicable to Place of the Work, place hold-back amount in bank account in joint names of Owner and Contractor.

.4 Amount authorized by certificate for payment of hold-back amount is due and payable on day following expiration of hold-back period stipulated in lien legislation applicable to Place of the Work.

.1 Where lien legislation does not exist or apply, hold-back amount is due and payable in accordance with other legislation, industry practice, or provisions which may be agreed to between parties.

.2 Owner may retain out of hold-back amount any sums required by law to satisfy any liens against Work or, if permitted by lien legislation applicable to Place of the Work, other third party monetary claims against Contractor which are enforceable against Owner

1.8 FINAL PAYMENT

.1 Submit an application for final payment on a CCDC 24 printed form copy with an authorized signature or electronic form using an authorized electronic signature.

.2 Consultant will, no later than ten (10) days after receipt of an application for final payment, review Work to verify validity of application. Consultant will give notification that application is valid or give reasons why it is not valid, no later than seven (7) days after reviewing Work.

.3 Consultant will issue final certificate for payment when application for final payment is determined valid.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Not Used.

1.2 ADMINISTRATIVE

.1 Schedule and administer project meetings throughout the progress of the work and at the call of Prime Consultant.

.2 Prepare agenda for meetings.

.3 Distribute written notice of each meeting four days in advance of meeting date to Prime Consultant and all members of the project team as established at the preconstruction meeting.

.4 Provide physical space and make arrangements for meetings.

.5 Preside at meetings.

.6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

.7 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants and all other members of the project team not in attendance.

.8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.3 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 Owner, Prime Consultant, Sub-consultants, Contractor, major Subcontractors, field inspectors and Contractor's site superintendent will be in attendance.

.3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.

.4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.

.5 Agenda to include:

.1 Appointment of official representative of participants in the

Work.

.2 Schedule of Work: Contractor shall provide a Critical Path Construction Progress Schedule at each site meeting and as requested by Owner or Prime Consultant.

.3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.

.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 56 00 – Temporary Barriers & Enclosures.

.5 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

.6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.

.7 Owner provided products.

.8 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.

.9 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.

.10 Take-over procedures, acceptance, warranties in accordance with Section s01 78 00 - Closeout Submittals.

.11 Monthly progress claims, administrative procedures, photographs, hold backs.

.12 Appointment of inspection and testing agencies or firms.

.13 Insurances, transcript of policies.

1.4 PROGRESS MEETINGS

.1 During course of Work and 2 weeks prior to project completion, schedule progress meetings every 2 weeks or as otherwise established at preconstruction meeting.

.2 Contractor, major Subcontractors involved in Work, Prime Consultant, required Sub-consultants and Owner are to be in attendance.

.3 Notify parties minimum 5 days prior to meetings.

.4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 3 days after meeting.

.5 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems, conflicts.

.4 Problems which impede construction schedule.

.5 Review of off-site fabrication delivery schedules.
.6 Corrective measures and procedures to regain projected schedule.
.7 Revision to construction schedule.
.8 Progress schedule, during succeeding work period.
.9 Review submittal schedules: expedite as required.
.10 Maintenance of quality standards.
.11 Review proposed changes for affect on construction schedule and on completion date.
.12 Other business.

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 RELATED REQUIREMENTS

.1 Not Used.

1.2

1.2 REFERENCES

.1 Not Used.

1.3 ADMINISTRATIVE

.1 Submit to Prime Consultant submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with Work affected by submittal until review is complete.

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

.5 Review submittals prior to submission to Prime Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.6 Notify Prime Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify field measurements and affected adjacent Work are coordinated.

.8 Contractor's responsibility for errors and omissions in submission is not relieved by Prime Consultant's review of submittals.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Prime Consultant review.

.10 Keep one reviewed copy of each submission on site.

1.4 SHOP DRAWINGS AND PRODUCT DATA

.1 Refer to CCDC 2 GC 3.10.

.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 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario.

.4 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.5 Allow 5 days for Prime Consultant's review of each submission.

.6 Adjustments made on shop drawings by Prime Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Prime Consultant prior to proceeding with Work.

.7 Make changes in shop drawings as Prime Consultant may require, consistent with Contract Documents. When resubmitting, notify Prime Consultant in writing of revisions other than those requested.

.8 Accompany submissions with transmittal letter, in [duplicate], containing:
- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

.9 Submissions include:
- .1 Date and revision dates.
- .2 Project title and number.

.3 Name and address of:
.1 Subcontractor.
.2 Supplier.
.3 Manufacturer.
.4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
.5 Details of appropriate portions of Work as applicable:
.1 Fabrication.
.2 Layout, showing dimensions, including identified field dimensions, and clearances.
.3 Setting or erection details.
.4 Capacities.
.5 Performance characteristics.
.6 Standards.
.7 Operating weight.
.8 Wiring diagrams.
.9 Single line and schematic diagrams.
.10 Relationship to adjacent work.

.10 After Prime Consultant's review, distribute copies.

.11 Submit 6 prints of shop drawings for each requirement requested in specification Sections and as Prime Consultant may reasonably request. Electronic copies of letter or legal size drawings will be accepted by email. Shop drawings submitted by fax will be rejected.

.12 Submit prints or electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Prime Consultant where shop drawings will not be prepared due to standardized manufacture of product. Materials submitted by fax will be rejected.

.13 Submit prints or electronic copies of test reports for requirements requested in specification Sections and as requested by Prime Consultant.
.1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
.2 Testing must have been within 3 years of date of contract award for project.

.14 Submit print or electronic copies of certificates for requirements requested in specification Sections and as requested by Prime

Consultant.

.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.

.2 Certificates must be dated after award of project contract complete with project name.

.15 Submit print or electronic copies of manufacturer's instructions for requirements requested in specification Sections and as requested by Prime Consultant.

.1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.16 Submit print or electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Prime Consultant.

.17 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.18 Submit print or electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Prime Consultant.

.19 Delete information not applicable to project.

.20 Supplement standard information to provide details applicable to project.

.21 If upon review by Prime Consultant, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

.22 The review of shop drawings is for sole purpose of ascertaining conformance with general concept. This review shall not mean that the detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all

requirements of construction and Contract Documents. Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co ordination of Work of all sub trades.

1.5 SAMPLES

.1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.

.2 Deliver samples prepaid to Prime Consultant's business address or site office.

.3 Notify Prime Consultant in writing, at time of submission of deviations in samples from requirements of Contract Documents.

.4 Where colour, pattern or texture is criterion, submit full range of samples.

.5 Adjustments made on samples by Prime Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Prime Consultant prior to proceeding with Work.

.6 Make changes in samples which Prime Consultant may require, consistent with Contract Documents.

.7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.6 MOCK-UPS

.1 Erect mock-ups in accordance with 01 45 00 - Quality Control.

1.7 PHOTOGRAPHIC DOCUMENTATION

.1 Submit electronic copy of digital photography in jpg format, monthly with progress statement and as directed by Prime Consultant.

.2 Project identification: name and number of project and date of exposure indicated.

.3 Number of viewpoints:

.1 Viewpoints and their location as determined by Prime Consultant.

.4 Frequency of photographic documentation:
.1 Upon completion of: excavation, foundation, framing, before concealment of services and as directed by Prime Consultant.

1.8 CERTIFICATES AND TRANSCRIPTS

.1 Immediately after award of Contract, submit Workers' Compensation Board status.

.2 Submit transcription of insurance immediately after 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 RELATED SECTIONS

.1 Not Used.

1.2 REFERENCES AND CODES

.1 Perform Work in accordance with the Ontario Building Code (OBC) including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.

.2 Meet or exceed requirements of:
- .1 Contract documents.
- .2 Specified standards, codes and referenced documents.

1.3 HAZARDOUS MATERIAL DISCOVERY

.1 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify Owner.

.2 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Owner.

.3 Mold: stop work immediately when material resembling mold is encountered during demolition work. Notify Owner.

1.4 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions and municipal by-laws.

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 RELATED SECTIONS

.1 Section 01 21 00 - Allowances

1.2 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)
.1 CCDC 2-2008, Stipulated Price Contract.

1.3 INSPECTION

.1 Refer to CCDC 2, GC 2.3.

.2 Allow Prime 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.

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

.4 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.

.5 Prime Consultant will order 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. If such Work is found in accordance with Contract Documents, Owner shall pay cost of examination and replacement.

1.4 INDEPENDENT INSPECTION AGENCIES

.1 Independent Inspection/Testing Agencies will be engaged by Owner for purpose of inspecting and/or testing portions of Work.

.2 Allocated costs: to Section 01 21 00 - Allowances.

.3 Provide equipment required for executing inspection and testing by appointed agencies.

.4 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

.5 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Prime Consultant at no cost to Owner. Pay costs for retesting and re-inspection.

1.5 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.

1.6 PROCEDURES

.1 Notify appropriate agency and Prime 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 orderly sequence to not cause delays 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.

1.7 REJECTED WORK

.1 Refer to CCDC, GC 2.4.

.2 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 Prime Consultant as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

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

.4 If in opinion of Prime Consultant it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Prime Consultant.

1.8 REPORTS

.1 Submit 3 copies of inspection and test reports to Prime Consultant.

.2 Provide copies to subcontractor of work being inspected or tested and manufacturer or fabricator of material being inspected or tested.

1.9 TESTS AND MIX DESIGNS

.1 Furnish test results and mix designs as requested.

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

1.10 MOCK-UPS

.1 Not Used

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.

.2 Refer to Mechanical & Electrical Specifications for definitive 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 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 52 00 – Construction Facilities.

1.2 REFERENCES

.1 Not Used.

1.3 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.4 INSTALLATION AND REMOVAL

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

.2 Remove from site all such work after use.

1.5 DEWATERING

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

1.6 WATER SUPPLY

.1 Provide continuous supply of potable water for construction use.

.2 Arrange for connection with appropriate utility company and pay costs for installation, maintenance and removal.

.3 Pay for utility charges at prevailing rates.

1.7 TEMPORARY HEATING AND VENTILATION

.1 Provide temporary heating required during construction period, including attendance, maintenance and fuel. Contractor shall include for winter heating.

.2 Construction heaters used inside building must be vented to outside or be non-flameless type. Solid fuel salamanders are not permitted.

.3 Provide 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 levels for storage, installation and curing of materials.
.5 Provide adequate ventilation to meet health regulations for safe working environment.

.4 Maintain temperatures of minimum 10 degrees C in areas where construction is in progress.

.5 Ventilating:
.1 Prevent 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 in harmful 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 contaminants.

.6 Permanent heating system of building, may be used once in its permanent location and provided the building is completely closed in. Be responsible for damage to heating system if used.

.7 On completion of Work for which permanent heating system is used, replace filters.

.8 Ensure Date of Substantial Performance and Warranties for heating system do not commence until entire system is in as near original condition as possible and is certified by Engineer.

.9 Pay costs for maintaining temporary heat, when using permanent heating system. Owner will pay utility charges when temporary heat source is existing building equipment.

.10 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.

.11 Be responsible for damage to Work due to failure in providing

adequate heat and protection during construction.

1.8 TEMPORARY POWER AND LIGHT

.1 The existing building service may be used for 120volt devices only. Any equipment requiring 240volt or greater power requirements shall be fed with generators provided by the contractor.

.2 The existing building service may not be used for electric winter heating.

.3 Temporary power for electric cranes and other equipment is the responsibility of the Contractor.

.4 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162lx.

.5 Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of Engineer provided that guarantees are not affected. Make good damage to electrical system caused by use under this Contract. Replace lamps which have been used for more than 3 months.

1.9 TEMPORARY COMMUNICATION FACILITIES

.1 Provide and pay for temporary telephone and data hook up, lines and equipment necessary for own use and.

1.10 FIRE PROTECTION

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

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

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 TEMPORARY

.1 Provide temporary erosion and sedimentation control measures to

EROSION AND SEDIMENTATION CONTROL

prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction and sediment and erosion control drawings.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 51 00 – Temporary Utilities.

1.2 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)
- .1 CCDC 2-2008, Stipulated Price Contract.

.2 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.
- .2 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.

.3 Canadian Standards Association (CSA International)
- .1 CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
- .2 CSA-0121-M1978(R2003), Douglas Fir Plywood.
- .3 CAN/CSA-S269.2-M1987(R2003), Access Scaffolding for Construction Purposes.
- .4 CAN/CSA-Z321-96(R2001), Signs and Symbols for the Occupational Environment.

1.3 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.4 INSTALLATION AND REMOVAL

.1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.

.2 Identify areas which have to be gravelled to prevent tracking of mud.

.3 Indicate use of supplemental or other staging area.

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

.5 Remove from site all such work after use.

1.5 SCAFFOLDING

.1 Scaffolding in accordance with CAN/CSA-S269.2.

.2 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms temporary, stairs and similar facilities required to perform the Work.

1.6 HOISTING

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

.2 Hoists and cranes to be operated by qualified operator.

1.7 ELEVATORS

.1 Permanent elevators not to be used by construction personnel or transporting of materials.

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

1.8 SITE STORAGE/LOADING

.1 Refer to CCDC 2, GC 3.12.

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

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

1.9 CONSTRUCTION PARKING

.1 Parking will be permitted on site.

.2 Provide and maintain adequate access to project site.

1.10 SECURITY

.1 The contractor shall be responsible to properly secure the site after hours

1.11 OFFICES

.1 Provide office heated to 22degrees C, lighted 750lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.

.2 Provide marked and fully stocked first-aid case in a readily available location.

.3 Subcontractors to provide their own offices as necessary. Direct location of these offices.

1.12 EQUIPMENT, TOOL AND MATERIALS STORAGE

.1 Provide and maintain, in 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 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 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 of Prime Consultant.

1.14 CONSTRUCTION SIGNAGE

.1 Provide and erect project sign, within three weeks of signing Contract, in a location designated by Owner.

.2 Ministry of Education sign: 1.2 x 2.4m, of wood frame and plywood construction covered with printed exterior grade film produced by a professional sign painter. Ministry sign graphics shall be supplied by the Owner

.3 Construction sign: 1.2 x 2.4m, of wood frame and plywood construction covered with printed exterior grade film. Indicate on sign, name of Owner, Prime Consultant, sub-consultants, Contractor and major Subcontractors

.4 No other signs or advertisements, other than warning signs, are permitted on site.

.5 Signs and notices for safety and instructions with Graphic symbols to CAN/CSA-Z321.

.6 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project.

1.15 PROTECTION AND MAINTENANCE OF TRAFFIC

.1 Provide access and temporary relocated roads as necessary to maintain traffic.

.2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Prime Consultant.

.3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs

.4 Protect travelling public from damage to person and property.

.5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.

.6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.

.7 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.

.8 Dust control: adequate to ensure safe operation at all times.

.9 Lighting: to assure full and clear visibility for full area of work during night work operations.

.10 Provide snow removal during period of Work.

1.16 CLEAN-UP

.1 Remove construction debris, waste materials, packaging material from work site daily.

.2 Clean dirt or mud tracked onto paved or surfaced roadways.

.3 Store materials resulting from demolition activities that are salvageable.

.4 Stack stored new or salvaged material not in construction facilities.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction and sediment and erosion control drawings.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Not Used.

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)
- .1 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
- .2 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.

.2 Canadian Standards Association (CSA International)
- .1 CSA-O121-M1978(R2003), Douglas Fir Plywood.

1.3 INSTALLATION AND REMOVAL

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

.2 Remove from site all such work after use.

1.4 HOARDING

.1 Erect temporary site enclosures using 1.83m (6'-0") high modular metal mesh fencing with fabric dust screen. Fence struts shall be spiked/bolted into the ground to prevent overturning.

.2 Provide lockable truck entrance gates and at least one pedestrian door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys.

.3 Erect and maintain pedestrian walkways including roof and side covers, complete with signs and electrical lighting as required by law.

.4 Covered hoarding intended to provide overhead protection shall be designed and stamped by a professional engineer licensed in the province of Ontario.

.6 Paint public side of site enclosure in selected colours with one coat primer to CAN/CGSB 1.189 and one coat exterior paint to CGSB 1.59. Maintain public side of enclosure in clean condition.

.8 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures. Tree protection barriers shall be constructed to municipal standards.

1.5 GUARD RAILS AND

.1 Provide secure, rigid guard rails and barricades around deep

BARRICADES

excavations, open shafts, open stair wells, open edges of floors and roofs.

.2 Provide as required by governing authorities.

1.6 WEATHER ENCLOSURES

.1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.

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

.3 Design enclosures to withstand wind pressure and snow loading.

1.7 DUST TIGHT SCREENS / INTERIOR HOARDING

.1 Provide dust tight screens/interior hoardings to localize dust generating activities, and for protection of workers, finished areas of Work and public.

.2 Erect dust tight screens/interior hoardings using 2x4 lumber framing with 13mm gypsum board finish to underside of existing ceiling finish to remain.

.3 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 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 Prime Consultant locations and installation schedule 3 days prior to installation.

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

1.13 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with current best practice.

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 RELATED SECTIONS

.1 Not Used.

1.2 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)
.1 CCDC 2-2008, Stipulated Price Contract.

.2 Within text of each specifications section, reference may be made to reference standards.

.3 Conform to these reference standards, in whole or in part as specifically requested in specifications.

.4 If there is question as to whether products or systems are in conformance with applicable standards, Prime Consultant reserves right to have such products or systems tested to prove or disprove conformance.

.5 Cost for such testing will be borne by Owner in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.3 QUALITY

.1 Refer to CCDC 2.

.2 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.3 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.

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

.5 Should disputes arise as to quality or fitness of products, decision rests strictly with Prime Consultant based upon requirements of Contract Documents.

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

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

1.4 AVAILABILITY

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Prime Consultant of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

.2 In event of failure to notify Prime Consultant at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Prime Consultant reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.5 STORAGE, HANDLING AND PROTECTION

.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.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.

.6 Store sheet materials, lumber, plastic and composite products on

flat, solid supports and keep clear of ground. Slope to shed moisture.

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

.8 Remove and replace damaged products at own expense and to satisfaction of Prime Consultant.

.9 Touch-up damaged factory finished surfaces to Prime Consultant's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.6 TRANSPORTATION

.1 Pay costs of transportation of products required in performance of Work.

.2 Transportation cost of products supplied by Owner will be paid for by Owner. Unload, handle and store such products.

1.7 MANUFACTURER'S INSTRUCTIONS

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

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

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

1.8 QUALITY OF WORK

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

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

.3 Decisions as to standard or fitness of Quality of Work in cases of

dispute rest solely with Prime Consultant, whose decision is final.

1.9 CO-ORDINATION

.1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.

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

1.10 CONCEALMENT

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

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

1.11 REMEDIAL WORK

.1 Refer to CCDC 2 and Section 01 73 00 - Execution.

.2 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.

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

1.12 LOCATION OF FIXTURES

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

.2 Inform Prime Consultant of conflicting installation. Install as directed.

1.13 FASTENINGS

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

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any

other organic material plugs are not acceptable.

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

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

1.14 FASTENINGS - EQUIPMENT

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

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.

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

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

1.15 PROTECTION OF WORK IN PROGRESS

.1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Prime Consultant.

1.16 EXISTING UTILITIES

.1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, building occupants and pedestrian and vehicular traffic.

.2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

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 RELATED SECTIONS

.1 Not Used

1.2 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)
.1 CCDC 2-2008, Stipulated Price Contract.

.2 Owner's identification of existing survey control points and property limits.

1.3 QUALIFICATIONS OF SURVEYOR

.1 Qualified registered land surveyor, licensed to practice in Place of Work, acceptable to Prime Consultant.

1.4 SURVEY REFERENCE POINTS

.1 Existing base horizontal and vertical control points are designated on drawings.

.2 Locate, confirm and protect control points prior to starting site work. Preserve permanent reference points during construction.

.3 Make no changes or relocations without prior written notice to Prime Consultant.

.4 Report to Prime Consultant when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

.5 Require surveyor to replace control points in accordance with original survey control.

1.5 SURVEY REQUIREMENTS

.1 Establish two permanent bench marks on site, referenced to established bench marks by survey control points. Record locations, with horizontal and vertical data in Project Record Documents.

.2 Establish lines and levels, locate and lay out, by instrumentation.

.3 Stake for grading, fill [and topsoil placement and landscaping features.

.4 Stake slopes and berms.

.5 Establish pipe invert elevations.

.6 Stake batter boards for foundations.

.7 Establish foundation column locations and floor elevations.

.8 Establish lines and levels for mechanical and electrical work.

1.6 EXISTING SERVICES

.1 Before commencing work, establish location and extent of service lines in area of Work and notify Prime Consultant of findings.

.2 Remove abandoned service lines within 2m of structures. Cap or otherwise seal lines at cut-off points as directed by Prime Consultant.

1.7 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.

.3 Inform Prime Consultant of impending installation and obtain approval for actual location.

.4 Submit field drawings to indicate relative position of various services and equipment when required by Prime Consultant.

1.8 RECORDS

.1 Maintain a complete, accurate log of control and survey work as it progresses.

.2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of Work.

.3 Record locations of maintained, re-routed and abandoned service lines.

1.9 SUBMITTALS

.1 Submit name and address of Surveyor to Prime Consultant.

.2 On request of Prime Consultant, submit documentation to verify accuracy of field engineering work.

.3 Submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conform and do not conform with Contract Documents.

1.10 SUBSURFACE CONDITIONS

.1 Promptly notify Prime Consultant in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.

.2 After prompt investigation, should Prime Consultant determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes and Change Orders.

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 RELATED SECTIONS

.1 Section 07 84 00 - Firestopping

1.2 SUBMITTALS

.1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit written request in advance of cutting or alteration which affects:
- .1 Structural integrity of elements of project.
- .2 Integrity of weather-exposed or moisture-resistant elements.
- .3 Efficiency, maintenance, or safety of operational elements.
- .4 Visual qualities of sight-exposed elements.
- .5 Work of Owner or separate contractor.

.3 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.

1.3 MATERIALS

.1 Required for original installation.

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

1.4 PREPARATION

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

.4 Provide supports to assure structural integrity of surroundings;

provide devices and methods to protect other portions of project from damage.

.5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.5 EXECUTION

.1 Execute cutting, fitting, and patching, including excavation and fill, to complete Work.

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

.3 Uncover Work to install ill-timed Work.

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

.5 Remove samples of installed Work for testing.

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

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

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

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

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

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

.12 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material in accordance with Section 07 84 00 - Firestopping, full thickness of the construction element.

.13 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

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

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with current best practice.

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 RELATED SECTIONS

.1 Section 01 56 00 – Temporary Barriers and Enclosures

1.2 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)
.1 CCDC 2-2008, Stipulated Price Contract.

1.3 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.

.2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Prime Consultant. Do not burn waste materials on site, unless approved by Prime Consultant.

.3 Clear snow and ice from access to building, bank/pile snow in designated areas only as per Owner's direction.

.4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.5 Provide on-site containers for collection of waste materials and debris. Containers shall be stored within the area of work and protected by fencing.

.6 Provide and use marked separate bins for recycling.

.7 Dispose of waste materials and debris off site.

.8 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.

.9 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.10 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

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

.12 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.4 FINAL CLEANING

.1 Refer to CCDC 2, GC 3.13.

.2 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.3 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.

.4 Prior to final review remove surplus products, tools, construction machinery and equipment.

.5 Remove waste products and debris including that caused by Owner or other Contractors.

.6 Remove waste materials from site at regularly scheduled times or dispose of as directed by Prime Consultant. Do not burn waste materials on site, unless approved by Prime Consultant.

.7 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.8 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.

.9 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, floors and ceilings.

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

.11 Vacuum clean and dust building interiors, behind grilles, louvres and screens.

.12 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.

.13 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.14 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.15 Remove dirt and other disfiguration from exterior surfaces.

.16 Clean and sweep roofs, gutters, areaways, and sunken wells.

.17 Sweep and wash clean paved areas.

.18 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.

.19 Clean roofs, downspouts, and drainage systems.

.20 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

.21 Remove snow and ice from access to building.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with current best practice.

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 RELATED REQUIREMENTS

.1 Section 01 78 23 – Operation and Maintenance Manuals

.2 Section 01 78 39 – Record Documents

1.2 REFERENCES

.1 Canadian Construction Documents Committee (CCDC)
- .1 CCDC 2-2008, Stipulated Price Contract.

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Acceptance of Work Procedures:
- .1 Contractor's Inspection: Contractor shall conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
  - .1 Notify Prime Consultant in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
  - .2 Request Prime Consultant's inspection.
- .2 Prime Consultant's Inspection:
  - .1 Prime Consultant and to inspect Work and identify defects and deficiencies.
  - .2 Contractor to correct Work as directed.
- .3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:
  - .1 Work: completed and inspected for compliance with Contract Documents.
  - .2 Defects: corrected and deficiencies completed.
  - .3 Equipment and systems: tested, adjusted, balanced and fully operational.
  - .4 Certificates required by Boiler Inspection Branch, Fire Commissioner, Utility companies: submitted.
  - .5 Operation of systems: demonstrated to Owner's personnel.
  - .6 Commissioning of mechanical systems and copies of final Commissioning Report submitted to Prime Consultant.
  - .7 Work: complete and ready for final inspection.
- .4 Final Inspection:
  - .1 When completion tasks are done, request final inspection of Work by Owner, Prime Consultant

and Contractor.

.2 When Work incomplete according to Owner and Prime Consultant, complete outstanding items and request re-inspection.

.5 Declaration of Substantial Performance: when Prime Consultant considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.

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

.7 Final Payment:

.1 When Prime Consultant considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

.2 Refer to CCDC 2: when Work deemed incomplete by Owner and Prime Consultant, complete outstanding items and request re-inspection.

.8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.4 FINAL CLEANING

.1 Clean in accordance with Section 01 74 11 - Cleaning.

.1 Remove surplus materials, excess materials, rubbish, tools and equipment.

.2 Waste Management: separate waste materials for reuse and recycling in accordance with current best practice.

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 RELATED REQUIREMENTS

.1 Section 01 79 00 - Demonstration and Training

1.2 REFERENCES

.1 Not Used.

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Pre-warranty Meeting:

- .1 Convene meeting one week prior to contract completion with contractor's representative, Owner and Prime Consultant in accordance with Section 01 31 19 - Project Meetings to:
  - .1 Verify Project requirements.
  - .2 Review manufacturer's installation instructions and warranty requirements.
- .2 Prime Consultant to establish communication procedures for:
  - .1 Notifying construction warranty defects.
  - .2 Determine priorities for type of defects.
  - .3 Determine reasonable response time.
- .3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
- .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Two weeks prior to Substantial Performance of the Work, submit to the Prime Consultant four final copies of operating and maintenance manuals in English.

.3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.

.4 Provide evidence, if requested, for type, source and quality of products supplied.

1.5 FORMAT

.1 Organize data as instructional manual.

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

.3 When multiple binders are used correlate data into related consistent groupings.
.1 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 by systems, 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 Text: manufacturer's printed data, or typewritten data.

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

.9 Provide 1:1 scaled CAD files in dwg format on CD or DVD.

1.6 CONTENTS - PROJECT RECORD DOCUMENTS

.1 Table of Contents for Each Volume: provide title of project;
.1 Date of submission; names.
.2 Addresses, and telephone numbers of Prime 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 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.
.1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

.6 Training: refer to Section 01 79 00 - Demonstration and Training.

1.7 AS -BUILT DOCUMENTS AND SAMPLES

.1 Maintain, in addition to requirements in General Conditions, at site for Prime Consultant one record copy of:
.1 Contract Drawings.
.2 Specifications.
.3 Addenda.
.4 Change Orders and other modifications to 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.
.1 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.
.1 Label each document "PROJECT RECORD" in neat, large, printed letters.

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

.5 Keep record documents and samples available for inspection by Prime Consultant.

1.8 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

.1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Prime Consultant.

.2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.

.3 Record information concurrently with construction progress.
.1 Do not conceal Work until required information is recorded.

.4 Contract Drawings and shop drawings: 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: 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, field test records, required by individual specifications sections.

.7 Provide digital photos, if requested, for site records.

1.9 FINAL SURVEY

.1 Submit final site survey certificate in accordance with Section 01 71 00 - Examination and Preparation, certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

1.10 EQUIPMENT AND SYSTEMS

.1 For each item of equipment and each system include description of unit or system, and component parts.

.1 Give function, normal operation characteristics and limiting conditions.

.2 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.
- .1 Include regulation, control, stopping, shut-down, and emergency instructions.
- .2 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 co-ordination 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 Section 01 45 00 - Quality Control.

.15 Additional requirements: as specified in individual specification sections.

1.11 MATERIALS AND FINISHES

.1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
- .1 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.

1.12 MAINTENANCE MATERIALS

.1 Spare Parts:

.1 Provide spare parts, in quantities specified in individual specification sections.
.2 Provide items of same manufacture and quality as items in Work.
.3 Deliver to site or location as directed; place and store.
.4 Receive and catalogue items.
.1 Submit inventory listing to Prime Consultant.
.2 Include approved listings in Maintenance Manual.
.5 Obtain receipt for delivered products and submit prior to final payment.

.2 Extra Stock Materials:

.1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
.2 Provide items of same manufacture and quality as items in Work.
.3 Deliver to site or location as directed; place and store.
.4 Receive and catalogue items.
.1 Submit inventory listing to Prime Consultant.
.2 Include approved listings in Maintenance Manual.
.5 Obtain receipt for delivered products and submit prior to final payment.

.3 Special Tools:

.1 Provide special tools, in quantities specified in individual specification section.
.2 Provide items with tags identifying their associated function and equipment.
.3 Deliver to site or location as directed; place and store.
.4 Receive and catalogue items.
.1 Submit inventory listing to Prime Consultant.
.2 Include approved listings in Maintenance Manual.

1.13 DELIVERY, STORAGE AND HANDLING

.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 for review by Prime Consultant.

1.14 WARRANTIES AND BONDS

.1 Develop warranty management plan to contain information relevant to Warranties.

.2 Submit warranty management plan, 30 days before planned pre-warranty conference, to Prime Consultant approval.

.3 Warranty management plan to include required actions and documents to assure that Owner receives warranties to which it is entitled.

.4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.

.5 Submit, warranty information made available during construction phase, to Prime Consultant for approval prior to each monthly pay estimate.

.6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.

.4 Verify that documents are in proper form, contain full information, and are notarized.

.5 Co-execute submittals when required.
.6 Retain warranties and bonds until time specified for submittal.

.7 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
.8 Conduct joint 12 month warranty inspection, measured from time of acceptance, by Prime Consultant.

.9 Include information contained in warranty management plan as follows:
.1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.
.2 Listing and status of delivery of Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and commissioned systems such as fire protection, alarm systems, sprinkler systems, lightning protection systems.
.3 Provide list for each warranted equipment, item, feature of construction or system indicating:
.1 Name of item.
.2 Model and serial numbers.
.3 Location where installed.
.4 Name and phone numbers of manufacturers or suppliers.
.5 Names, addresses and telephone numbers of sources of spare parts.
.6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
.7 Cross-reference to warranty certificates as applicable.
.8 Starting point and duration of warranty period.
.9 Summary of maintenance procedures required to continue warranty in force.
.10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
.11 Organization, names and phone numbers of persons to call for warranty service.
.12 Typical response time and repair time expected for various warranted equipment.
.4 Contractor's plans for attendance at 12 month

post-construction warranty inspections.

.5 Procedure and status of tagging of equipment covered by extended warranties.

.6 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

.10 Respond in timely manner to oral or written notification of required construction warranty repair work.

.11 Written verification to follow oral instructions.

.1 Failure to respond will be cause for the Owner to proceed with action against Contractor.

1.15 WARRANTY TAGS

.1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Prime Consultant.

.2 Attach tags with copper wire and spray with waterproof silicone coating.

.3 Leave date of acceptance until project is accepted for occupancy.

.4 Indicate following information on tag:

.1 Type of product/material.
.2 Model number.
.3 Serial number.
.4 Contract number.
.5 Warranty period.
.6 Inspector's signature.
.7 Construction Contractor.

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 RELATED REQUIREMENTS

.1 Section 01 33 00 - Submittal Procedures.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Demonstrate scheduled operation and maintenance of equipment and systems to Owner's personnel weeks prior to date of substantial performance.

.2 Owner: provide list of personnel to receive instructions, and co-ordinate their attendance at agreed-upon times.

.3 Preparation:

- .1 Verify conditions for demonstration and instructions comply with requirements.
- .2 Verify designated personnel are present.
- .3 Ensure equipment has been inspected and put into operation in accordance with mechanical and electrical specifications.
- .4 Ensure testing, adjusting, and balancing has been performed and equipment and systems are fully operational.

.4 Demonstration and Instructions:

- .1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment at scheduled times, at the equipment location.
- .2 Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.
- .3 Review contents of manual in detail to explain aspects of operation and maintenance.
- .4 Prepare and insert additional data in operations and maintenance manuals when needed during instructions.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit schedule of time and date for demonstration of each item of equipment and each system two weeks prior to designated dates, for Owner’s approval.

.3 Submit reports within one week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.

.4 Give time and date of each demonstration, with list of persons present.

.5 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

1.4 QUALITY ASSURANCE

.1 When specified in individual Sections requiring manufacturer to provide authorized representative to demonstrate operation of equipment and systems:
- .1 Instruct Owner's personnel.
- .2 Provide written report that demonstration and instructions have been completed.

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 An abridged version of Section 02 41 16 - Structure Demolition methods and procedures for demolition of structures, parts of structures, basements and foundation walls, including abandonment and removal of septic tanks and tanks containing petroleum products.

1.2 RELATED SECTIONS

.1 Not Used.

1.3 REFERENCES

.1 Canadian Standards Association (CSA International)
- .1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.

1.4 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Shop Drawings:
- .1 Provide shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide drawings stamped and signed by professional engineer registered or licensed in Province of Ontario.

.3 Before proceeding with demolition of load bearing walls or of other walls, and where required by authority having jurisdiction submit for review by Prime Consultant shoring and underpinning drawings prepared by qualified professional engineer registered or licensed in the Province of Ontario showing proposed method.

.4 Prior to beginning of Work on site indicate:
- .1 Descriptions of and anticipated quantities in percentages of materials to be salvaged reused, recycled and land-filled.
- .2 Schedule of selective demolition.
- .3 Number and location of dumpsters.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Waste Management and Disposal:
- .1 Separate waste materials for reuse and recycling in accordance with current best practices.

1.6 SITE CONDITIONS

.1 Review designated substance report and take precautions to protect environment.

.2 Should material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Prime Consultant immediately.
- .1 Do not proceed until written instructions have been received from Prime Consultant.

.3 Notify Prime Consultant before disrupting building access or services.

PART 2 - PRODUCTS

2.1 EQUIPMENT

.1 Leave equipment and machinery running only while in use, except where extreme temperatures prohibit shutting down.

.2 Demonstrate that tools and machinery are being used in manner which allows for salvage of materials in best condition possible.

PART 3 - EXECUTION

3.1 PREPARATION

.1 Protection:
- .1 Prevent movement, settlement, or damage to adjacent structures, utilities, and parts of building to remain in place. Provide bracing and shoring required.
- .2 Keep noise, dust, and inconvenience to occupants to minimum.
- .3 Protect building systems, services and equipment.
- .4 Provide temporary dust screens, covers, railings, supports and other protection as required.

.2 Disconnect and re-route electrical, telephone and communication service lines. Post warning signs on electrical lines and equipment which must remain energized to serve other products during period of demolition.

.3 Locate and protect utility lines. Do not disrupt active or energized utilities traversing premises or designated to remain undisturbed.

.4 Disconnect and cap designated mechanical services.

.1 Natural gas supply lines: remove in accordance with utility company requirements and as directed by Prime Consultant.
.2 Sewer and water lines: remove in accordance with requirements of authority having jurisdiction and as directed by Prime Consultant.
.3 Other underground services: remove and dispose of as indicated and as directed by Prime Consultant.

3.2 DEMOLITION SALVAGE AND DISPOSAL

.1 Remove parts of existing building to permit new construction. Sort materials into appropriate piles for reuse and recycling.

.2 Refer to demolition drawings and specifications for items to be salvaged for reuse.

.3 Remove items to be reused, store as directed by Prime Consultant and re-install under appropriate section of specification.

.4 Trim edges of partially demolished building elements to tolerances as defined by Prime Consultant to suit future use.

.5 Dispose of removed materials, to appropriate recycling facilities except where specified otherwise, and in accordance with authority having jurisdiction.

3.3 PARTIAL DEMOLITION OF STRUCTURES

.1 Existing building is a functioning primary school.

3.4 STOCKPILING

.1 Label stockpiles, indicating material type and quantity.

.2 Designate appropriate security resources/measures to prevent vandalism, damage and theft.

.3 Locate stockpiled materials convenient for use in new construction. Eliminate double handling wherever possible.

.4 Stockpile materials designated for alternate disposal in location which facilitates removal from site and examination by potential end markets, and which does not impede disassembly, processing, or hauling procedures.

3.5 REMOVAL FROM

.1 Transport material designated for alternate disposal by approved

SITE

haulers and/or approved facilities or receiving organizations in accordance with applicable regulations.

.2 Dispose of materials not designated for alternate disposal in accordance with applicable regulations.

3.6 CLEANING AND RESTORATION

.1 Keep site clean and organized throughout demolition procedure.

.2 Upon completion of project, reinstate all building areas, parking surfaces, walkways and other existing site features affected by Work to condition which existed prior to beginning of Work or to match condition of adjacent, undisturbed areas.

END OF SECTION

PART 1: GENERAL

1.1 GENERAL REQUIREMENTS

.1 Provide all material and labour required for the completion of the Contract. Breakdown of Work by Section is for guidance only and is not necessarily complete.

.2 Work Furnished and Installed:

i. Precast concrete planks

.3 Related Work Specified Elsewhere:

i. Concrete Formwork.

ii. Concrete Reinforcement.

iii. Cast-in-Place Concrete .

1.2 MEASUREMENT PROCEDURES

.1 Conform to General Instructions

1.3 STANDARDS, CODES AND ACTS

.1 Conform with the Ontario Building Code 2006 (O. Reg. 403/97) and any applicable acts of any authority having jurisdiction and the following:

.2 Canadian Standards Association (CSA)

i. CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete

ii. CSA-A23.3-09, Design of Concrete Structures for Buildings.

iii. CSA-A23.4-09, Precast Concrete Materials and Construction.

iv. CSA-G30.18-09, Carbon-Steel Bars for Concrete Reinforcement

v. CSA-G40.20/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

vi. CAN/CSA-G164-M92 (R2008) Ho Dip Galvanizing of Irregularly Shaped Articles.

vii. CSA-G279-1975, Steel for Prestressed Concrete Tendons.

viii. CSA-W47.1-09, Certification of Companies for Fusion Welding of Steel

ix. CSA-W48.1-M1991 (R1998), Carbon Steel Covered Electrodes for Metal Arc Welding.

x. CSA-W59-03(R2008), Welded Steel Construction (Metal Arc Welding).

xi. CSA-W186-M1990 (R2007); Welding of Reinforcing Bars in Reinforced Concrete Construction.

.3 Where there are differences between the specifications and the drawings and the standards, codes or acts, the most stringent shall govern.

1.4 DESIGN REQUIREMENTS

.1 Precast slab elements

i. Design precast elements to CSA-A23.3 and CSA-A23.4 to carry handling stresses.

ii. Design connections/attachments of precast elements to load/forces specified by Consultant.

iii. Submit electronic copies of detailed calculations and design drawings for typical precast elements and connections for Consultant for review 4 weeks prior to manufacture.

iv. Design and provide anchorage at butt joints of slabs to safely transmit the forces shown.

v. Design the deck so that it can safely support all loading shown or implied over spans and under conditions indicated without exceeding a maximum deflection under live load of 1/360th part of the deck span between consecutive supports.

vi. Where Precast slabs are supported by steel beams, design and provide positive lateral support to the top flange of the beams to the approval of the Consultant.

vii. Design and provide uplift anchorage for all slab units. Anchorage shall be such that it can safely withstand an uplift pressure of at least 1.0 kPa of deck over and above the deck dead load.

viii. Design and provide anchorage of slabs to safely withstand uplift pressure shown.

ix. Design and provide anchorage of slabs to safely withstand uplift pressures in accordance with the requirements of the national Building Code of Canada.

x. Interconnect slabs to safely resist a shear force of 745 kg/m.

1.5 PERFORMANCE REQUIREMENTS

.1 Tolerance of precast elements to CSA-A23.4, Section 10.

.2 Length of precast elements not to vary from design length by more than plus or minus 10mm.

.3 Cross sectional dimensions of precast elements not to vary from design dimensions by more than plus or minus 5mm.

.4 Deviations from straight lines not to exceed 3mm in 9m.

.5 Precast elements not to vary by more than plus or minus 3 mm from true overall cross sectional shape as measured by difference in diagonal dimensions.

1.6 SUBMITTALS

.1 Shop Drawings

i. Submit shop drawings in accordance with Section 01 33 00 – Submittal Procedures, arid in accordance with CSA-A23.3 and CSA-A23.4.

ii. Do not reproduce the structural drawings to serve as shop drawings.

iii. Ensure each drawing submitted bears stamp and signature of qualified professional engineer registered or licensed in the Province of Ontario.

iv. Include the following items for Bubbledeck concrete slab:

- Design calculations for Items designed by manufacturer
- Finishing schedules.
- Camber
- Methods of handling and erection, and sequence of erection and any special handling instructions or bracing required.
- Openings, sleeves, inserts, pour stops, cast-in hydronic tubing, cast-in weldments and related reinforcement

v. Include the following items for precast concrete slabs:

- Deck thickness, reinforcement, unit weight, safe superimposed load for each deck type.
- Bearing details, layout details, anchorages for both uplift and lateral supporting members.
- All through slab openings, recesses and the like.
- Where openings are to be cut after fabrication, detail on previously reviewed shop drawings and resubmit for review by the Consultant.
- Typical details showing criteria for cutting openings through deck on site.
- Sequence of erection and any special handling instruction or bracing required.
- Pockets, such as those which must be cut out of slabs to provide for connections or pockets to provide clearance to adjacent structure.
- Openings larger than 150 mm in size.

.2 Certificates

i. Provide the following certificates prepared by an approved inspection company, prior to commencement of the work.

ii. Concrete: The mix proposed for each class of concrete giving proportions by dry weight of cement, coarse and fine aggregate, type and amounts of admixtures or air entraining agents and water-cement ratio. Certification that compressive strength, slump, entrained air content and other specified properties will be met.

iii. Reinforcing Steel and Prestressed Tendons: Mill Test certificates of reinforcement and stress-strain curves pertaining to the strand lots proposed for the work. Certification that the strand meets the specification requirement, based upon suitable testing of the first shipment of each strand used.

.3 Calculations

i. Upon request by the Consultant, submit calculations prepared by a Registered Professional Engineer in the Province of Ontario and such further proof as may be necessary to show that deck and connections conform to the requirements set forth herein.

.4 Records

i. Continuously maintain a set of plant records showing for each day:

- Item numbers and job numbers for each pour on each facility.
- Strand reel numbers in use on each facility.
- Gauge pressures and/or elongations on each facility.
- Reinforcing steel heat numbers and dates received.
- The following items relating to concrete:

  Mix proportions and admixtures
  Slump
  Air Content
  Compressive Strength
  Curing Cycle

ii. Quality control problems and remedial measures taken. Provide the Consultant with two (2) copies of these records on a regular basis.

1.7 QUALIFICATIONS

.1 Precast concrete elements to be fabricated by manufacturing plant certified by Canadian Standards Association in appropriate category according to CSA-A23.3 and CSAA23.4.

.2 Precast concrete manufacturer to be certified in accordance with CSA's certification procedures for precast concrete plants prior to submitting tender and to specifically verify as part of tender that plant is currently certified in Structural Elements.

.3 Only precast elements fabricated in such certified plants to be acceptable to owner, and plant certification to be maintained for duration at fabrication, erection until warranty expires.

.4 Welding companies certified to CSA-W47.1 and W55.3

PART 2: PRODUCTS

2.1 MATERIALS

.1 Deck manufacturer must be approved by the Consultant.

.2 Cement, aggregates, water, admixtures: to CSA-A23.1 and CSA-A23.4.

.3 Grout: Minimum compressive strength 30MPa at 28 days.

.4 Reinforcing steel: to CSA-G30.18

.5 Prestressing Steel: conform to CSA Standard G279

.6 Welded wire fabric: to CSA-G30.18.

.7 Hardware and miscellaneous materials: to CSA-A23.1.

.8 Forms: to CSA-A23.4.

.9 Anchors and supports: to CSA G40.21 Type 300 W galvanized after fabrication.

.10 Welding materials: to CSA-W48.1.

.11 Welding electrodes: to CSA-W48.1 and certified by Canadian Welding Bureau.

.12 Galvanizing: hot dipped galvanizing with minimum zinc coating of 610 g/m2 to CAN/CSA-G164.

.13 Steel primer: to CAN/CGSB-1.210.

.14 Zinc-rich primer: to CAN/CGSB-1.181.

2.2 MIXES

.1 Proportion normal density concrete in accordance with CSA-A23.1, Alternative 1, to give the following properties for concrete in suspended slabs and monolithic housekeeping pads:

i. Minimum compressive strength at 28 days: as indicated on the drawings

ii. Class of exposure N.

iii. Nominal size of coarse aggregate: 20 mm

.2 Slump at time and point of discharge: 80 mm ± 30 mm.

2.3 MANUFACTURED UNITS

.1 Manufacture units in accordance with CSA-A23.4, and CSA-A251.

.2 Mark each precast unit to correspond to Identification mark on shop drawings for location with date cast on part of unit which will not be exposed.

.3 Provide hardware suitable for handling elements.

.4 Shop prime steel inserts after fabrication and touch up primer on anchors after welding. Do not apply primer to embedded portion of anchor or inserts.

.5 Galvanize steel embedments after fabrication and touch up with zinc-rich prime after welding.

2.4 FINISHES

.1 Finish units to Finish Grade A to CSA-A23.4, Section 24.

.2 Soffits of deck slabs in exposed areas (without ceilings) are to have a consistent appearance in terms of colour and texture.

PART 3: EXECUTION

3.1 Typical precast concrete slab

.1 Fabrication

i. Manufacture deck to within close size tolerances suitable to the size of joint gap detailed so that units will fit accurately in their designated position.

ii. Provide anchorage inserts as required.

iii. Provide units with a top surface suitable to receive the roof waterproof membrane and a bottom surface conforming with Finish Grade A as defined in CSA-A23.4.

iv. Provide units with a top surface suitably roughened so that toppings will be fully bonded.

v. Fire Rating

- Deck slabs shall have a minimum 2 hour fire rating as defined in NBC 2005, Supplement No. 2. Refer to architectural drawings for confirmation.

vi. Finishes

- Units to receive carpet shall have a top surface meeting the requirements of a fine steel trowel finish as defined in CSA A23.1. Units to receive a concrete topping shall have their top surface suitably roughened so that the topping will be fully bonded. The finish and dimensional tolerances of the underside of deck units and lintels shall conform to Standard Grade as defined in CSA-A23-4.

.2 Erection

i. General

- Handle, transport, store and erect members in conformity with the CSA-A23.4 except as altered herein.

- Place deck units on supporting work and adjust to their final required position each unit being brought to full bearing of at least 90 mm or as shown on drawings. Align units end to end to provide accurate fit with corresponding collinear sections, with all units parallel, true and straight.

- If required for minor adjustment of slab elevation, install temporary wooden wedges between support members and deck. Fully grout the resulting void and remove wedges when group is of sufficient strength.

- Where precast slabs are exposed to view in the finished building, exercise particular care in handling, erecting, cutting of holes or recesses and

grouting units so that the exposed underside is left clean, with holes fitting tight to services passing through the deck without defects, such as stains, dirt, abrasions and cracks.

ii. Grouting

- After final alignment of the deck units and connections have been approved, grout as follows:
- Saturate areas to receive group with water 24 hours prior to grouting.
- Consistency of grout shall be such that joints are completely filled yet not wet enough to seep through to the underside of the slab.
- Strike grout flush with the upper surface of the deck units.
- Protect and cure the grout in accordance with the requirements specified in Section 3A.
- After grout thoroughly brush the exposed face of the deck with a soft broom to remove all dust.

iii. Holes Through Deck

- Cooperate with other trades in order to obtain all information necessary to locate openings either shown or implied, before submission of shop drawings.
- Cast openings and related reinforcement into the deck units as required for pipes, ducts, hoppers and the like. Indicate openings and reinforcement for openings on shop drawings.
- Openings up to 150 mm square or in diameter may be cut in the field provided this trade approved the location and drilling of these openings and verifies at the completion of the work that these as-built openings do not reduce the specified safe load carrying capacity of the deck.

END OF SECTION 03 41 00

PART 1 - GENERAL

1.1 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CAN3 A165 SERIES-94(R2000), CSA Standards on Concrete Masonry Units - covers: A165.1, A165.2, A165.3.

.2 CSA A179-94(R1999), Mortar and Grout for Unit Masonry.

.3 CSA-A370-94(C1999), Connectors for Masonry.

.4 CSA-A371-94(R1999), Masonry Construction for Buildings.

.5 CSA G30.14-M1983(R1998), Deformed Steel Wire For Concrete Reinforcement.

.6 CAN/CSA G30.18-M92, Billet-Steel Bars for Concrete Reinforcement.

.7 CSA-S304.1-94(R2001), Masonry Design for Buildings.

.8 CAN/CSA A82.1-M87(R1999), Burned Clay Brick (Solid Masonry Units Made From Clay or Shale).

1.2 SUBMITTALS

.1 Shop Drawings :

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures, 01 00 10 - General Instructions.

.2 Shop drawings consist of bar bending details, lists and placing drawings.

.3 On placing drawings, indicate sizes, spacing, location and quantities of reinforcement and connectors.

1.3 STORAGE AND HANDLING

.1 Protect on site stored or installed material from moisture damage in accordance with manufacturer's printed instructions.

PART 2 - PRODUCTS

2.1 MASONRY UNITS

.1 Standard concrete block units: to CAN3-A165 Series (CAN3-A165.1).

.1 Size: modular; 190mm high x 90mm, 140mm and 190mm thicknesses as indicated.

.2 Special shapes: provide solid bull-nosed units for exposed corners. Provide purpose-made shapes for lintels and bond beams. Provide additional special shapes as indicated.

.2 Architectural concrete block units: to CAN3-A165 Series

(CAN3-A165.1).
.1 Size: modular; 190mm high x 140mm.
.2 Colour: 'Iceland Suave' by Brampton Brick

2.2 REINFORCEMENT AND CONNECTORS

.1 Bar reinforcement: to CSA-A371 and CAN/CSA G30.18. Refer to structural drawings.

.2 Wire reinforcement: to CSA-A371 and CSA G30.14. Refer to structural drawings.

.3 Connectors shall be corrosion resistant: to CSA-A370 and CSA-S304.

2.3 MORTAR AND GROUT

.1 Mortar: to CSA A179.
.1 Use aggregate passing 1.18 mm sieve where 6 mm thick joints are indicated.
.2 Colour: ground coloured natural aggregates or metallic oxide pigments.

.2 Mortar Type: S

.3 Mortar for foundation walls, manholes, sewers, pavements, walks, patios and other exterior masonry at or below grade: type M.

.4 Following applies regardless of mortar types and uses specified above:
.1 Mortar for grouted reinforced masonry: type S.

.5 Grout: to CSA A179, Table 3.

.6 Parging mortar: type S to CSA A179.

2.4 ACCESSORIES

.1 Nailing Inserts: 0.5 mm minimum thickness, galvanized.

.2 Bolts: 12 mm diameter x 150 mm long with ends bent 50 mm at 90 degrees.

.3 Flashings: copper sheet, 600g/m^2, asphalt laminated to two layers of creped kraft paper, reinforced with 12.7 x 12.7mm fibreglass scrim.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Do masonry work in accordance with CSA-A371 except where specified otherwise.
- .1 Bond: running stretcher bond with vertical joints in perpendicular alignment and centred on adjacent stretchers above and below.
- .2 Coursing height: 200 mm for one block and one joint.
- .3 Jointing: tool where exposed or where paint or other finish coating is specified to provide smooth compressed concave.

.2 Build masonry plumb, level, and true to line, with vertical joints in alignment.

.3 Layout coursing and bond to achieve correct coursing heights, and continuity of bond above and below openings, with minimum of cutting.

3.2 CONSTRUCTION

.1 Exposed masonry:
- .1 Remove chipped, cracked, and otherwise damaged units, in exposed masonry and replace with undamaged units.
- .2 Cut out for electrical switches, outlet boxes, and other recessed or built-in objects. Make cuts straight, clean, and free from uneven edges.

.2 Building-In:
- .1 Install masonry connectors and reinforcement where indicated on drawings.
- .2 Build in items required to be built into masonry.
- .3 Prevent displacement of built-in items during construction. Check plumb, location and alignment frequently, as work progresses.
- .4 Brace door jambs to maintain plumb. Fill spaces between jambs and masonry with mortar.
- .5 Install loose steel lintels over openings where indicated.

.3 Concrete block lintels:
- .1 Install reinforced concrete block lintels over openings in masonry where steel or reinforced concrete lintels are not indicated.
- .2 End bearing: as indicated on structural drawings.

.4 Support of loads:

.1 Refer to structural drawings for strength of concrete required where concrete fill is used in lieu of solid units.
.2 Use grout to CSA A179 where grout is used in lieu of solid units.
.3 Install building paper below voids to be filled with concrete or grout; keep paper 25 mm back from faces of units.

.5 Provision for movement:
.1 Leave 3mm space below shelf angles.
.2 Leave 6mm space between top of non-load bearing walls and partitions and structural elements. Refer to structural drawings for angle retainers. Do not use wedges.
.3 Built masonry to tie in with stabilizers, with provision for vertical movement.

.6 Interface with other work:
.1 Cut openings in existing work as indicated.
.2 Openings in walls: approved by Prime Consultant.
.3 Make good existing work. Use materials to match existing.

.7 Build in flashings in masonry in accordance with CSA-A371.
.1 Install flashings under exterior masonry bearing on foundation walls, slabs, shelf angles, and steel angles over openings. Install flashings under weep hole courses and as indicated.
.2 In cavity walls and veneered walls, carry flashings from front edge of masonry, under outer wythe, then up backing not less than 150 mm, and as follows:
.1 For masonry backing embed flashing 25 mm in joint.
.2 For gypsum board backing, bond to wall using manufacturer's recommended adhesive.
.3 Lap joints 150 mm and seal with adhesive.

3.3 REINFORCING AND CONNECTING

.1 Install masonry connectors and reinforcement in accordance with CSA-A370, CSA-A371 and CSA-S304.1 unless indicated otherwise.

.2 Prior to placing concrete, mortar or grout, notify Prime Consultant to obtain Engineer's approval of placement of reinforcement and connectors.

3.4 BONDING AND TYING	.1	Bond walls of two or more wythes using metal ladder connectors in accordance with CSA-S304, CSA-A371 and as indicated.
3.5 REINFORCED LINTELS AND BOND BEAMS	.1	Reinforce masonry lintels and bond beams as indicated.
	.2	Place and grout reinforcement in accordance with CSA-S304.1, CSA-A371, and CSA-A179.
3.6 GROUTING	.1	Grout masonry in accordance with CSA-S304.1, CSA-A371 and CSA-A179 and as indicated.
3.7 ANCHORS	.1	Supply and install metal anchors as indicated.
3.8 LATERAL SUPPORT AND ANCHORAGE	.1	Supply and install lateral support and anchorage in accordance with CSA-S304.1 and as indicated.
3.9 SITE TOLERANCES	.1	Tolerances in notes to Clause 5.3 of CSA-A371 apply.
3.10 FIELD QUALITY CONTROL	.1	Inspection and testing will be carried out by Testing Laboratory designated by Owner.
3.11 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.
3.12 PROTECTION	.1	Protect masonry and other work from marking and other damage. Protect completed work from mortar droppings. Use non-staining coverings.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 09 91 99 – Painting

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)
- .1 ASTM A 53/A 53M-02, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Steamless.
- .2 ASTM A 269-02, Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
- .3 ASTM A 307-02, 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 CAN/CSA-G40.20/G40.21-98, General Requirements for Rolled or Welded Structural Quality Steel.
- .2 CAN/CSA-G164-M92(R1998), Hot Dip Galvanizing of Irregularly Shaped Articles.
- .3 CAN/CSA-S16.1-01, Limit States Design of Steel Structures.
- .4 CSA W48-01, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
- .5 CSA W59-1989(R2001),Welded Steel Construction (Metal Arc Welding) (Imperial Version).

.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 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:
.1 For finishes, coatings, primers and paints.

.2 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.

.3 Samples. Submit 300x300mm or 300mm long samples (complete with specified finish) of:
.1 Powder-coated steel plate stair handrail at Foyer 105 as detailed
.2 Powder-coated steel plate arches at Foyer 105
.3 Powder-coated steel bar handrail at stair in Foyer 105
.4 Painted steel pipe handrails and pickets at Stair 122

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 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.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with current best practice

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material for recycling.

.4 Divert unused metal materials from landfill to metal recycling facility.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 350W, as indicated on drawings

.2 Steel pipe: to ASTM A 53/A 53M standard weight black or galvanized finish as noted.

.3 Welding materials: to CSA W59.

.4 Welding electrodes: to CSA W48 Series.

.5 Bolts and anchor bolts: to ASTM A 307.

.6 Aluminum and steel sheet: refer to section 07 62 00 – Sheet Metal Flashing and Trim

.7 Steel plate; 4mm

2.2 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.

2.3 FINISHES

.1 Galvanizing: hot dipped galvanizing with zinc coating 600g/m^2 to CAN/CSA-G164.

.2 Shop coat primer: to CAN/CGSB-1.40, gray colour.

.3 Zinc primer: zinc rich, ready mix to CAN/CGSB-1.181.

.4 Bituminous paint: to CAN/CGSB-1.108.

.5 Powder coating: Polyester to CAN/CGSB. Selected by Prime Consultant from Tiger Drylac colour range.

.6 Shop-applied sprayed paint finishes, refer to section 09 91 99 – Painting

2.4 ISOLATION COATING

.1 Isolate aluminum from following components, by means of bituminous paint:
- .1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
- .2 Concrete, mortar and masonry.
- .3 Wood.

2.5 SHOP PAINTING

.1 Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.

.2 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 degrees C.

.3 Clean surfaces to be field welded; do not paint.

PART 3 - EXECUTION

3.1 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 Prime 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 CAN/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.

3.2 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 Not Used.

1.2 REFERENCES

.1 American National Standards Institute (ANSI)
- .1 ANSI/NPA A208.1-1999, Particleboard.
- .2 ANSI A208.2-02, Medium Density Fiberboard (MDF) for Interior Applications.
- .3 ANSI/HPVA HP-1-04, Standard for Hardwood and Decorative Plywood.

.2 American Society for Testing and Materials International (ASTM)
- .1 ASTM E 1333-96(2002), Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates From Wood Products Using a Large Chamber.
- .2 ASTM D 2832-92(R2005), Standard Guide for Determining Volatile and Nonvolatile Content of Paint and Related Coatings.
- .3 ASTM D 5116-06, Standard Guide For Small-Scale Environmental Chamber Determinations of Organic Emissions From Indoor Materials/Products.

.3 Architectural Woodwork Manufacturers Association of Canada (AWMAC) and Architectural Woodwork Institute (AWI)
- .1 Architectural Woodwork Quality Standards Illustrated, 8th edition, Version 1.0 (2005).

.4 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-71.20-[M88], Adhesive, Contact, Brushable.

.5 Canadian Standards Association (CSA International)
- .1 CSA B111-74(R2003), Wire Nails, Spikes and Staples.
- .2 CSA O112.4 Series-M1977(R2006), Standards for Wood Adhesives.
- .3 CSA O112.5-Series-M-1977(R2006), Urea Resin Adhesives for Wood (Room- and High-Temperature Curing).
- .4 CSA O112.7-Series M-1977(R2006), Resorcinol and Phenol-Resorcinol Resin Adhesives for Wood (Room- and Intermediate-Temperature Curing).
- .5 CSA O121-M89(R2003), Douglas Fir Plywood.
- .6 CSA O141-05, Softwood Lumber.
- .7 CSA O151-04, Canadian Softwood Plywood.

.8 CSA O153-M1980(R2003), Poplar Plywood.

.6 International Organization for Standardization (ISO)
- .1 ISO 14040-2006, Environmental Management-Life Cycle Assessment - Principles and Framework.
- .2 ISO 14041-98, Environmental Management-Life Cycle Assessment - Goal and Scope Definition and Inventory Analysis.

.7 Forest Stewardship Council (FSC)
- .1 FSC Accredited Certified Bodies.

.8 National Electrical Manufacturers Association (NEMA)
- .1 ANSI/NEMA LD-3-05, High-Pressure Decorative Laminates.

.9 National Hardwood Lumber Association (NHLA)
- .1 Rules for the Measurement and Inspection of Hardwood and Cypress 1998.

.10 National Lumber Grades Authority (NLGA)
- .1 Standard Grading Rules for Canadian Lumber 2005.

1.3 SUBMITTALS

.1 Provide shop drawings in accordance with Section 01 33 00 - Submittal Procedures and according to the standards of latest edition of the AWMAC manual.
- .1 Indicate details of construction, profiles, jointing, fastening and other related details.
  - .1 Scales: profiles full size, details half full size.
- .2 Indicate materials, thicknesses, finishes and hardware.
- .3 Indicate locations of service outlets in casework, typical and special installation conditions, and connections, attachments, anchorage and location of exposed fastenings.

.5 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
- .1 Provide duplicate samples: sample size 300x300 mm or 300mm long unless specified otherwise of:
  - .1 Typical cabinet door with #2 plastic laminate finish
  - .2 Typical countertop construction with plastic laminate material as shown in detail 2/A10.5
  - .3 Typical countertop construction with solid surface material as shown in detail 3/A10.6
  - .4 Plastic laminated wall panel.

.2 Provide duplicate samples of all specified plastic and metal laminates and solid surface materials.

.6 Quality assurance submittals:
.1 Manufacturer's Instructions: manufacturer's installation instructions.

1.4 QUALITY ASSURANCE

.1 All work shall be performed in conformance with the requirements of 'Custom' grade as set out in the latest edition of the AWMAC manual.

.2 Lumber by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

.3 Plywood, particleboard, OSB and wood based composite panels in accordance with CSA and ANSI standards.

.4 Sustainable Requirements:

.5 Delivery, Storage, and Handling:
.1 Deliver, handle, store and protect materials of this section in accordance with Section 01 61 00 - Common Product Requirements.
.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.
.2 Waste Management and Disposal:
.1 Separate waste materials for reuse and recycling.

PART 2 - PRODUCTS

2.1 SUSTAINABLE REQUIREMENTS

.1 Not Used.

2.2 MATERIALS

.1 General: Use clean stock only and comply with AWMAC Quality Standards grades as indicated.

2.3 MILLWORK SCHEDULE

.1 Plastic Laminates:
.1 Plastic laminate #1 – Countertops:
Pionite #WF181, 'Ice Fishing'

.2 Plastic laminate #2 – Cabinetry
Wilsonart #7954-38 'Natural Rift'
.3 Plastic laminate #3 – Backsplash:
Formica #2032, 'Brushed Pewter'

.2 Hardware:
.1 Drawer sliders: heavy duty roller assembly, Accuride or Hettiche.
.2 Hinges: self closing European type, 125 degree open, Hettiche or Blum Module.
.3 Pulls; drawers, doors: Richelieu #39660, Finish: #184
.4 Brackets for closet shelving: Richelieu Heavy Duty 'L' Bracket, 300mm long, white finish, #494W12B.

.3 Metal Trims:
.1 Clear anodized aluminum extrusions as noted and dimensioned on drawings.

.4 Casework core materials, unless otherwise indicated on Drawings:
.1 Cabinetry; 19mm thick particle board.
.2 Shelving; exposed: 19mm thick particle board.
.3 Interior; semi-exposed: 19mm particle board.
.4 Doors and drawer fronts: 19mm particle board.
.5 Counter tops: 19mm urea-formaldehyde-free plywood. Seal all edges and joints as per AWMAC 'Custom' Quality Standards.

2.4 FABRICATION

.1 Set nails and countersink screws apply plain 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 cutouts 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 Veneer laminated plastic to core material in accordance with adhesive manufacturer's instructions. Ensure core and laminate profiles coincide to provide continuous support and bond over entire surface. Use continuous lengths up to [2400] [3000] mm. Keep joints 600 mm from sink cutouts.

.9 Form shaped profiles and bends as indicated, using postforming grade laminate to laminate manufacturer's instructions.

.10 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.

.11 Apply laminate backing sheet to reverse side of core of plastic laminate work.

.12 Apply laminated plastic liner sheet to interior of cabinetry where indicated.

PART 3 - EXECUTION

3.1 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 Fasten and anchor millwork securely. Provide heavy duty fixture attachments for wall mounted cabinets.

.4 Use draw bolts in countertop joints.

.5 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, columns, fixtures, outlets or other projecting, intersecting or penetrating objects.

.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 contact with masonry or cementitious construction.

.8 Fit hardware accurately and securely in accordance with manufacturer's written instructions.

3.2 CLEANING

.1 Proceed in accordance with Section 01 74 11 - Cleaning.

.2 Clean millwork and cabinet work inside cupboards and drawers and outside surfaces.

.3 Remove excess glue from surfaces.

3.3 PROTECTION

.1 Protect millwork and cabinet work from damage until final inspection.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 07 42 40 – Aluminum Composite Panels

.1 Section 07 47 56 – Fibre Reinforced Cementitious Panels

1.2 REFERENCES

.1 American Society for Testing and Materials International (ASTM)
- .1 ASTM C 591-01, Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation.
- .2 ASTM C 612-04, Standard Specification for Mineral Fibre Block and Board Thermal Insulation.
- .3 ASTM C 726-05, Standard Specification for Mineral Fiber Roof Insulation Board.
- .4 ASTM C 1289-05a, Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
- .5 ASTM E 96/E 96M-05, Standard Test Methods for Water Vapour Transmission of Materials.

.2 Canadian Gas Association (CGA)
- .1 CAN/CGA-B149.1-05, Natural Gas and Propane Installation Code Handbook.
- .2 CAN/CGA-B149.2-05, Propane Storage and Handling Code.

.3 Canadian General Standards Board (CGSB)
- .1 CGSB 71-GP-24M-77(R1983), Adhesive, Flexible, for Bonding Cellular polystyrene Insulation.

.4 Underwriters Laboratories of Canada (ULC)
- .1 CAN/ULC-S604-M91, Standard for Type A Chimneys.
- .2 CAN/ULC-S701-05, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Coverings.
- .3 CAN/ULC-S702-97, Standard for Thermal Insulation, Mineral Fibre, for Buildings.
- .4 CAN/ULC-S704-03, Standard for Thermal Insulation Polyurethane and Polyisocyanurate, Boards, Faced.

.5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
- .1 Material Safety Data Sheets (MSDS).

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 Convene pre-installation meeting one week prior to beginning work of this Section.
.1 Verify project requirements.
.2 Review installation and substrate conditions.
.3 Coordinate with other building subtrades.
.4 Review manufacturer's installation instructions and warranty requirements.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with current best practice

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material for recycling.

PART 2 - PRODUCTS

2.2 INSULATION

.1 Extruded polystyrene (XPS): to CAN/ULC-S701.
.1 Type: 4.
.2 Compressive strength: 140kPa.
.3 Thickness: as indicated.
.4 Edges: square.
.5 Thickness as noted on drawings.

.2 Mineral fibre board (where noted on drawings for fire protection):
.1 Type: IVB
.2 Acceptable material: Roxul 'Curtain Rock' semi-rigid insulation board or approved equivalent alternate.
.3 Surfaces: unsurfaced.
.4 Thickness as noted on drawings.

2.3 ADHESIVE

.1 Adhesive (for polystyrene): to CGSB 71-GP-24.
.1 As recommended by manufacturer

2.4 ACCESSORIES

.1 Insulation clips: impale type, perforated 50 x 50 mm cold rolled carbon steel 0.8 mm thick, adhesive back, spindle of 2.5 mm diameter annealed steel, length to suit insulation, 25 mm diameter washers of self locking type.

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 75mm from heat emitting devices such as recessed light fixtures, and minimum 50mm 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 Prime Consultant.

3.3 EXAMINATION

.1 Examine substrates and immediately inform Prime 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 INSULATION INSTALLATION

.1 Apply Type adhesive to in accordance with manufacturer's recommendations.

.2 Imbed insulation boards into vapour barrier type adhesive, applied as specified, prior to skinning of adhesive.

.3 Leave insulation board joints unbonded over line of expansion and control joints. Bond a continuous 150mm wide modified bituminous membrane over expansion and control joints using compatible adhesive and primer before application of insulation.

3.5 PERIMETER FOUNDATION INSULATION

.1 Interior application: extend boards as indicated, installed on inside face of perimeter foundation walls.

.2 Under slab application: install boards full area of slab as indicated. Lay boards on level compacted fill.

3.6 ROOF INSTALLATION

.1 Refer to Section 07 21 13.02 – Insulation – Built-up Roofing Section 07 51 00 – Built-up Bituminous Roofing.

3.8 CLEANING

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Labour, Products, equipment and services necessary for sprayed foam insulation Work in accordance with the Contract Documents.

1.2 REFERENCES

.1 ASTM D1621, Standard Test Method for Compressive Properties Of Rigid Cellular Plastics.

.2 ASTM D1622, Standard Test Method for Apparent Density of Rigid Cellular Plastics.

.3 ASTM D1623, Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics.

.4 ASTM D2842, Standard Test Method for Water Absorption of Rigid Cellular Plastics.

.5 ASTM D6226, Standard Test Method for Open Cell Content of Rigid Cellular Plastics.

.6 ASTM E96, Standard Test Methods for Water Vapor Transmission of Materials.

.7 CAN/ULC S705.1, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Material Specification.

.8 CAN/ULC S705.2, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Application.

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, characteristics, and limitations.

.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, materials, details of joint conditions, including door, window, entrance framing and similar locations.

.3 Samples: Submit following samples in accordance with Section 01 33 00:
- .1 Two 150 x 150 x 25 mm thick samples of sprayed insulation.

.4 Certificates: Submit the following certificates in accordance with Section 01 33 00:
- .1 Applicator's current certificate of approval by CUFCA/NECA or BASF Canada's training program.
- .2 Applicator's current certificate of approval from material manufacturer.

1.4 QUALITY ASSURANCE

.1 Perform work of this Section by a company that has a minimum of five years proven experience in installations of similar size and nature.

.2 Contractor to be a certified member of the Canadian Urethane Foam Contractors Association/ National Energy Conservation Association (CUFCA/NECA) or be licensed under the BASF Canada Quality and Training Program "Raising Performance to New Heights" and in accordance with CAN/ULC S705.2 installation standard.

.3 Provide quality assurance testing in accordance with CAN/ULC S705.2. Record daily results in a log book for Consultant's review.

.4 Mock-up:
- .1 Construct mock-up of 2m2 minimum, of spray-in-place foam insulation to thickness as indicated on drawings, including one inside corner and one outside corner.
- .2 Arrange for Consultant's review and acceptance, allow 24 hours before proceeding with Work.
- .3 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of Work if accepted by Consultant. Remove and dispose of mock-ups which do not form part of Work.

1.5 SITE CONDITIONS

.1 Do not install work of this Section outside of following environmental ranges without Consultant's and Product manufacturer's written acceptance:
- .1 Ambient air and surface temperature: 50C to 400C.
- .2 Relative Humidity: Above 85%.

.2 Supply and install temporary protection and facilities to maintain

Product manufacturer's, and above specified environmental requirements for 48 hours before, during, and 48 hours after installation.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 All materials under work of this Section, including but not limited to, primers and sealants are to have low VOC content limits.

.2 Sprayed foam insulation: Sprayed/frothed polyurethane foam conforming to CAN/ULC S705.1. and containing no fluorocarbons and conforming to the following minimum requirements:

- .1 Density (ASTM D1622): 28.9 kg/m3.
- .2 Open cell content (ASTMD2856): 6%.
- .3 Tensile strength (ASTM D1623): 325 kPa.
- .4 Compressive strength (ASTM D1621): 201 kPa.
- .5 Water absorption (ASTM D2842): 0.6% by volume.
- .6 Water vapour permeance (ASTM E96): 50mm sample 41 ng/PaAsAm2 (0.68Perms).
- .7 Flame spread: <500.
- .8 Sprayed urethane foam: 'Walltite Eco v.3' by BASF or approved alternative

.3 Primers: As recommended by sprayed foam insulation manufacturer.

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 PREPARATION

.1 Verify substrate surfaces are solid, free from surface water, frozen matter, dust, oil, grease, scaling or laitance, projections and any other foreign matter detrimental to performance. Obtain manufacturer's approval of substrate in writing, submit copy to Consultant.

.2 Provide ventilation in area to receive sprayed foam insulation, introducing and exhausting fresh air continuously during and for 24 hours after application.

.3 Provide temporary enclosures to prevent spray from contaminating air beyond application area, and damage from overspray and dusting on adjacent surfaces.

.4 Supply and install temporary protection to adjacent surfaces to prevent damage resulting from Work of this Section.

.5 If required, apply primer to substrate surfaces in accordance with manufacturer's written instructions.

3.3 SPRAY INSULATION

.1 Install insulation in accordance with manufacturer's written instructions and conforming to CAN/ULC S705.2.

.2 Apply sprayed foam insulation to thickness indicated on drawings and to provide continuous air retarder in locations indicated on the Drawings. Apply insulation to within 3 mm of thickness indicated on drawings. Provide one measuring pin for every 50 m2.

.3 Insulation thickness greater than 50 mm shall be completed in a minimum of 2 steps.

.4 Insulation to be continuous, level, plumb and uniform thickness throughout. Insulation shall be free of voids and imbedded foreign materials.

3.4 INSPECTION AND TESTING

.1 Arrange for third party site-inspection by approved company. Cost of inspections shall be included in bid price.

.2 Site inspection shall be carried out at 5%, 50% and 95% completion to verify conformance with CAN/ULC S705.2, manufacturers written instructions and this Section.

.3 Written inspection reports shall be forwarded to Consultant within three (3) working days of test being performed.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 .Labour, Products, equipment and services necessary for vapour retarders Work in accordance with the Contract Documents.

1.2 REFERENCES

.1 CAN/CGSB 19.21-M, Sealing and Bedding Compound, Acoustical.

.2 CAN/CGSB-51.34-M, Vapour Barrier, Polyethylene Sheet, for Use in Building Construction.

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, characteristics, and limitations.

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

.2 Samples: Submit following samples in accordance with Section 01 33 00:

.1 Two 300 x 300 mm samples of vapour retarders.

.2 Two samples, 300 mm long, of fastening bar.

1.4 QUALITY ASSURANCE

.1 Mock-up:

.1 Construct one 2 m2 mock-up of each type of vapour retarder in location acceptable to Consultant indicating as a minimum one lap joint, one inside corner, one window interface, and one electrical box.

.2 Arrange for Consultant's review and acceptance.

.3 Mock-up may remain as part of Work if accepted by Consultant. Remove and dispose of mock-ups which do not form part of Work.

1.5 SITE CONDITIONS

.1 Do not install the work of this Section outside of environmental ranges as recommended by manufacturer without Consultant's and Product manufacturer's written acceptance.

.2 Supply and install temporary protection and facilities to maintain Product manufacturer's, and above specification, environmental requirements before, during, and after

installation.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 All materials under work of this Section, including but not limited to, primers and sealants are to have low VOC content limits.

.2 Membrane air/vapour retarder:

.1 Membrane air/vapour retarder: 1.0 mm thick, single-ply, self adhering, self sealing, rubberised asphalt, bonded to a cross-laminated high density polyethylene film.

.1 'CCW 705' by Carlisle Coatings & Waterproofing.
.2 'Blueskin SA' by Henry Company Canada Inc.
.3 'Sopraseal Stick 1100 T' by Soprema.
.4 'Exo-Air 110' by Tremco.
.5 'Air-Shield" by W. R. Meadows.

.2 Primer:

.1 'CCW-AWP Primer' by Carlisle Coatings & Waterproofing.
.2 'Aquatac' by Henry Company Canada Inc.
.3 'Elastocol Stick H20' by Soprema.
.4 'ExoAir WB Primer' by Tremco
.5 'Mel-Prime Water Base' by W.R. Meadows.

.3 Mastic:

.1 'CCW 704 Mastic' by Carlisle Coatings & Waterproofing.
.2 'Polybitume 570-05' by Henry Company Canada Inc.
.3 'Sopramastic' by Soprema.
.4 'Acoustical Sealant' by Tremco
.5 'Sealtight Pointing Mastic' by W.R. Meadows.

.4 Fastening bar: Continuous 25 mm wide x 3 mm thick aluminum bar, predrilled for mechanical attachment.

.5 Fasteners: As specified herein or manufacturer's recommended fastener for Attaching to Substrate.

.3 Sheet vapour retarder 'Super Six' Polyethylene film to CAN/CGSB-51.34, 0.15 mm (6mil) thick.

.1 Joint sealing tape: Air resistant pressure sensitive adhesive tape, type recommended by sheet vapour retarder manufacturer, 50 mm wide for lap joints and perimeter seals, 25 mm wide elsewhere.

.2 Sealant: CAN/CGSB 19.21; One-part, non-sag, non-bleeding, non-drying, nonhardening, sealant shall remain tacky for permanent bonding to all surfaces; 'Tremco Acoustical Sealant' by Tremco Ltd. or approved

alternative.

PART 3 - EXECUTION

3.1 EXAMINATION AND COORDINATION

.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.

.2 Verify that existing substrates to receive vapour retarder are clean, dry, sound, smooth, and continuous.

.3 Coordinate installation of vapour retarders with work of other Sections to achieve a vapour tight building envelope.

3.2 MEMBRANE AIR/VAPOUR RETARDER INSTALLATION

.1 Install air/vapour retarder and associated components in accordance with manufacturer's instructions in locations indicated.

.2 Primer and mastic:

.1 Primer:

.1 Prime substrate surfaces to receive air/vapour retarder, at recommended application rate, allow to dry. Vary coverage to suit surface porosity.

.2 Prime surfaces. Re-prime surfaces if not covered with air/vapour retarder within 4 hours.

.2 Mastic:

.1 Install mastic where required to ensure integrity of air/vapour retarder installation at protrusions and other complex details.

.2 Fill substrate voids, gaps, depressions, cracks, and joints with mastic until continuous, smooth, substrate for air/vapour retarder is achieved.

.3 Lap air/vapour retarder ends and edges 50 mm minimum. Roll air/vapour retarder and laps for continuous adhesion over entire substrate area; use manufacturer's recommended roller.

.4 Extend air/vapour retarder as required to connect to roof parapets, windows, doors frames, aluminum work and other components of Work comprising air/vapour retarder system.

.5 Provide end-dams and terminations fabricated from same material as membrane air/vapour retarder or material recommended by membrane manufacturer at sills, lintels,

openings, and where horizontal surfaces intersect with vertical surfaces to ensure moisture is shed to exterior.

.6 Cut and fit air/vapour retarder as required for passage of protrusions, ensuring continuous adherence to substrate.

.7 At end of days' Work, trowel mastic water cut-off along uppermost edge of incomplete air/vapour retarder assembly, to prevent loss of adhesion and damage air/vapour retarder.

.8 Supply and install continuous mechanical fastening bar to clamp air/vapour retarder both sides of unfilled gaps, cracks, and joints.

3.3 SHEET VAPOUR RETARDER INSTALLATION

.1 Ensure services are installed and inspected prior to installation of retarder.

.2 Install sheet vapour retarder on the warm side of wall assembly as indicayed, prior to installation of insulation or interior finishes to form a continuous vapour retarder.

.3 Use sheets of largest practical size to minimize joints.

.4 Inspect for continuity. Repair punctures and tears with sealing tape before work is concealed.

.5 At exterior surface openings, cut vapour retarder to form openings and ensure material is lapped and sealed to frame.

.6 Ensure continuity of vapour retarder is maintained at junctures with other materials.

.7 At perimeter seals, seal perimeter of sheet vapour retarder as follows:

- .1 Apply continuous bead of sealant to substrate at perimeter of sheets.
- .2 Lap sheet over sealant and press into sealant bead.
- .3 Install fasteners through lapped sheets at sealant bead into substrate.
- .4 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

.8 Seal lap joints of sheet vapour retarder as follows:

- .1 Attach first sheet to substrate.
- .2 Apply continuous bead of sealant over solid backing at joint.
- .3 Lap adjoining sheet minimum 150 mm and press into sealant bead.

.4 Install fasteners through lapped sheets at sealant bead into substrate.

.5 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

.9 Seal electrical switch and outlet device boxes that penetrate vapour retarder as follows:

.1 Wrap boxes with film sheet providing minimum 300 mm perimeter lap flange.

.2 Apply sealant to seal edges of flange to main vapour retarder and seal wiring penetrations through box cover.

3.4 FIELD QUALITY CONTROL

.1 Inspect vapour retarder continuity immediately prior to installation of subsequent construction. Repair punctures, rips and tears to ensure continuity of vapour retarder.

.2 Where punctures and tears are extensive, replace entire damaged section.

.3 Do not cover or permit to be covered any portion of vapour retarder until it has been inspected by Consultant.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 07 92 00 – Joint Sealants

.2 Section 07 21 13 – Thermal Insulation

1.2 REFERENCES

.1 AAMA 611, Voluntary Standards for Anodized Architectural Aluminum.

.2 AAMA CW-10, Care and Handling of Architectural Aluminum from Shop to Site.

.3 ANSI B18.6.4, Screws, Tapping and Metallic Drive, Inch Series, Thread Forming and Cutting.

.4 ASTM C920, Specification for Elastomeric Joint Sealants.

.5 ASTM D1781, Standard Test Method for Climbing Drum Peel for Adhesives.

.6 CAN/CSA-G40.20/G40.21M, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steels.

.7 CSA S136, Cold Formed Steel Structural Members.

1.3 DESIGN REQUIREMENT

.1 Design composite panels in accordance with following Climatic Design Data for Toronto 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 exterior metal wall and wall panel system as a “dry joint system” and to withstand live, dead, lateral, wind, seismic, handling, transportation, and erection loads, imposed and other loads.

3. Prevent rain penetration through panel system. Incorporate means of draining to the exterior.

4. Design exterior metal wall panel system to support its own weight and the wind load, positive and negative, prevalent for the location of the building, but no less than windgust pressure calculated from National Building Code using 1-10 year probability factor. To minimize the potential for “dished” panels after loading, permanent set of the panel, measured normal to

the panel surface after application and removal of the design load, must not exceeding L/800 of distance between supported edges of panel or distance between stiffeners where stiffeners are used. Stiffeners, where used, must not deflect more than L/90 of span under load.

5. Design exterior metal wall panel system to accommodate thermal movements of the components and structural movements to provide an installation free of oil canning, buckling, delamination, failure of joint seals, excessive stress on fasteners or any other detrimental effects.

.6 Design composite panel system to prevent rattling and vibration of panels, overstressing of fasteners and clips, and other detrimental effects on the system.

.7 Design soffit system to accommodate expansion and contraction of soffit elements without causing buckling, failure of joints, undue stress on fasteners or other effects detrimental to appearance or performance.

8. Panel removal: System design to allow removal of individual panels within wall system.

.9 Design miscellaneous, additional structural framing members required to complete composite panel system, where not indicated on Contract Drawings.

.10 The attachment face of subgirts supporting the panel system must not deflect vertically
more than 3 mm due to the dead load of the panel system.

1.4 SUBMITTALS

.1 Product data:
- .1 Submit copies of manufacturer's Product data in accordance with Section 01 33 00 indicating:
  - .1 Performance criteria, compliance with appropriate reference standard, characteristics, limitations.
  - .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, details, profiles, dimensions, thickness of materials, finishes, methods of joining, joint location, special shapes, methods of anchoring, anchor and clip details, types of sealants and

gaskets, waterproof connections to adjoining work, details of other pertinent components of the work (i.e. windows, penetrations, membranes, etc), and compliance with design criteria and requirements of related work.

.3 Samples: Submit two 300 x 300 mm samples of wall panels in the selected colours and finish for approval.

4. Closeout Submittals: Provide maintenance instructions for incorporation into Operation and Maintenance Manual, specified in section 01 78 00.

1.5 QUALITY ASSURANCE

.1 Retain a licensed Professional Engineer, registered in Province of Ontario, to perform following services for composite panel Work:
- .1 Design of composite metal panel system and fully engineered system of anchorage for all work of this Section using the specified thermal spacer clip and girt support system.
- .2 Review, stamp, and sign shop drawings.
- .3 Conduct shop and field inspections and prepare and submit inspection reports.

.2 Perform work of this Section only by a Subcontractor of recognized standing who has adequate plant, equipment, and skilled workers to perform it expeditiously, and is known to have been responsible for satisfactory installations similar to that specified during a period of at least the immediate past ten years.

.3 Execute steel welding to CSA W59-M by fabricators certified by the Canadian Welding Bureau to CSA W47.1.

.4 Execute aluminum welding by fabricators certified by the Canadian Welding Bureau to CSA W47.2-M.

.5 Execute finishing coatings and metal pre-treatments by applicators approved in writing by the manufacturer of the coatings and under the supervision of the manufacturer's qualified representative.

.6 Mock-up:
- .1 Fabricate, deliver, and erect a 1200 mm wide x 1800 mm high mock-up panel of composite panel system in location acceptable to Consultant.
- .2 Demonstrate finish, anchoring devices, air/vapour retarder sealing, breathable membrane, thermal spacer

clip and associated sub-structure and quality of workmanship.

.3 Mock-up may form part of final Work, if acceptable to Consultant. Remove and dispose of mock-ups which do not form part of Work.

1.6 DELIVERY, STORAGE & HANDLING

.1 Handle aluminum Work in accordance with AAMA CW-10. 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.

.2 Remove and replace all damaged and unsatisfactory materials which are deemed unsuitable for use at this Section's own expense.

1.7 EXTENDED WARRANTY

.1 Submit an extended warranty for composite panel Work in accordance with General Conditions, except that warranty period is extended to 3 years from date of Substantial Performance of the Work.

.1 Warrant against leaking, warping, twisting, joint, and inish failure.

.2 Coverage: Complete replacement including affected adjacent parts.

2. Manufacturer's Warranty: Provide panel manufacturer's written warranty naming Owner as beneficiary and 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 from date Work is certified as substantially performed.

PART 2 - PRODUCTS

2.1 ACCEPTABLE PRODUCTS & MANUFACTURERS

.1 Alucobond Aluminum Composite Panels, SL-2000 - Dry Joint System' by Sobotec Architectural Wall System Solutions.

.2 Or approved alternatives by Exterior Technologies Group, Flynn Canada Ltd, Vicwest Canada.

2.2 MATERIALS

.1 All materials under work of this Section, including but not limited to, sealants, paints, and coatings are to have low VOC content

limits.

.2 Composite Material: Two sheets of 0.51 mm thick aluminum alloy 3003, sandwiching a core of extruded thermoplastic formed in a continuous process without the use of glues or adhesives between dissimilar materials. Panel thickness: 4 mm. Bond integrity testingto adhere to ASTM D1781.

.3 Finish: Exposed to view: Colour anodized to AAMA 611 per Aluminum Association Designation System for Aluminum Finishes AA-M12C22A44. Colour: To match Alucobond colour 'Silver Metallic Cool - 30'. Concealed aluminum finish: Mill finish.

.4 Structural shapes, plates, sag rods, and similar items: CAN/CSA-G40.20-G40.21-M, Grade 350W. Provide all additional structural supports not shown on Drawings as required.

.5 Breathable membrane:
- .1 UV resistant underlayment: Coated, black, spun bonded polyester, breathable membrane with a nominal weight of 270g/m^2. 'AirOutshield UV Resistant Underlayment' by SRP Canada Inc. or approved alternative.
- .2 Membrane to be complete with manufacturer recommended tape and fasteners.

.6 Thermal spacer clip and girt support system:
- .1 Provide all components and accessories as required for complete and secure installation of thermal spacer clip and girt support system.
- .2 Z-girts and C channels: CAN/CSA S136-M; Minimum 1.2 mm thick, Z275 galvanized. Depth as indicated on Contract Drawings. Z-girts to be thermally broken at mid-point of insulation thickness. Spacing and sizing as engineered to suit intended application.
- .3 Thermal spacer clip system:
  - .1 Thermal spacer clip system:
    - .1 Fibreglass thermal spacers. Depth to suit application. 'Cascadia Clip' thermal spacer system by Cascadia Windows and Doors;
    - .2 Steel Z-girts, 1.2 mm thick, with Galvalume AZM 150 coating.
    - .3 Fasteners: Corrosion resistant, type as recommended by thermal clip system manufacturer.; or
  - .2 Thermal spacer clip system:
    - .1 Clip system consisting of substructure of clips, fasteners and girts to suit application, 'EA RVRS TClip and Girt

Thermally Broken Rainscreen Facade Substructure' by Engineered Assemblies.

.2 Fasteners: Corrosion resistant, type as recommended by thermal clip system manufacturer.

.4 Fasteners: Corrosion resistant stainless steel fasteners, type as recommended by thermal clip system manufacturer.

.7 Fasteners: Concealed, ANSI B18.6.4, stainless steel Type 304.

.8 Flashings, Closure Pieces, Trim: Same material and colour as panels.

.9 Clips and Panel Reinforcement: Extruded aluminum.

.10 Sealant: ASTM C920, Type S, Grade NS, Class 100/50; One-part, low-modulus, moisture-curing, silicone. 'Dow Corning 790' by Dow Corning or 'Spectrem 1' by Tremco. Colour as selected by Consultant. Primer as recommended by manufacturer.

.11 Joint backing: Product as recommended by siding sealant manufacturer.

.12 Touch-up paint: as recommended by panel manufacturer.

.13 Isolation coating: Bituminous coating, acid and alkali resistant material.

2.3 FABRICATION

.1 . Fabricate composite panels and associated sub-structure in accordance with reviewed shop drawings and manufacturer's written instructions.

2. Fabricate facings and concealed support members in a manner which will provide an installation free of exposed fastenings, with sufficient support and allowance for thermal movement to prevent facing distortion. Take site measurements before proceeding with production.

.3 Fabricate components of the system at factory, ready for field installation. Include full continuous joint reveals within system.

4. Fabricate facings flat, true, free of marks, without visible distortion and with edges square, straight and true. Make all planes true, and corners square and bend of minimum radius.

.5 Changes of plans, parallel or transverse to longitudinal axis shall

be accomplished as detailed on shop drawings in the factory wherever practical and with a minimum of field fabrication.

.6 Form panels to dimensions indicated with tolerances to accommodate expansion and contraction between panels and structure members. Accurately form shaped panels.

7. Provide proprietary aluminum extrusions to manufacturer's standard profiles for a complete installation. Extrusions shall be full length around panel perimeter for panel reinforcement and alignment. Intermittent clips are unacceptable.

.8 Changes of plans, parallel or transverse to longitudinal axis shall be accomplished as detailed on shop drawings in the factory wherever practical and with a minimum of field fabrication.

.9 Form panels to dimensions indicated with tolerances to accommodate expansion and contraction between panels and structure members. Accurately form shaped panels.

.10 Fabricate panels with flanges on all sides.

.11 Factory fabricate accessory and trim components ready for installation.

12. Joint filler strip shall be same material and colour as panels. Use of caulking at joints is not acceptable.

13. Plastic shims shall be used as thermal separator between extrusions and sub-girts.

14. Maximum allowable tolerances shall be as follows:
    - .1 Panel bow: In a concave or convex direction to be 0.5% of panel dimension width and length.
    - .2 Panel flatness: Rises and falls across the panel, (local bumps and depressions) will not be accepted.
    - .3 Panel tolerance:
        - .1 Width: 2 mm.
        - .2 Length: 4 mm.
        - .3 Thickness: 0.2 mm.
    - .4 Squareness: 5 mm maximum.

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.

2. Verify that backup construction is aligned for proper installation of wall panels before commencing erection.

.3 Protect metal surfaces in contact with concrete, masonry mortar, plaster or other cementitious surface with isolation coating.

3.2 INSTALLATION

.1 Supply and install miscellaneous, additional structural framing members, required to complete composite panel system, where not indicated on Contract Drawings.

.2 Apply isolation coating to supporting structural framing to prevent galvanic corrosion.

3. Erect wall and soffit panels complete with girts, breathable membrane, clips, and fasteners, to meet design criteria and with maximum 10 mm panel gaps. Anchor each individual panel over solid backing. Ensure that all penetrations through air/vapour barrier are sealed.

.4 Install panels, support and anchoring system, fasteners, trim and related items to lines and elevations indicated and in strict accordance with reviewed shop/erection drawings and manufacturer's printed instructions. Carefully co-ordinate work with other Sections.

.5 Thermal spacer and girts and channel system:

.1 Install thermal spacer and girt support system in accordance with reviewed shop drawings and manufacturer’s written instructions.

.2 Orient Z girts to drain water from cavity.

.3 Install C channels to frame openings such as doors, windows, and louvre openings, and orient channel webs to form heads, jambs and sills of openings.

.6 Breathable membrane:

.1 Install breathable membrane in accordance with manufacturer’s written instructions.

.2 Install membrane so that it forms a continuous membrane over entire intended substrate area, allowing any water to drain down to away from openings.

.3 Avoid blockages that would otherwise obstruct the water flow.

.4 Starting at base of wall, unroll membrane horizontally across wall. Extend 150mm over starting corner.

.5 Fasten at top and bottom of roll within 50 mm of edge 300 mm on centre and at a maximum of 600 mm on centre in field.

.6 Shingle next layers of membrane ensuring minimum 150 mm horizontal and minimum 300 mm vertical laps.

.7 Ensure membrane is slipped under bottom edge of penetration “skirt” and shingled over taped top edge.

.8 Seal top and sides with seam tape. Do not place vertical laps above windows.

.9 No penetrations are to be left in installed membrane.

.7 Anchor component parts to transmit wind loading and other stresses to anchorage system.

8. Erect wall and soffit panel system in accordance with manufacturer's instructions and under direct supervision of the manufacturer.

9. Erect panels and joint filler strip in accordance with manufacturer’s details to meet specified design criteria and performance. Use concealed fastening only.

10. Finished work shall be securely anchored, free of distortion, free of surface imperfections and uniform in colour.

11. Cut and flash wall penetrations.

12. Erect wall and soffit panels in straight lines, true, level, and plumb.

13. Site tolerances: Erection tolerances apply to each individual panel and shall not be accumulative:

.1 Maximum deviation from vertical and horizontal alignment of erected panels 3 mm in 6 m.

.2 Maximum offset from alignment between adjacent wall panels: 1.5 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 perimeter of composite panel system and where indicated on drawings for weathertight installation. Tool sealant to concave profile.

.3 Seal around all openings and all other locations indicated or required to provide weathertight and watertight seal.

3.4 REPAIR

.1 Remove damaged, dented, defaced, defectively finished, or tool marked components and replace with new, unless minor blemishes are approved by Consultant.

2. Only with approval of Consultant, refinish shop applied finishes in field with compatible materials to manufacturer's written instructions.

3.5 CLEANING

.1 Remove all strippable protective film from the work as it is erected and prior to moving on to the next bay or grid.

.2 Wash down exposed exterior surfaces using solution of mild non-acidic detergent in warm water, applied with soft clean wiping cloths.

.3 As work progresses, remove excess sealant with recommended solvent and which will not affect metal, finished surfaces, or adjacent surfaces and materials.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

.1 This Section includes requirements for supply and installation of the following, as required for complete and proper installation:
- .1 Surface Coloured and Textured High Density Fibre Reinforced Cement Panels
- .2 Support System and Accessories
- .3 Breathable Sheathing Membrane

1.2 RELATED SECTIONS

.1 Section 07 21 13 - Thermal Insulation

.2 Section 07 26 00 - Vapor Retarders

.3 Section 07 62 00 - Sheet Metal Flashing and Trim

.4 Section 07 92 00 - Joint Sealants

.5 Section 08 11 00 - Metal Doors and Frames

.6 Section 08 44 00 – Aluminum Work

.7 Section 09 91 99 - Painting.

1.3 REFERENCES

.1 Specification American Society for Testing and Materials (ASTM):
- .1 ASTM A653/A653M-11, Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc Iron Alloy Coated (Galvannealed) by the Hot Dip Process
- .2 ASTM B209-10, Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate
- .3 ASTM B211-12e1, Standard Specification for Aluminum and Aluminum Alloy Rolled or Cold Finished Bar, Rod, and Wire
- .4 ASTM B221-12, Standard for Aluminum and Aluminum Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
- .5 ASTM C1166-06(2011), Standard Test Method for Flame Propagation of Dense and Cellular Elastomeric Gaskets and Accessories
- .6 ASTM C1185-08(2012), Standard Test Methods for Sampling and Testing Non Asbestos Fibre Reinforced Cement Flat Sheet, Roofing and Siding Shingles, and Clapboards
- .7 ASTM C1186-08(2012), Standard Specification for Flat Fibre Reinforced Cement Sheets

.8 ASTM D395-03(2008), Standard Test Methods for Rubber Property Compression Set
.9 ASTM D412-06ae2, Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers Tension
.10 ASTM D624-00(2012), Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
.11 ASTM D746-07, Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact
.12 ASTM D1149-07(2012), Standard Test Methods for Rubber Deterioration Cracking in an Ozone Controlled Environment
.13 ASTM D2240-05(2010), Standard Test Method for Rubber Property Durometer Hardness
.14 ASTM E96/E96M-12, Standard Test Methods for Water Vapour Transmission of Materials
.15 ASTM E2178-11, Standard Test Method for Air Permeance of Building Materials

.2 Underwriter Lavatories of Canada (ULC):
.1 CAN/ULC-S102-10, Surface Burning Characteristics of Building Materials and Assemblies
.2 CAN/ULC-S114-05, Standard Method of Test for Determination of Non-combustibility in Building Materials
.3 CAN/ULC-S134-92, Fire Test for Exterior Wall Assemblies
.4 CAN/ULC-S135-04, Standard Test Method for the Determination of Combustibility Parameters of Building Materials Using an Oxygen Consumption Calorimeter (Cone Calorimeter), Includes Amendment 1

.3 Canadian Construction Materials Centre (CCMC):
.1 CCMC 13549-R, Technical Guide 07 193 Sheathing Membrane - Breather Type

.4 European Committee for Standardization (CEN):
.1 EN 12467:2012, Fiber-Cement Flat Sheets. Product Specification and Test Methods

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Coordination: Coordinate the Work of this Section with the installation of gypsum sheathing board and air barrier; Sequence work so that installation of fiber-cement panels and support framing coincides with installation of substrate preparation without causing delay to the Work.

.2 Pre-Construction Conference: Arrange a site meeting attended

by the Contractor, the Subcontractor, the Consultant, materials supplier(s), and other relevant personal before commencement of work for this Section; as indicated in Section 01 31 13 Project Meetings.

.1 Review methods and procedures related to installation, including manufacturer's written instructions;
.2 Examine substrate conditions for compliance with manufacturers installation requirements;
.3 Review temporary protection measures required during and after installation.

1.5 SUBMITTALS

.1 Provide requested information in accordance with Section 01 33 00 Submittals Procedures.

.2 Action Submittals: Provide the following submittals before starting any work of this Section:

.1 Product Data: Submit manufacturer’s data sheets covering the care and recommended maintenance procedures for incorporation into maintenance manuals.
.2 Shop Drawings: Submit shop drawings of panel systems, components, façade material, panel layout and accessories to the Consultant for review.

.3 Samples:

.1 Submit for approval 100mm x 150mm (4" x 6") sample of proposed colour and texture for Consultant's approval.
.2 Submit full size samples of accessories as requested by Consultant.

.4 Manufacturers Warranties: Submit copies of manufacturers warranties.

1.6 CLOSEOUT SUBMITTALS

.1 Operation and Maintenance Data: Submit manufacturer’s written instructions for cleaning solutions, materials and procedures, include name of original installer and contact information in accordance with Section 01 78 00 – Closeout Submittals

.1 Provide specific warning of any maintenance practice or materials that may damage or disfigure the finished Work.

1.7 QUALITY ASSURANCE

.1 Qualifications: Provide proof of qualifications when requested by Consultant:

.1 Manufacturer / Supplier: Obtain materials from one source with resources to provide products from the same production run for each contiguous area of consistent

quality in appearance and physical properties.

.2 Installers: Execute Work of this Section using qualified personnel skilled in installation of work of this Section, having a minimum of five (5) years proven experience of installations similar in material, design, and extent to that indicated for this Project.

1.8 MOCK-UPS

.1 Mock-ups: Construct mock-ups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution in accordance with Section 01 45 00 Quality Control for mock-ups and as follows:

.1 Build mock-up of typical wall section, incorporating the panel and finish, support framing and anchoring, breathable membrane, substrate materials, and adjacent materials including flashing, doors, windows and trim.

.2 Notify Consultant a minimum seven (7) days prior to mock-up construction.

.3 Review and acceptance of mock-ups does not constitute approval of deviations from the Contract Documents contained in mock-ups unless Consultant specifically notes such deviations in writing.

.4 Once reviewed by Consultant, acceptable mock-up can form a permanent part of the Work, and will form the basis for acceptance for the remainder of the project.

.5 Remove and replace materials found not acceptable at no cost to Owner or Consultant

1.9 DELIVERY STORAGE & HANDLING

.1 Delivery: At the time of delivery, visually inspect all materials for damage. Note any damaged to materials on the receiving ticket and immediately report to the shipping company and the material manufacturer.

.1 Remove damaged materials from the site immediately.

.2 Storage: Store materials in accordance with manufacturer's written instructions, raised off the ground and cover with a weather proof flame resistant sheeting or tarpaulin.

.3 Handling: Material shall be handled in accordance with sound material handling practices and in accordance with manufacturer's written instructions.

1.10 SITE CONDITIONS

.1 Site Measurements: Verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings where fiber-cement panels are indicated to fit walls and other construction.

.2 Establish dimensions and proceed with fabricating fiber-cement panels where field measurements cannot be made without delaying the work; allow for site trimming and fitting.

.3 Ambient Conditions: Install materials outlined in this Section after completion of work by other Sections is complete, and all penetrations are watertight; to provide adequate dry, clean, level, and plumb surfaces for installation and adhesion.

1.11 WARRANTY

.1 Provide manufacturer's warranty for a period of ten (10) years from date of delivery of material and agree to repair or replace faulty materials which become evident during the warranty period.

.1 Warranty includes but is not limited to the following:

.1 Maintain the mechanical qualities, water tightness and frost resistance, providing the panels are correctly installed on a ventilated construction in accordance to the installation procedures outlined in this Section.

.2 Special Finish Warranty: Submit a written warranty, signed by manufacturer, covering failure of the exterior finish on fiber-cement panels within the specified warranty period and agreeing to repair finish or replace panels that show evidence of finish deterioration.

.1 Deterioration of finish includes, but is not limited to, colour fade, chalking, and cracking, for a period of ten (10) years from date of Substantial Performance.

PART 2 - PRODUCTS

2.1 MATERIALS DISTRIBUTORS

.1 Materials and accessories specified herein are distributed by:
Engineered Assemblies.
76 - 6535 Millcreek Drive, Mississauga,
Ontario, Canada, L5N 2M2
Phone: (905) 816 2218 or (866) 591-7021
Email: info@engineeredassemblies.com
Website: www.engineeredassemblies.com

.2 or approved equivalent alternate. Alternates shall be submitted 7 days prior to tender closing with specification documentation indicating properties of the material and colour selections matching that specified.

2.2 PERFORMANCE REQUIREMENTS

.1 Air space at top and bottom of building, or each wall termination, for buildings less than 18m (60'), shall be 25mm (1") to facilitate airflow from behind the panels. Do not block vertical airflow at windows, doors, eaves, or at the base of the building. Airflow shall be continuous from bottom to top so there is air movement behind each panel. For walls over 18m (60') in height, increase the ventilated cavity between rear of panels and exterior sheathing to 32mm (1-1/4"). Air flow behind the panels is critical to the performance of the Rear Ventilated Rain Screen design.

.2 Perforated aluminum bird screen to allow minimum 50% free airflow.

.3 Opening at small windows may be reduced according to Engineered Assemblies Standard System Design Guidelines.

.4 Fasteners shall accommodate thermal expansion/contraction without excessive stress to the panel. Each panel shall have central lock points to support gravity loads.

.5 Design and install cladding system to allow for thermal movement of local climate with at least 60 degrees C ambient or panel temperature fluctuations, without causing undue stress on fasteners or panel or other detrimental effects.

.6 Design to accommodate, by means of control joints, movement in wall system and between wall system and building structure, caused by structural movements, without permanent distortion, damage to in fills or racking of joints.

.7 Design members and suspension system to withstand gravity load, live loads, including negative loads, as calculated in accordance with the building code.

.8 Structural panel supports shall provid the minimum L/300 deflection stiffness required by the panel manufacturer. Panels themselves shall not deflect more than L/180 maximum at serviciability limit states.

2.3 MATERIALS

.1 Natura Pro Surface Coloured and Textured High Density Fiber-Cement Panels:

.1 Fully compressed, air-cured Fibre Reinforced Cement sheet, finished with a semi transparent acrylic coating.

.2 Application:

.1 Exterior facades and soffits as detailed on drawings.

.3 Thickness:

.1 8mm (5/16")

.4 Dimensions:

.1 1250mm x 2500mm (4' x 8')

.2 1250mm x 3100mm (4' x 10')

.5 Physical Characteristics: ASTM C1185, ASTM C1186, and EN 12467.

.6 Panel Weight:

.1 1250mm x 2500mm x 8mm (4' x 8' x 5/16"): 48 Kg

.2 1250mm x 3100mm x 8mm (4' x 10' x 5/16"): 60 Kg

.7 Density Dry: 1650 kg/m^3

.8 Bending strength at ambient, perpendicular: 24.0 N/mm2

.9 Bending strength at ambient, parallel: 17.0 N/mm2.

.10 Modulus of elasticity: 15.000 N/mm2.

.11 Maximum water absorption: 20 %.

.12 Moisture movement (30-90%, mean): 1.0 mm/m.

.13 Thermal expansion coefficient: 10 x 10-6 m/mK.

.14 Thermal conductivity coefficient: 0.6 W/mK

.15 Fire reaction: (CAN/ULC-S135) Suitable for non-combustible construction in Canada.

.16 Finish:

.1 Finish: Semi-transparent coating on anthracite Fibre Reinforced Cement with an additional, permanent, UV-cured top-coating (surface coating only, not edges). Colour: N073

.1 Basis of Design Product: Natura Pro High Density Fibre Reinforced Cement Panels as manufactured by Euro Panel and distributed by Engineered Assemblies, info@engineeredassemblies.com or (905) 816-2218.

.2 Substructure:

.1 Vertical Girts:

.1 Vertical girts supporting panels are 1.2mm (18 gauge) thick, galvanized zinc-coated steel to ASTM A653 with Grade A coating Z275. Painted black.

.1 Shop Primers: Provide primers that are compatible with paint systems specified in Section 09 91 99 - Painting.

.2 Preformed galvanized metal sheet, 1.2mm (18 gauge) thick, minimum base steel nominal thickness, notched or perforated for drainage.

.3 Girt locations as determined and approved by structural engineer, to align with modular panel fasteners spaced based on manufacturer's panel load data.

.4 Front fastened systems:

.1 Girts behind panels to be vertical to allow vertical ventilation.

.2 Preformed black galvanized steel girts to be used at inside and outside corners to ensure corners are straight and closed visually, and used at intermediary panel locations and where panels come together.

.3 Girts provided by Engineered Assemblies; info@engineeredassemblies.com or (905) 816-2218.

.5 Cavity behind panel: Minimum 25mm (1") of unrestricted space.

.6 Gap between panels: Minimum of 8mm (5/16") to allow for expansion and contraction.

.7 EPDM Rubber Separation Strip: Designed and supplied by Engineered Assemblies to be installed between the panel and the vertical girt to allow movement between panel and support system, meeting the following:

.1 Shore "A" Hardness: ASTM D2240.

.2 Compression Set, 22h at 212°F (100°C): ASTM D395.

.3 Ozone Resistance, 100 mPa 100h @ 104°F (40°C) 20%

.4 Elongation: ASTM D1149.

.5 Tensile Strength: ASTM D412.

.6 Elongation at Rupture: ASTM D412.

.7 Tear Strength: ASTM D624.

.8 Brittleness Temperature at -40°F (-40°C): ASTM D746.

.9 Flame Propagation, Option II; ASTM C1166.

.8 Substructure to account for control joints of building to ensure a girt is not connected across the control joint.

.9 Install panels across one set of vertical girts to ensure that expansion and contraction of the substrate is controlled within framing members.

.2 Horizontal Clip System: 38mm (1-1/2") wide, die cut aluminum extruded clip, adjustable to plumb structure, minimum 1.2mm (18 gauge) thick galvanized zinc-coated steel to ASTM A653. System to provide compliance to ASHRAE 90.1 and thermally broken façade requirements of the building code. Effective R Value to be that provided on drawings.

.1 Adaptable horizontal framing members.

.2 Clip Depth:

.1 100mm (4"), 125mm (5") and 150mm (6") as per details.

.3 Vertical Clip Spacing:

.1 1041mm (41")

.4 Basis of Design Product: EA RVRS TClip and Girt, Model T100 / T125 / T150, by Engineered Assemblies; info@engineeredassemblies.com or (905) 816-2218.

.3 Fasteners:

.1 Colour matched stainless steel rivets, as per Engineered Assemblies recommendations. No dissimilar materials allowed, in selection of fasteners.

.2 All holes are pre-drilled at same diameter.

.3 Fixed holes include a stainless steel grommet on the rivet stem.

.4 Floating holes have rivet only.

.4 Bird and Vent Screen:

.1 Continuous bird and vent screen located at top and bottom of panel system, where opening is minimum 25mm (1") wide, with minimum 50% free air flow, manufactured by Engineered Assemblies from perforated aluminum, painted black.

.5 Flashings: Prefinished steel as specified in Section 07 62 00.

.1 Flashings at edges, top and bottom of panel system as per architectural drawings.

.3 Breathable Sheathing Membrane:

.1 Sheathing Membrane: Triple layer, spun bonded polypropylene, breathable membrane with a nominal weight of 120 g/m^2, water vapour transmission of 150 perms minimum, as per ASTM E96; Colour: Black.

.1 Basis of Design Product: AirOutshield Sheathing

Membrane, by SRP Canada, and distributed by Engineered Assemblies; info@engineeredassemblies.com or (905) 816-2218.

.2 UV Resistant Underlayment: Coated, black, spun bonded polyester, breathable membrane with a nominal weight of 270g/m^2.

.1 Basis of Design Product: AirOutshield UV Resistant Underlayment by SRP Canada, and distributed by Engineered Assemblies; info@engineeredassemblies.com or (905) 816-2218.

.3 Seam Tape: 25mm (1") double sided tape, 30 mil. thick, to seal vertical and horizontal seams between layers of AirOutshield.

.1 Basis of Design Product: Eternabond 1" D.S Seam Tape by SRP Canada and distributed by Engineered Assemblies; info@engineeredassemblies.com or (905) 816-2218.

.4 Insulation: As indicated in Section 07 21 13.

.5 Air Barrier: As indicated in Section 07 26 00.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions:

.1 Examine substrates to receive work and surrounding adjacent surfaces for conditions affecting installation. Coordinate with related sections to ensure proper dimensions are maintained.

.2 Verify site dimensions by accurate field measurements so that work will be accurately designed, fabricated and fitted to the structure.

.3 All penetrations through the façade for the work of other trades shall be fitted with a watertight sleeve. Verify flashings are in place, sealed with waterproof membrane and covered with building membranes.

.4 Maintain sheathing membrane integrity.

.2 Notify Contractor in writing of any conditions that are not acceptable.

.3 Proceed with installation after verification and correction of

surface conditions acceptable to manufacturer.

3.2 INSTALLATION

.1 Erect fiber-cement panel system in accordance with manufacturer's instructions.

.2 Erect cementitious siding in straight lines, true, level and plumb. Maintain dimensions required by manufacturer for minimum distances from edge for holes and penetrations.

.3 Space at top and bottom of each wall minimum 25mm (1"), as per manufacturer's details.

.4 Installation to allow for thermal expansion of the panel.

.5 Holes are pre-drilled as per manufacturer's written instructions

.6 Size of rivets as per manufacturer's written instructions. No other types of fasteners are approved.

.7 Install panels with joints centered over framing. Install all fasteners straight to the panel and in a consistent manner.

.8 Do not install using damaged, warped or misaligned material.

.9 Where panels fit into accessories, allow room for expansion.

.10 Finished installation shall be properly secured, free of rattles, distortions, waviness, and protrusions, damaged or chipped components.

.11 Cut and flash wall penetrations with metal flashing.

.12 Install breathable sheathing membrane in accordance to manufacturer's instructions. No penetrations are to be left in installed membrane.

3.3 CLEANING

.1 Progress Cleaning: Leave work area clean at the end of each work day, ensuring safe movement of passing pedestrians.

.2 Final Cleaning: At completion of installation, clean all surfaces so they are free of foreign matter using cleaners recommended by material manufacturer.

.3 Restore panels and accessory components damaged during installation and construction so no evidence remains of

corrective work. If results of restoration are unsuccessful, as determined by the Consultant, remove and replace damaged systems with new at no additional cost to the Owner.

.4 Waste Management: Co-ordinate recycling of waste materials and packaging at appropriate facility, diverting waste from landfill. Certified installer shall be responsible for ensuring waste management efforts are practiced.

END OF SECTION

PART 1 - GENERAL

1.1 SCOPE

.1 To install a fully-adhered Sika Sarnafil roofing membrane with flashings and other components to comprise a roofing system.

1.2 RELATED WORK

.1 The work includes but is not necessarily limited to the installation of:
- .1 Substrate preparation
- .2 Wood blocking
- .3 Separation layers
- .4 Roof membrane
- .5 Fasteners
- .6 Adhesive for flashings
- .7 Roof membrane flashings
- .8 Walkways
- .9 Metal flashings
- .10 Sealants

.2 Upon successful completion of work the following warranties may be obtained:
- .1 Sika Sarnafil warranty
- .2 Roofing contractor warranty

1.3 QUALITY ASSURANCE

.1 This roofing system shall be applied only by a Roofing Contractor authorized by Sika Sarnafil prior to bid (Sika Sarnafil "Applicator").

.2 Sika Sarnafil's field Technical Representative must be present for the commencement of the installation of the roofing system. The roofing contractor must give Sika Sarnafil appropriate notification of the start-up date. Sika Sarnafil will conduct additional in-progress reviews at a rate of 1 per every 1,500 m2 of installed roof. Upon completion of the installation and the delivery to Sika Sarnafil by the Applicator of a certification that all work has been done in strict accordance with the contract specifications and Sika Sarnafil's requirements, an inspection shall be made by a Technical Representative of Sika Sarnafil to review the installed roof system.

.3 All review reports conducted by Sika Sarnafil will besigned by the Approved Applicator and submitted to the General Contractor which in turn will be forwarded to the Prime Consultant.

.4 There shall be no deviation made from the Project Specification or the approved shop drawings without prior written approval by

the Owner, the Owner's Representative and Sika Sarnafil.

.5 All work pertaining to the installation of Sarnafil membrane and flashings shall only be completed by Applicator personnel trained and authorized by Sika Sarnafil in those procedures.

1.4 PRODUCT DELIVERY, STORAGE & HANDLING

.1 All products delivered to the job site shall be in the original unopened containers or wrappings bearing all seals and approvals.

.2 Handle all materials to prevent damage. Place all materials on pallets and fully protect from moisture.

.3 Membrane rolls shall be stored lying down on pallets and fully protected from the weather with clean canvas tarpaulins. Unvented polyethylene tarpaulins are not accepted due to the accumulation of moisture beneath the tarpaulin in certain weather conditions that may affect the ease of membrane weldability.

.4 All adhesives shall be stored at temperatures between 40° F (5° C) and 80° F (27°C).

.5 All flammable materials shall be stored in a cool, dry area away from sparks and open flames. Follow precautions outlined on containers or supplied by material manufacturer/supplier.

.6 All materials which are determined to be damaged by the Owner's Representative or Sika Sarnafil are to be removed from the job site and replaced at no cost to the Owner.

1.5 JOB CONDITIONS

.1 Sika Sarnafil materials may be installed under certain adverse weather conditions but only after consultation with Sika Sarnafil, as installation time and system integrity may be affected.

.2 Only as much of the new roofing as can be made weathertight each day, including all flashing and detail work, shall be installed. All seams shall be cleaned and heat welded before leaving the job site that day.

.3 All surfaces to receive new insulation, membrane or flashings shall be dry. Should surface moisture occur, the Applicator shall provide the necessary equipment to dry the surface prior to application.

.4 All new and temporary construction, including equipment and accessories, shall be secured in such a manner as to preclude wind blow-off and subsequent roof or equipment damage.

.5 Uninterrupted water-stops shall be installed at the end of each day's work and shall be completely removed before proceeding with the next day's work. Water-stops shall not emit dangerous or unsafe fumes and shall not remain in contact with the finished roof as the installation progresses. Contaminated membrane shall be replaced at no cost to the Owner.

.6 The Applicator is cautioned that certain Sika Sarnafil membranes are incompatible with asphalt, coal tar, heavy oils, roofing cements, creosote and some preservative materials. Such materials shall not remain in contact with Sika Sarnafil membranes. The Applicator shall consult Sika Sarnafil regarding compatibility, precautions and recommendations.

.7 Arrange work sequence to avoid use of newly constructed roofing as a walking surface or for equipment movement and storage. Where such access is absolutely required, the Applicator shall provide all necessary protection and barriers to segregate the work area and to prevent damage to adjacent areas. A substantial protection layer consisting of plywood over Sarnafelt or plywood over insulation board shall be provided for all new and existing roof areas that receive rooftop traffic during construction.

.8 Prior to and during application, all dirt, debris and dust shall be removed from surfaces either by vacuuming, sweeping, blowing with compressed air and/or similar methods.

.9 All new roofing waste material (i.e., scrap roof membrane, empty cans of adhesive) shall be immediately removed from the site by the Applicator and properly transported to a legal dumping area authorized to receive such material.

.10 The Applicator shall take precautions that storage and/or application of materials and/or equipment does not overload the roof deck or building structure.

.11 Flammable adhesives shall not be stored and not be used in the vicinity of open flames, sparks and excessive heat.

.12 All rooftop contamination that is anticipated or that is occurring shall be reported to Sika Sarnafil to determine the corrective steps to be taken.

.13 Applicator shall immediately stop work if any unusual or concealed condition is discovered and shall immediately notify Owner and Prime Consultant of such condition in writing for correction at the Owner's expense (letter copy to Sika Sarnafil).

1.6 WARRANTY

.1 Sika Sarnafil System Warranty

.1 Upon successful completion of the work to Sika Sarnafil's satisfaction and receipt of final payment, the Sika Sarnafil Standard 15 year System Warranty shall be issued. The warranty encompasses both workmanship as well as all roofing components supplied by Sika Sarnafil to provide a watertight roofing system for 15 years.

.2 Applicator/Roofing Contractor Warranty

.1 The Applicator shall supply the Owner with a separate workmanship warranty. In the event any work related to roofing, flashing, or metal is found to be within the Applicator warranty term, defective or otherwise not in accordance with the Contract Documents, the Applicator shall repair that defect at no cost to the Owner. The Applicator's warranty obligation shall run directly to the Owner, and a copy shall be sent to Sika Sarnafil.

.3 Owner Responsibility

.1 Owner shall notify both Sika Sarnafil, the General Contractor and the Applicator of any leaks as they occur during the time period when both warranties are in effect.

1.7 RECYCLING

.1 Sika Sarnafil will take back the membrane once it has completed its service life. The cost to remove the membrane, package and ship it back to the manufacturers facility is not the responsibility of Sika Sarnafil.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 The components of the Sika Sarnafil roof systems are to be products of Sika Sarnafil as indicated on the Detail Drawings and specified in the Contract Documents.

.2 Components to be used that are other than those supplied or manufactured by Sika Sarnafil may be submitted for review and acceptance by Sika Sarnafil. Sika Sarnafil's acceptance of any other product is only for a determination of compatibility with Sarnafil products and not for inclusion in the Sika Sarnafil

warranty. The specifications, installation instructions, limitations, and/or restrictions of the respective manufacturers must be reviewed by the Owner's Representative for acceptability for the intended use with Sika Sarnafil products.

2.2 VAPOUR RETARDER

.1 Sarnavap-6

.1 A 6 mil. (0.15 mm) thick polyethylene vapor retarder/air retarder. Sarnavap-6 is supplied in a folded panel that is rolled onto a core. The core width is 5 feet (1.5 m). When unrolled off the core and unfolded, the sheet dimensions are 20 feet (6.9 m) wide by 100 feet (33m) long. Consult Product Data Sheet for additional information.

2.3 MEMBRANE

.1 Sarnafil G410 fiberglass reinforced membrane with a lacquer coating.

.2 Membrane shall conform to ASTM D4434 (latest version), "Standard for Polyvinyl Chloride Sheet Roofing". Classification: Type II, Grade I.

.1 Sarnafil G410-15, 60 mil. (1.5 mm), thermoplastic membrane with fiberglass reinforcement.

.3 Color of Membrane

.1 EnergySmart (white), initial reflectivity of 0.83, initial emissivity 0.92, solar reflective index (SRI) of >104.

.4 Typical Physical Properties:

Parameters	Minimum ASTM Requirement	Minimum ASTM Requirements	Sarnafil Typical Physical Parameters
Reinforcing Material	-	-	Polyester
Overall Thickness, min., inches (mm)	D751	0.060 (1.50)	[0.060 inches]
Breaking Strength, min., lbf/in. (KN/m)	D751	200 (35.0)	230 (40.0)
Elongation at Break, min.	D751	15%	20%
Seam strength*, min.(% of breaking strength)	D751	75	85
Retention of Properties After Heat Aging	D3045	-	-
Breaking Strength, min., (% of original)	D751	90	95
Elongation, min., (%of original)	D751	90	90
Tearing Strength, min., lbf (N)	D1004	45.0 (200)	50 (220)
Low Temperature Bend, -40°F (-40°C)	D2136	Pass	Pass
Accelerated Weathering Test (Xenson Arc)	D2565	5,000 Hours	10,000 Hours
Cracking (7x magnification)	-	None	None
Discoloration (by observation)	-	Negligible	Negligible
Crazing (7 x magnification)	-	None	None
Linear Dimensional Change	D1204	0.5% max.	0.1%
Weight Change After Immersion in Water	D570	+/- 3.0% max.	2.5%
Static Puncture Resistance, 33 lbf (15 kg)	D5602	Pass	Pass
Dynamic Puncture Resistance, 14.7 ft-lbf (20 J)	D5635	Pass	Pass

2.4 FLASHING MATERIALS

.1 Wall/Curb Flashing

.1 Sarnafil G41 0.15 Membrane:

.1 A fiberglass reinforced membrane adhered to approved substrate using Sarnacol adhesive. Consult Product Data Sheets for adhesive options and additional information.

.2 Miscellaneous Flashing

.1 Sarnaflash:

.1 A prefabricated expansion joint cover made from Sarnafil membrane. Sarnaflash is designed for securement to wall orhorizontal surfaces to span and accommodate the movement of new and existing expansion gaps from 1 inch to 4-1/2 inches (25mm to 114 mm) across .

.2 Sarnadrain:

.1 PVC-coated, heavy-duty aluminum roof drain insert that mechanically seals to the drainpipe interior. Sarnadrain is made of 0.0125 inches thick spun aluminum. The extra large flange that has a PVC plastisol compound bonded to it to accept the Sarnafil flashing membrane. The drain comes with a cast aluminum strainer dome.

. 3 Sarnacol 2170 Adhesive:

.1 A solvent-based reactivating-type adhesive used to attach membrane to flashing substrate. Consult Product Data Sheets for additional information.

APPLICATION RATED FOR BARE BACK MEMBRANE		
	Adhesive Rates – G/100 sf (L/m2)	Approximate sf/Pail (m2/Pail)
	Substrate + Membrane = Total	
Isocyanurate facer	1.25 (0.51) + 0.50 (0.20) = 1.75 (0.71)	285 (26.48)
Smooth plywood	1.00 (0.41) + 0.50 (0.20) _ = 1.50 (0.61)	333 (30.94)
Metal	0.75 (0.31) + 0.50 (0.20) = 1.25 (0.51)	400 (37.16)
Concrete wall	1.25 (0.51) + 0.50 (0.20) = 1.75 (0.71)	285 (26.48)
GP Dens-Deck	1.25 (0.51) + 0.50 (0.20) = 1.75 (0. 71)	285 (26.48)
GP Dens-Deck Prime	1.00 (0.41) + 0.50 (0.20) = 1.50 (0.61)	333 (30. 94)

.4 S327 Coverstrip

.1 8 inch (0.2 m) wide precut flashing made from Sarnafil S327 polyester reinforced membrane. Used to cover Sarnabar and Sarnadisc.

2.5 INSULATION BOARD

.1 SarnaTherm III Insulation

.1 A rigid isocyanurate foam insulation with fiberglass reinforced facers. SarnaTherm III is available in 4ft x 4ft (1.2 m x 1.2 m) or 4ft x 8ft (1.2m x 2.4 m) sizes. Consult Product Data Sheet for additional information.

Compliance:	CAN/CGSB-51.26-M86 CAN/ULC-S 126-M86 Insulation Type: 2
Board Dimensions:	1220 x 2440 mm (48 x 96 in.)
Compressive Strength ASTM D1621:	140kPa (20.0 psi) nominal
Tensile Strength ASTM D1623:	600 kPa (87 .0 psi)
Flexural Strength ASTM C203:	500 kPa (72.5 psi)
Water Vapour Permeance ASTM E96:	0.0 Ng/Pa.S.m2
Dimensional Stability ASTM D2126:	0.71% max.
Water Absorption ASTM D2842:	1.2% max.
CCMC listed product	
<u>First Layer</u>	
Thermal Resistance to:	CAN/ULC-S770
RSI Value:	3.26 m2.Deg. C/W
R Value:	18.5 ft2.h.Deg F/BTU
Thickness:	76.2 mm (3.0 in.)
<u>Second Layer</u>	
Thermal Resistance to:	CAN/ULC-S770
RSI Value:	2.69 m2.Deg. C/W
R Value:	15.3 ft2.h.Deg F/BTU
Thickness:	62.5 mm (2-1/2 in.)

.2 Tapered SarnaTherm III polyisocyanurate foam insulation with black mat facers.

1. Provide tapered insulation in Area 'B' where noted on drawings.
2. Roof sumps at all roof drains: 2% slope, 1220 x 1220 (4' x 4')

2.6 ATTACHMENT COMPONENTS

.1 Sarnaplate

.1 A stress plate used to attach Sarnatherm insulation to the roof deck. Sarnaplate is 3" in diameter, 22 gauge stamping of SAE 1010 steel with an AZ-50 Galvalume coating. Consult Sika Sarnafil Product Data Sheet for additional information.

.2 Sarnafastener #12

.1 A #12 corrosion-resistant fastener used with Sarnaplates

to attach insulation boards to steel or wood roof decks. Sarnafastener #12 has a modified buttress thread, a shank diameter of approximately 0.168 inch (4 mm) and a thread diameter of approximately 0.214 inch (5 mm). The driving head has a diameter of approximately 0.435 inch (11 mm) with a #3 Phillips recess for positive engagement. Consult Sika Sarnafil Product Data Sheet for additional information.

.3 Sarnafastener- XP

.1 A #15, heavy-duty, corrosion-resistant fastener used with Sarnaplate to attach insulation or Sarnadisc, Sarnadisc-XPN and Sarna bar to attach Sarnafil S327 roof membrane to steel or wood roof decks. SarnafastenerXP has a shank diameter of approximately 0.21 inch (5.3 mm) and the thread diameter is approximately 0.26 inch (6.6 mm). The driving head has a diameter of approximately 0.435 inch (11 mm) with a #3 Phillips recess for positive engagement. Consult Sika Sarnafil Product Data Sheet for additional information .

.4 Sarnadisc- Eye Hook

.1 A 2-3/8" dia. high strength plate used with a Sarnafastener XP to attach the roof membrane to the substrate. The Sarnadisc is a 20 ga. galvalume coated steel plate that meets the Factory Mutual4470 criteria for corrosion resistance. Consult Sika Sarnafil Product Data Sheet for additional information.

.5 Sarnabar

.1 An FM-approved, heavy-duty, 14 gauge, galvanized or stainless, roll-formed steel bar used to attach membrane to roof decks. The formed steel is pre-punched with holes every 1 inch (25 mm) on center to allow various Sarnafastener spacing options. Consult Sarnafil Product Data Sheet for additional information.

.6 Sarnacord

.1 A 5/32 inch (4 mm) diameter, red-colored, flexible thermoplastic extrusion that is welded to the top surface of the Sarnafil membrane and against the side of the Sarnabar, used to hold the membrane in position. Consult Sarnafil Product Data Sheet for additional information.

.7 Sarnafastener-CD1 0

.1 A nail-in, corrosion-resistant fastener used with

Sarnaplate-HD/CD, Sarnastop or Sarnabar to attach insulation or membrane to normal weight concrete roof deck. Sarnafastener-CD1 0 has a shank diameter of 0.215 inch (5.5mm), a split diameter of 0.265/0.275 inch (6.7/7.0mm) and a flat head with a 0.435 inch (11 mm) diameter. Consult Product Data Sheet for additional information.

2.7 OVERLAY BOARD

.1 Georgia Pacific DensDeck Primed

.1 A fire-tested, gypsum hardboard with glass-mat facers and a pre-primed surface on one side. Dens-Deck Prime is provided in a 4ft x 8ft (1.2 m x 2.4 m) board size and in 1/4" thicknesses. Consult Product Data Sheet for size, thickness and additional information.

2.8 MISCELLANEOUS ACCESSORIES

.1 Aluminum Tape

.1 A 2 inch (50 mm) wide pressure-sensitive aluminum tape used as a separation layer between small areas of asphalt contamination and the membrane and as a bond-breaker under the cover strip at Sarnaclad joints.

.2 SarnaTape

.1 A high performance sealant tape used with metal flashings as a preventive measure against air and windblown moisture entry.

.3 Sarnamatic 641 me or 661

.1 220 volt, self-propelled, hot-air welding machine used to seal long lengths of Sarnafil membrane seams.

2.9 ROOF WALKWAY

.1 Polyvinyl chloride, (PVC), polyester reinforced protection mat. Which is adhered and hot air welded to and protects the Sarnafil roofing membrane from mechanical abuse.

Thickness	2.4mm (0.096") ASTM D-751
Breaking Strength	40kN/m (230 lbf/in.) ASTM D751
Elongation	20% ASTM D-751
Width	1m (3'-3")
Length	10m (32'-10")
Tear Strength	222N (501bf) ASTM D751
Low Temperature Flexibility	-40C ASTM D-2136
UV Resistance	5,000 hrs ASTM D-2565
Puncture Resistance	241N (54 lbs) ASTM D-2065

PART 3 - EXECUTION

3.1 PRECONSTRUCTION CONFERENCE

.1 The Applicator, Owner's Representative/Designer and Manufacturer(s) shall attend a pre-construction conference.

.2 The meeting shall discuss all aspects of the project including but not limited to:
- .1 Safety
- .2 Set up
- .3 Construction schedule
- .4 Contract conditions
- .5 Coordination of the work

3.2 SUBSTRATE CONDITION

.1 Applicator shall be responsible for acceptance or provision of proper substrate to receive new roofing materials.

.2 Applicator shall verify that the work done under related sections meets the following conditions:
- .1 Roof drains and/or scuppers have been installed properly
- .2 Roof curbs, nailers, equipment supports, vents and other roof penetrations are properly secured and prepared to receive new roofing materials.
- .3 All surfaces are smooth and free of dirt, debris and incompatible materials.
- .4 All roof surfaces shall be free of water, ice and snow.

3.3 SUBSTRATE PREPARATION

.1 The roof deck and must be structurally sound to provide support for the new roof system. The Applicator shall load materials on the rooftop in such a manner to eliminate risk of deck overload due to concentrated weight. The Owner's Representative shall ensure that the roof deck is secured to the structural framing according to local building code and in such a manner as to resist all anticipated wind loads in that location.

3.4 EXISTING ROOF REMOVAL

.1 Not Used

3.5 VAPOUR RETARDER / AIR RETARDER INSTALLATION

.1 Concrete deck
- .1 For vapour drive leaving the building, the vapour retarder shall be laid directly over the deck with all side and end joints sealed in accordance with the manufacturer's instructions. The vapour retarder shall be sealed to all penetrations and terminations and to the existing vapour

barrier under the existing tapered roof section.

3.6 INSULATION INSTALLATION

.1 Insulation shall be installed according to insulation manufacturer's instructions.

.2 Insulation shall be neatly cut to fit around penetrations and projections.

.3 Install tapered insulation as indicated on drawings.

.4 Install tapered insulation around drains creating a drain sump.

.5 Do not install more insulation board than can be covered with Sika Sarnafil membrane by the end of the day or the onset of inclement weather.

.6 Stagger joints at least 12 inches (0.3 m) between layers.

3.7 OVERLAY BOARD

.1 DensDeck shall be installed according to insulation manufacturer's instructions.

.2 DensDeck shall be neatly cut to fit around penetrations and projections.

.3 Do not install more Dens Deck than can be covered with Sika Sarnafil membrane by the end of the day or the onset of inclement weather.

.4 Stagger joints at least 12 inches (0.3 m) between layers.

.5 Mechanically fasten Dens Deck Utility board to steel deck at a rate of 1 fastener and plate per 4 sq.ft. Additional fasteners and plates may be required to keep edges flat.

3.8 INSTALLATION OF SIKA SARNAFIL MEMBRANE

.1 The surface of the insulation or substrate shall be inspected prior to installation of the Sarnafil roof membrane. The substrate shall be clean, dry, free from debris and smooth with no surface roughness or contamination. Broken, delaminated, wet or damaged insulation boards shall be removed and replaced.

.2 Sarnacol2170 Adhesive:

.1 Over the properly installed and prepared substrate surface, Sarnacol 2170 adhesive shall be applied using solvent-resistant 3/4inch (19 mm) nap paint rollers. The adhesive shall be applied to the substrate at a rate according to Sarnafil requirements. The adhesive shall be

applied in smooth, even coating with no gaps, globs, puddles or similar inconsistencies. Only an area which can be completely covered in the same day's operations shall be coated with adhesive. The first layer of adhesive shall be allowed to dry completely prior to installing the membrane.

.2 When the adhesive on the substrate is dry, the Sarnafil roof membrane is unrolled. Adjacent sheets shall be overlapped 3 inches (75 mm). Once in place, one-half of the sheet's length shall be turned back and the underside shall be coated with Sarnacol 2170 adhesive at a rate of ½ gallon per 100 ft2 (0.2 liters/m2). When the membrane adhesive has dried slightly to produce strings when touched with a dry finger, the coated membrane shall be rolled onto the previously-coated substrate being careful to avoid wrinkles. Do not allow adhesive on the underside of the Sarnafil membrane to dry completely. The amount of membrane that can be coated with adhesive before rolling into substrate will be determined by ambient temperature, humidity and crew. The bonded sheet shall be pressed firmly in place with a water-filled, foam-covered lawn roller by frequent rolling in two directions. The remaining un-bonded half of the sheet shall be folded back and the procedure repeated.

Notes: The Applicator shall count the amount of pails of adhesive used per area per day to verify conformance to the specified adhesive rate. No adhesive shall be applied in seam areas. All membrane shall be applied in the same manner.

3.9 HOT-AIR WELDING OF SEAM OVERLAPS

.1 General

.1 All seams shall be hot-air welded. Seam overlaps should be 3 inches (75mm) wide when automatic machine-welding and 4 inches (100 mm) wide when hand-welding, except for certain details.

.2 Welding equipment shall be provided by or approved by Sika Sarnafil. All mechanics intending to use the equipment shall have successfully completed a training course provided by a Sika Sarnafil Technical Representative prior to welding.

.3 All membrane to be welded shall be clean and dry.

.2 Hand-Welding

.1 Hand-welded seams shall be completed in two stages. Hot-air welding equipment shall be allowed to warm up for at least one minute prior to welding.

.2 The back edge of the seam shall be welded with a narrow but continuous weld to prevent loss of hot air during the final welding.

.3 The nozzle shall be inserted into the seam at a 45 degree angle to the edge of the membrane. Once the proper welding temperature has been reached and the membrane begins to "flow," the hand roller is positioned perpendicular to the nozzle and pressed lightly. For straight seams, the 1-1/2 inch (40 mm) wide nozzle is recommended for use. For corners and compound connections, the 3/4 inch (20 mm) wide nozzle shall be used.

.3 Machine Welding

.1 Machine welded seams are achieved by the use of Sika Sarnafil's automatic welding equipment. When using this equipment, Sika Sarnafil's instructions shall be followed and local codes for electric supply, grounding and over current protection observed. Dedicated circuit house power or a dedicated portable generator is recommended. No other equipment shall be operated off the generator .

.2 Metal tracks may be used over the deck membrane and under the machine welder to minimize or eliminate wrinkles.

.4 Quality Control of Welded Seams

.1 The Applicator shall check all welded seams for continuity using a rounded screwdriver. Visible evidence that welding is proceeding correctly is smoke during the welding operation, shiny membrane surfaces, and an uninterrupted flow of dark gray material from the underside of the top membrane. On-site evaluation of welded seams shall be made daily by the Applicator to locations as directed by the Owner's Representative or Sika Sarnafil's representative. One inch (25mm) wide cross-section samples of welded seams shall be taken at least three times a day. Correct welds display failure from shearing of the membrane prior to separation of the weld. Each test cut shall be patched by the Applicator at no extra cost to the Owner.

3.10 MEMBRANE FLASHINGS

.1 All flashings shall be installed concurrently with the roof

membrane as the job progresses. No temporary flashings shall be allowed without the prior written approval of the Owner's Representative and Sika Sarnafil. Approval shall only be for specific locations on specific dates. If any water is allowed to enter under the newly completed roofing, the affected area shall be removed and replaced at the Applicator's expense. Flashing shall be adhered to compatible, dry, smooth, and solvent-resistant surfaces. Use caution to ensure adhesive fumes are not drawn into the building.

.2 Sarnacol Adhesive for Membrane Flashings

.1 Over the properly installed and prepared flashing substrate, Sarnacol adhesive shall be applied according to instructions found on the Product Data Sheet. The Sarnacol adhesive shall be applied in smooth, even coats with no gaps, globs or similar inconsistencies. Only an area which can be completely covered in the same day's operations shall be flashed. The bonded sheet shall be pressed firmly in place with a hand roller.

.2 No adhesive shall be applied in seam areas that are to be welded. All panels of membrane shall be applied in the same manner, overlapping the edges of the panels as required by welding techniques.

.3 Sika Sarnafil's requirements and recommendations and the specifications shall be followed. All material submittals shall have been accepted by Sika Sarnafil prior to installation.

.4 All flashings shall extend a minimum of 8 inches (0.2 m) above roofing level unless otherwise accepted in writing by the Owner's Representative and Sika Sarnafil Technical Department.

.5 All flashing membranes shall be consistently adhered to substrates. All interior and exterior corners and miters shall be cut and hot-air welded into place. No bitumen shall be in contact with the Sika Sarnafil membrane.

.6 Sika Sarnafil flashings shall be terminated according to Sika Sarnafil recommended details.

.7 All adhered flashings that exceed 30 inches (0.75 m) in height or that of the perimeter Sarnabar spacings shall receive additional securement. Consult Sika Sarnafil Technical Department for securement methods.

.8 All mechanically-attached flashings that exceed 18 inches (0.46 m) in height shall receive additional securement. Consult Sika

Sarnafil Technical Department for securement methods.

3.11 METAL FLSHINGS

.1 Metal details, fabrication practices and installation methods shall conform to the applicable requirements of the following:
- .1 Factory Mutual Loss Prevention Data Sheet 1-49 (latest issue).
- .2 CRCA & OIRCA- latest issue.

.2 Metal, other than that provided by Sika Sarnafil, is not covered under the Sika Sarnafil warranty.

.3 Complete all metal work in conjunction with roofing and flashings so that a watertight condition exists daily.

.4 Metal shall be installed to provide adequate resistance to bending to allow for normal thermal expansion and contraction.

.5 Metal flashings shall be securely fastened into solid wood blocking. Fasteners shall penetrate the wood nailer a minimum of 1 inch (25 mm).

.6 Hook strips shall extend past wood nailers over wall surfaces by 1-1/2 inch (38 mm) minimum and shall be securely sealed from air entry.

3.12 ROOF WALKWAY

.1 Using a solvent resistant paint roller, coat surface with Sarnacol 2170 at a rate of 0.301/m2 (0.60gal/1 00ft2) and allow to dry min. 1 hour. Do not apply under excessively humid conditions or at temperatures below -10C (14F).

.2 Unroll Sarnatred in position and turn back % of its length. Coat underside of membrane with Sarnacol 2170 at a rate of 0.251/m2 (0.5gal/100fF) and allow to dry just sufficiently to produce "strings" when touched with a finger. Turn down membrane carefully onto the coated surface and press solidly down. Repeat procedure with remaining 1/2 of membrane length. Using a weighted roller, roll membrane solidly down to ensure contact with substrate immediately after completion of adhesion procedure.

3.13 COMPLETION

.1 Prior to demobilization from the site, the work shall be reviewed by the Owner's Representative, General Contractor, Prime

Consultant and the Applicator. All defects noted and non-compliances with the Specifications or the recommendations of Sika Sarnafil shall be itemized in a punch list. These items must be corrected immediately by the Applicator to the satisfaction of the Owner's Representative and Sika Sarnafil prior to demobilization.

.2 All Warranties referenced in this Specification shall have been submitted and have been accepted at time of contract award.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 07 45 19 – Built-up Bituminous Roofing.

.2 Section 07 92 00 – Joint Sealants.

1.2 REFERENCES

.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.

.2 American Society for Testing and Materials International (ASTM)
- .1 ASTM A 167-99(2004), Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- .2 ASTM A 240/A 240M-07e1, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
- .3 ASTM A 606-04, Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance.
- .4 ASTM A 653/A 653M-07, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .5 ASTM A 792/A 792M-06a, Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
- .6 ASTM B 32-04, Standard Specification for Solder Metal.
- .7 ASTM D 523-89(1999), Standard Test Method for Specular Gloss.
- .8 ASTM D 822-01(2006), Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings. .

.3 Canadian Roofing Contractors Association (CRCA)
- .1 Roofing Specifications Manual 1997.

.4 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.
- .2 CAN/CGSB-93.1-M85, Sheet Aluminum Alloy,

Prefinished, Residential.

.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 B111-1974(R2003), Wire Nails, Spikes and Staples.

.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.

.7 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
- .1 Material Safety Data Sheets (MSDS).

1.3 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:
- .1 Submit manufacturer's printed product literature for sheet metal flashing systems materials, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
- .2 Submit two copies WHMIS MSDS - Material Safety Data Sheets.

.3 Shop Drawings:
- .1 Shop drawings: submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario.

.4 Samples:
- .1 Submit duplicate 300 x 300mm samples of each type of sheet metal material, finishes and colours:
  - .1 Custom break-formed window surrounds as detailed on drawings.

.5 Quality assurance submittals: submit following in accordance with Section 01 45 00 - Quality Control.
- .1 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures warrantee requirements and maintenance requirements.
- .2 Manufacturer's Field Reports: submit to manufacturer's

written reports within 3 days of review, verifying compliance of Work, as described in PART 3, FIELD QUALITY CONTROL.

1.4 QUALITY ASSURANCE

.1 Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning work of this Section on-site with contractor's representative and Prime Consultant in accordance with to:
- .1 Verify project requirements.
- .2 Review installation and substrate conditions.
- .3 Co-ordination with other building subtrades.
- .4 Review manufacturer's installation instructions and warranty requirements.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Waste Management and Disposal:
- .1 Separate waste materials for reuse and recycling in accordance with current best practice.

PART 2 - PRODUCTS

2.1 SHEET METAL MATERIALS

.1 Zinc coated steel sheet: 1.6mm thickness, commercial quality to ASTM A 653/A 653M, with Z275 designation zinc coating.

2.2 PREFINISHED STEEL SHEET

.1 Prefinished steel with factory applied silicone modified polyester.
- .1 Class F1S.
- .2 Colour: selected by Prime Consultant from manufacturer's standard range.
- .3 Specular gloss: 30units +/- 5 in accordance with ASTM D 523.

2.3 PREFINISHED ALUMINUM SHEET

.1 Clear and black Anodized Aluminum sheet: flat clear anodized aluminum, 1.6mm minimum thickness for flashings, 3mm minimum thickness for cladding where noted on drawings.

2.4 ACCESSORIES

.1 Isolation coating: alkali resistant bituminous paint.

.2 Plastic cement: to CAN/CGSB 37.5.

.3 Underlay for metal flashing: No. 15 perforated asphalt felt to CSA A123.3].

.4 Sealants: Refer to Section 07 92 00 – Joint Sealants.

.5 Cleats: of same material, and temper as sheet metal, minimum 50mm wide. Thickness same as sheet metal being secured.

.6 Fasteners: of same material as sheet metal, to CSA B111, ring thread flat head roofing nails of length and thickness suitable for metal flashing application.

.7 Washers: of same material as sheet metal, 1 mm thick with rubber packings.

.8 Touch-up paint: as recommended by prefinished material manufacturer.

2.5 FABRICATION

.1 Fabricate metal flashings and other sheet metal work [in accordance with applicable CRCA 'FL' series details] [as indicated].

.2 Fabricate aluminum flashings and other sheet aluminum work in accordance with AAI-Aluminum Sheet Metal Work in Building Construction.

.3 Form pieces in 2400 mm maximum lengths.
.1 Make allowance for expansion at joints.

.4 Hem exposed edges on underside 12 mm.
.1 Mitre and seal corners with sealant.

.5 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

.6 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.

2.6 METAL FLASHINGS

.1 Form flashings, copings and fascias to profiles indicated of 1.6mm thick galvanized or prefinished steel and clear anodized aluminum as noted on drawings.

2.7 PANS

.1 Not Used.

2.8 REGLETS AND CAP FLASHINGS

.1 Form metal cap flashings of 1.6mm thick prefinished steel.
- .1 Provide clinch strips matching flashing and slotted fixing holes and steel/plastic washer fasteners.

2.9 EAVES TROUGHS AND DOWNPIPES

.1 Form scuppers from 3mm thick prefinished steel

.2 Sizes and profiles as indicated on drawings.

2.10 SCUPPERS

.1 Form scuppers from 3mm thick prefinished steel

.2 Sizes and profiles as indicated on drawings.

2.11 ALUMINUM FINISHES

.1 Finish exposed surfaces of aluminum components in accordance with AA DAF45.
- .1 Clear anodic finish: designation AA-

.2 Appearance and properties of anodized finishes designated by Aluminum Association as Architectural Class 1, Architectural Class 2, and Protective and Decorative: to AAMA/WDMA/CSA-101/I.S.2/A440, for coating Classes 1, 2 and 3 respectively.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION

.1 Install sheet metal work in accordance with CRCA FL series details and as detailed.

.2 Use concealed fastenings except where approved before installation.

.3 Provide underlay under sheet metal.
- .1 Secure in place and lap joints 100 mm.

.4 Counterflash bituminous flashings at intersections of roof with vertical surfaces and curbs.
- .1 Flash joints using S-lock forming tight fit over hook/clinch strips, as detailed.

.5 Lock end joints and caulk with sealant.

.6 Install pans, where shown around items projecting through roof membrane.

3.3 EAVES TROUGHS AND DOWNPIPES

.1 Not Used.

3.4 SCUPPERS

.1 Form scuppers from 3mm thick prefinished] steel

.2 Sizes and profiles as indicated on drawings.

.3 Provide necessary fastenings.

3.5 FIELD QUALITY CONTROL

.1 Manufacturer's Field Services:

.1 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.

3.6 CLEANING

.1 Proceed in accordance with Section 01 74 11 - Cleaning.

.2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

.3 Leave work areas clean, free from grease, finger marks and stains.

END OF SECTION

PART 1 - GENERAL

1.1 SCOPE

.1 This specification covers labor, materials, equipment, and application necessary for, and incidental to, the complete and proper installation of intumescent fire protection for application to steel structures and supports in accordance with all applicable requirements of contract documents.

.2 This specification shall be supplemented by the applicable requirements of building codes, insurance rating organizations and all other authorities having jurisdiction.

1.2 SECTION INCLUDES

.1 Intumescent fire protection material.

.2 Topcoat protective decorative finish.

1.3 RELATED SECTIONS

.1 Refer to Structural drawings for structural steel specifications.

.2 Section 05 50 00 – Metal Fabrications: Structural steel and metal fabrications with reference to primer receiving fire protection materials.

.3 Section 07 84 00 – Firestopping

.4 Section 09 91 99 - Painting

1.4 REFERENCES

.1 CAN4-S101M Standard Methods of Fire Endurance Tests of Building Construction Materials.

.2 UL – List of Equipment and Materials.

.3 Intertek Testing Services/Warnock Hersey Certification Listing.

.4 Test Standards

- .1 ANSI/UL 263 (ASTM E119 and NFPA 251) – Fire Tests of Building Construction and Materials.
- .2 ASTM E84 – Surface Burning characteristics of Building Materials.
- .3 ANSI/UL 1709 – Rapid Rise Fire Tests of Protection Materials for Structural Steel.

.5 Steel Structures Painting Council (SSPC) Surface Preparation Standards.

.6 Material manufacturer's current published information.

1.5 SYSTEM DESCRIPTION

.1 The intumescent fire protection materials shall be applied at the required thickness to provide the following fire resistance ratings:
.1 Beams: 1 hour
.2 Columns: 1 hour

1.6 SUBMITTALS

.1 Manufacturer's Data: Submit manufacturer's specifications, including certification as may be required to show material compliance with contract documents.

.2 Test Data: Submit certified copies of test designs from nationally certified testing laboratory verifying for protection applied to substrates and tested in accordance with Reference 1.4.4.1 and 2 noted above.

.3 Application Instructions: Submit manufacturer's application instructions.

1.7 QUALITY ASSURANCE

.1 Manufacturer – Company specializing in manufacturing products of this section.

.2 Applicator – A firm with expertise in the installation of fire protection or similar materials. This firm shall be approved by the fire protection material supplier.

.3 Product – The product shall be approved be the architect and applicable authorities having jurisdiction.

1.8 DELIVERY, STORAGE & HANDLING

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

.2 Store materials at a temperature above 40˚ F (4˚ C) in a dry location, protected from the weather.

.3 Damaged packages found unsuitable for use and any materials which have come into contact with contaminants prior to use shall be rejected and removed from the project.

1.9 PROJECT / SITE

.1 When the temperature at the job site is less than 40˚ F a

CONDITIONS

minimum substrate and ambient temperature of 32˚ F shall be maintained prior to, during, and a minimum of 24 hours after application. If necessary for job schedule, the General Contractor shall provide enclosures and heat to maintain proper temperatures and humidity levels in the application areas.

.2 The General Contractor shall provide mechanical ventilation to allow proper drying of the intumescent and to ensure that a safe working area is achieved, during and after application.

.3 In enclosed areas, ventilation shall not be less than 4 complete air exchanges per hour.

.4 Intumescent fire protection shall not be applied until concrete toppings and or roofing applications have been installed.

.5 Relative humidity shall not exceed 80% throughout the total period of application and drying for the intumescent fire protection material, and must not exceed 85% throughout the application and drying for the protective decorative finish coat.

1.10 SEQUENCING & SCHEDULING

.1 Applicator shall cooperate in the coordination and scheduling of fire protection work to avoid delays in job progress.

.2 The installation of piping, ducts, conduit, or other suspended equipment shall not commence until the application of the sprayed fire protection is complete in that area.

PART 2 - PRODUCTS

2.1 PRIMER

.1 Surface Preparation: Prior to the application of the primer material, the steel shall be dry abrasive blasted to an SSPC Standard, SSPC-SP 6, “Commercial Blast”.

.2 Primer shall be a high performance epoxy primer such as Carboguard 893SG applied at a dry film thickness of 4 to 6 mils. The primer shall be applied in full accordance with the manufacturer’s written instructions.

2.2 INTUMESCENT FIRE PROTECTION SYSTEM

.1 Intumescent fire protection material shall be applied in accordance with drawings and/or specification, and shall have been tested, in accordance with REF. 1.4.4.1 and 2 or equivalent nationally certified testing laboratory and reported by

Underwriter's Laboratories. The thickness of the Intumescent Fireproofing selected shall provide the fire rating specified in section 1.5.1. The required dry film thickness of the intumescent coating is dependant upon the size of the steel members and shall be in accordance with the applicable UL test design as shown in the table below:

2.3 DECORATIVE COATING

.1 Topcoat materials may be required for color-coding, aesthetics or additional surface protection. The colour and surface characteristics of the topcoat shall be those selected by the architect.

PART 3 - EXECUTION

3.1 PREPARATION

.1 All surfaces to receive fire protection or a topcoat shall be clean, dry, and free of oil, grease, loose mill scale, dirt, dust, or other materials, which would impair the bonding of the fire protection or the topcoat material to the surface. Any cleaning of the surfaces to receive fire protection materials shall be the responsibility of the General Contractor or steel erector, as outlined in the structural steel section.

.2 Confirm compatibility of surfaces to receive fire protection material. Steel surfaces shall be properly prepared and primed with materials listed in the intumescent fireproofing product data sheet.

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

.4 The application of fire protection material shall not commence until certification has been received by the General Contractor that all surfaces to receive fire protection material have been inspected by the applicator and are acceptable to receive fire protection material.

.5 Provide masking, drop cloths, or other suitable coverings to prevent over spray onto surfaces not intended to be sprayed.

3.2 APPLICATION

.1 Application of intumescent fire protection shall not begin until the General Contractor is notified by the applicator that surfaces to receive fire protection have been inspected and are acceptable.

.2 Equipment and application shall conform to the manufacturer's written application instructions.

.3 The fire protection material shall be applied in as many passes as necessary to achieve the required fire resistance rating.

.4 The fire protection material and the topcoat decorative finish shall be applied by spray, brush, or roller in a shop or in the field.

.5 Topcoat shall be applied according to the manufacturer's recommendations.

.6 Proper temperature and ventilation shall be maintained as specified in 1.9.

3.3 MOCK UP

.1 Before proceeding with the work, the applicator shall apply the fire protection material and the decorative topcoat to a section as a mock up. This section shall be witnessed by the architect's or owner's representative and shall be subject to their approval to be used as a guide for texture, appearance, gloss and thickness of the finished work

3.4 CLEAN UP AND REPAIR

.1 The work area shall be maintained in an orderly condition.

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

.3 Upon completion of installation, all excess material, over spray, dropping and debris shall be cleared and removed from the job site.

.4 All patching of and repair to fire protection material , due to damage by other trades, shall be performed under this section and paid for by the trade responsible for the damage.

3.5 INSPECTIONS AND TESTING

.1 Engage the services of a NACE certified inspector who has successfully completed the requirements of a level III certification program and that is familiar with the materials being installed.

.2 In addition to continuous wet film thickness checks performed by the applicator during application, the dry film thickness of the

installed intumescent fireproofing shall be verified by inspection with a Positector or similar dry film testing device in accordance with AWCI Technical Manual 12-B Second Edition.

.3 The results of the above tests shall be made available to all parties at the completion of each area and approved prior to the application of the topcoat

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 07 92 00 – Joint Sealants.

1.2 REFERENCES

.1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
- .1 Material Safety Data Sheets (MSDS).

.2 Underwriter's Laboratories of Canada (ULC)
- .1 ULC-S115-1995, Fire Tests of Fire stop Systems.

1.3 DEFINITIONS

.1 Fire Stop Material: device intended to close off opening or penetration during fire or materials that fill openings in wall or floor assembly where penetration is by cables, cable trays, conduits, ducts and pipes and poke-through termination devices, including electrical outlet boxes along with their means of support through wall or floor openings.

.2 Single Component Fire Stop System: fire stop material that has Listed Systems Design and is used individually without use of high temperature insulation or other materials to create fire stop system.

.3 Multiple Component Fire Stop System: exact group of fire stop materials that are identified within Listed Systems Design to create on site fire stop system.

.4 Tightly Fitted; (ref: NBC Part 3.1.9.1.1 and 9.10.9.6.1): penetrating items that are cast in place in buildings of noncombustible construction or have "0" annular space in buildings of combustible construction.
- .1 Words "tightly fitted" should ensure that integrity of fire separation is such that it prevents passage of smoke and hot gases to unexposed side of fire separation.

1.4 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:
- .1 Submit manufacturer's printed product literature, specifications and datasheet and include product

characteristics, performance criteria, physical size, finish and limitations.

.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets.

.3 Shop Drawings:

.1 Submit shop drawings to show location of proposed material, reinforcement, anchorage, fastenings and method of installation.

.2 Construction details should accurately reflect actual job conditions.

.4 Samples:

.1 Submit duplicate 300 x 300 mm samples showing actual fire stop material proposed for project.

.5 Quality assurance submittals: submit following in accordance with Section 01 45 00 - Quality Control.

.1 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures and.

1.5 QUALITY ASSURANCE

.1 Qualifications:

.1 Installer: Company specializing in fire stopping installations with 5 years of documented experience and approved by manufacturer.

.2 Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning work of this Section, with contractor's representative and Prime Consultant in accordance with to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordination with other building sub-trades.

.4 Review manufacturer's written installation instructions and warranty requirements.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Packing, shipping, handling and unloading:

.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 Deliver materials to the site in undamaged condition and in original unopened containers, marked to indicate brand name, manufacturer and ULC markings.

.2 Storage and Protection:
- .1 Store materials indoors in a dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
- .2 Replace defective or damaged materials with new.

.3 Waste Management and Disposal:
- .1 Separate waste materials for reuse and recycling in accordance with current best practice.

PART 2 – PRODUCTS

2.1 SUSTAINABLE REQUIREMENTS

.1 Not Used.

2.2 MATERIALS

.1 Fire stopping and smoke seal systems: in accordance with CAN-ULC-S115.
- .1 Asbestos-free materials and systems capable of maintaining effective barrier against flame, smoke and gases in compliance with requirements of CAN-ULC-S115 and not to exceed opening sizes for which they are intended and conforming to specified special requirements described in PART 3.
- .2 Fire stop system rating: As noted on drawings.

.2 Service penetration assemblies: systems tested to CAN-ULC-S115.

.3 Service penetration fire stop components: certified by test laboratory to CAN-ULC-S115.

.4 Fire-resistance rating of installed fire stopping assembly in accordance with NBC.

.5 Fire stopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal.

.6 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal.

.7 Primers: to manufacturer's recommendation for specific material, substrate, and end use.

.8 Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.

.9 Damming and backup materials, supports and anchoring devices: to manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.

.10 Sealants for vertical joints: non-sagging.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 PREPARATION

.1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials.

.1 Ensure that substrates and surfaces are clean, dry and frost free.

.2 Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer's instructions.

.3 Maintain insulation around pipes and ducts penetrating fire separation without interruption to vapour barrier.

.4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

3.3 INSTALLATION

.1 Install fire stopping and smoke seal material and components in accordance with manufacturer's certified tested system listing.

.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 neat finish.

.5 Remove excess compound promptly as work progresses and upon completion.

3.4 SPECIAL REQUIREMENTS

.1 Not Used.

3.5 SEQUENCES OF OPERATION

.1 Proceed with installation only when submittals have been reviewed by Prime Consultant.

.2 Install floor fire stopping before interior partition erections.

.3 Metal deck bonding: fire stopping to precede spray applied fireproofing to ensure required bonding.

.4 Mechanical pipe insulation: certified fire stop system component.
.1 Ensure pipe insulation installation precedes fire stopping.

3.6 FIELD QUALITY CONTROL

.1 Inspections: notify Prime Consultant when ready for inspection and prior to concealing or enclosing fire stopping materials and service penetration assemblies.

3.7 CLEANING

.1 Proceed in accordance with Section 01 74 11 - Cleaning.

.2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

.3 Remove temporary dams after initial set of fire stopping and smoke seal materials.

3.8 SCHEDULE

.1 Fire stop 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 Around mechanical and electrical assemblies penetrating fire separations.

.2 Perimeter of fire rated door frame as noted in drawings.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Materials, preparation and application for caulking and sealants.

.2 Text to complete other various Sections containing sealant or caulking specifications, including Section [07 52 00 - Modified Bituminous Membrane Roofing].

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 45 00 - Quality Control.

.3 Section 01 61 00 - Common Product Requirements.

.4 Section 07 84 00 – Fire Stopping.

1.3 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)
- .1 ASTM C 919-02, 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 samples in accordance with Section 01 33 00 - Submittal Procedures.

.4 Submit duplicate samples of each type of material and colour.

.5 Cured samples of exposed sealants for each color where required to match adjacent material.

.6 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 QUALITY ASSURANCE/MOCK-UP

.1 Not Used.

1.6 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.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper and plastic packaging material in appropriate on-site bins for recycling.

.4 Place materials defined as hazardous or toxic in designated containers.

.5 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.

.6 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.

.7 Divert unused joint sealing material from landfill to official hazardous material collections site approved by Prime Consultant.

.8 Empty plastic joint sealer containers are not recyclable. Do not dispose of empty containers with plastic materials destined for recycling.

.9 Fold up metal banding, flatten, and place in designated area for recycling.

1.8 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.

1.9 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.

.3 Ventilate area of work as directed by use of approved portable supply and exhaust fans]

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 Interior Sealant: Type 1:
- .1 Paintable acrylic latex to CAN/CGSB-19.17-M90.
- .2 Acceptable material: Tremco Latex 100.

.2 Exterior Sealant: Type 2:
- .1 Multi-component Chemical Curing CAN/CGSB-19.24-M90
- .2 Joints up to 19mm maximum.
- .3 Acceptable materials: Tremco ‘Dymeric 240’ Mameco of Canada ‘Vulkem 922’, Sika ‘Sikaflex 511’, Sikaflex 2CNS’.
- .4 Colour selected by Architect from manufacturer’s standard colour range.

.3 Preformed Compressible and Non-Compressible back-up materials.
- .1 Polyethylene, Urethane, Neoprene or Vinyl Foam.
  - .1 Extruded closed cell foam backer rod.
  - .2 Size: oversize 30 to 50 %.
- .2 Neoprene or Butyl Rubber.
  - .1 Round solid rod, Shore A hardness 70.
- .3 High Density Foam.

.1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m^3 density, or neoprene foam backer, size as recommended by manufacturer.

.4 Bond Breaker Tape.

.1 Polyethylene bond breaker tape which will not bond to sealant.

2.3 SEALANT SELECTION

.1 Perimeters of exterior doors and windows, connection to existing masonry, joints between dissimilar materials where noted on drawings. Sealant type: Type 2.

.2 Perimeters of interior door and window frames (other than fire rated door frames), as detailed and itemized: Sealant type: Type 1.

.3 Perimeter of plumbing fixtures: Sealant type: Type 1.

.4 Exposed interior control joints in drywall: Sealant type: Type 1.

.5 Joints between millwork items and adjacent walls and backsplashes. Sealant type: Type 1.

2.4 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 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.

.2 Curing.

.1 Cure sealants in accordance with sealant manufacturer's

instructions.

.2 Do not cover up sealants until proper curing has taken place.

.3 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.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 07 92 00 – Joint Sealants

.2 Section 08 71 00 – Door Hardware

.3 Section 08 50 00 - Glazing

.4 Section 09 91 99 – Painting

1.2 REFERENCES

.1 American Society for Testing and Materials International (ASTM)
- .1 ASTM A 653/A 653M-06a, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 ASTM B 29-03, Standard Specification for Refined Lead.
- .3 ASTM B 749-03, Standard Specification for Lead and Lead Alloy Strip, Sheet and Plate Products.

.2 Canada Green Building Council (CaGBC)
- .1 LEED Canada-NC Version 1.0-2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations.

.3 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.

.4 Canadian Standards Association (CSA International)
- .1 CSA-G40.20-04/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
- .2 CSA W59-[03], Welded Steel Construction (Metal Arc Welding).

.5 Canadian Steel Door Manufacturers' Association (CSDMA)
- .1 CSDMA, Recommended Specifications for Commercial Steel Doors and Frames, 2000.
- .2 CSDMA, Selection and Usage Guide for Commercial Steel Doors, 1990.

.6 National Fire Protection Association (NFPA)

.1 NFPA 80-99, Standard for Fire Doors and Fire Windows.
.2 NFPA 252-03, Standard Methods of Fire Tests of Door Assemblies.

.7 South Coast Air Quality Management District (SCAQMD), California State
.1 SCAQMD Rule 1113-04, Architectural Coatings.
.2 SCAQMD Rule 1168-05, Adhesives and Sealants Applications.

.8 Underwriters' Laboratories of Canada (ULC)
.1 CAN/ULC-S701-01, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
.2 CAN/ULC-S702-97, Standard for Thermal Insulation, Mineral Fibre, for Buildings.
.3 CAN/ULC-S704-[03], Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
.4 CAN4-S104-M80, Standard Method for Fire Tests of Door Assemblies.
.5 CAN4-S105-M85, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN4-S104.

1.3 SYSTEM DESCRIPTION

.1 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104, NFPA 252 for ratings specified or indicated.

.2 Provide fire labelled frames for openings requiring fire protection ratings as noted on drawings

.3 Narrow profile fire rated doors and frames (door D105 only):
.1 45 minute glazed fire rated steel doors and frames by Technical Glass Products 2” narrow profile ‘Fireframes Designer Series’, colour to be selected by Architect.
.2 Narrow profile fire rated doors and frames comprise a pre-manufactured and tested package including rated ceramic glazing (refer to Section 08 80 50 – Glazing)

1.4 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
.1 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, louvred, arrangement of hardware, fire rating and finishes.
.3 Indicate each type frame material, core thickness,

reinforcements, glazing stops, location of anchors and exposed fastenings, reinforcing, fire rating and finishes.

.4 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

1.5 SUSTAINABLE REQUIREMENTS

.1 Not Used.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Waste Management and Disposal:

.1 Separate waste materials for reuse and recycling in accordance with current best practice.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Hot dipped galvanized steel sheet: to ASTM A 653M, ZF75, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.

.2 Reinforcement channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A 653M, ZF75.

2.2 DOOR CORE MATERIALS

.1 Honeycomb construction:

.1 Structural small cell, 24.5 mm maximum kraft paper 'honeycomb', weight: 36.3 kg per ream minimum, density: 16.5 kg/m^3 minimum sanded to required thickness.

.2 Stiffened face sheets laminated, honeycomb core.

.3 Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door to 250 degrees C at [30] [60] minutes. Core to be tested as part of a complete door assembly, in accordance with [CAN4-S104], [ASTM E 152] [or] [NFPA 252], covering Standard Method of Tests of Door Assemblies and listed by nationally recognized testing agency having factory inspection service.

2.3 ADHESIVES

.1 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.

2.4 PRIMER

.1 Touch-up prime CAN/CGSB-1.181.

2.5 PAINT

.1 Field paint steel doors and frames in accordance with Sections 09 91 99 - Painting. Protect weatherstrips from paint. Provide final finish free of scratches or other blemishes.

.1 Provide final finish free of scratches or other blemishes. Maximum VOC emission level 50g/L to SCAQMD Rule 1113.

2.6 ACCESSORIES

.1 Door silencers: single stud rubber/neoprene type.

.2 Interior top and bottom caps: steel.

.3 Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.

.4 Door bottom seal: Refer to section 08 71 00 – Door Hardware.

.5 Metallic paste filler: to manufacturer's standard.

.6 Fire labels: metal riveted.

.7 Glazing: Refer to section 08 80 50 – Glazing.

.8 Make provisions for glazing as indicated and provide necessary glazing stops.

.1 Provide removable stainless steel glazing beads for use with glazing tapes and compounds and secured with countersunk stainless steel screws.

.2 Design exterior glazing stops to be tamperproof.

2.7 FRAMES
FABRICATION GENERAL

.1 Fabricate frames in accordance with CSDMA specifications.

.2 Fabricate frames to profiles and maximum face sizes as indicated.

.3 Exterior frames: 1.6mm welded, thermally broken type construction.

.4 Interior frames: 1.6mm welded type construction.

.5 Blank, reinforce, drill and tap frames for mortised, templated hardware, [and] [electronic hardware] using templates provided

by finish hardware supplier. Reinforce frames for surface mounted hardware.

.6 Protect mortised cutouts with steel guard boxes.

.7 Prepare frame for door silencers, 3 for single door, 2 at head for double door.

.8 Manufacturer's nameplates on frames and screens are not permitted.

.9 Conceal fastenings except where exposed fastenings are indicated.

.10 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.

.11 Insulate exterior frame components with polyurethane insulation.

2.8 FRAME ANCHORAGE

.1 Provide appropriate anchorage to floor and wall construction.

.2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.

.3 Provide 2 anchors for rebate opening heights up to 1520 mm and 1 additional anchor for each additional 760 mm of height or fraction thereof.

.4 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm on centre maximum.

2.9 FRAMES: WELDED TYPE

.1 Welding in accordance with CSA W59.

.2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.

.3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.

.4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.

.5 Securely attach floor anchors to inside of each jamb profile.

.6 Weld in 2 temporary jamb spreaders per frame to maintain

proper alignment during shipment.

2.10 FRAMES: KNOCKED-DOWN TYPE

.1 Not Used.

2.11 FRAMES: SLIP-ON TYPE

.1 Not Used.

2.12 DOOR FABRICATION GENERAL

.1 Doors: swing type, flush, with provision for glass and/or louvre openings as indicated.

.2 Exterior doors: honeycomb construction. Interior doors: honeycomb construction.

.3 Fabricate doors with longitudinal edges welded. Seams: grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish.

.4 Blank, reinforce, drill doors and tap for mortised, templated hardware and electronic hardware.

.5 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.

.6 Reinforce doors where required, for surface mounted hardware. Provide flush steel top caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.

.7 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.

.8 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in conformance with CAN4-S104 / ASTM E 152 / NFPA 252 and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

.9 Manufacturer's nameplates on doors are not permitted.

2.13 DOORS:

.1 Form face sheets for exterior doors from 1.6mm sheet steel with

HONEYCOMB CORE CONSTRUCTION

honeycomb core laminated under pressure to face sheets.

.2 Form face sheets for interior doors from 1.6mm sheet steel with honeycomb or temperature rise rated core (where a rating is required) laminated under pressure to face sheets.

2.14 HOLLOW STEEL CONSTRUCTION

.1 Not Used.

2.15 THERMALLY BROKEN DOORS AND FRAMES

.1 Fabricate thermally broken doors by using insulated core and separating exterior parts from interior parts with continuous interlocking thermal break.

.2 Thermal break: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma.

.3 Fabricate thermally broken frames separating exterior parts form interior parts with continuous interlocking thermal break.

.4 Apply insulation.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

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.

3.3 FRAME INSTALLATION

.1 Set frames plumb, square, level and at correct elevation.

.2 Secure anchorages and connections to adjacent construction.

.3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.

.4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

.5 Caulk perimeter of frames between frame and adjacent material. Refer to Section 07 92 00 – Joint Sealants

.6 Maintain continuity of air barrier.

3.4 DOOR INSTALLATION

.1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 - Door Hardware.

.2 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows.

.1 Hinge side: 1.0 mm.
.2 Latchside and head: 1.5 mm.
.3 Finished floor, [top of carpet] [noncombustible sill] [and thresholds]: 13 mm.

.3 Adjust operable parts for correct function.

.4 Install louvres.

3.5 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.

3.6 GLAZING

.1 Install glazing for doors and frames in accordance with Section 08 80 50 - Glazing].

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 08 11 00 - Metal Doors and Frames.

.3 Section 08 71 00 - Door Hardware.

.4 Section 08 80 50 - Glazing.

1.2 REFERENCES

.1 Architectural Woodwork Manufacturers Association of Canada (AWMAC).
- .1 Quality Standards for Architectural Woodwork 1998.

.2 Canadian General Standards Board (CGSB).
- .1 CAN/CGSB-71.19-M88, Adhesive, Contact, Sprayable.
- .2 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.

.3 Canadian Standards Association (CSA International).
- .1 CSA A440.2-98, Energy Performance of Windows and Other Fenestration Systems.
- .2 CSA O115-M1982(R2001), Hardwood and Decorative Plywood.
- .3 CAN/CSA O132.2 Series-90(R1998), Wood Flush Doors.
- .4 CAN/CSA-O132.5-M1992(R1998), Stile and Rail Wood Doors.
- .5 CAN/CSA-Z808-96, A Sustainable Forest Management System: Guidance Document.
- .6 CSA Certification Program for Windows and Doors 00.

.4 Environmental Choice Program (ECP).
- .1 CCD-045-92, Sealants and Caulking Compounds.
- .2 CCD-046-92, Adhesives.

.5 National Fire Protection Association (NFPA).
- .1 NFPA 80-1999, Standard for Fire Doors and Fire Windows.
- .2 NFPA 252-1999, Standard Method of Fire Tests of Door Assemblies.

.6 Underwriters' Laboratories of Canada (ULC).
- .1 CAN-4S104M-80(R1985), Fire Tests of Door Assemblies.
- .2 CAN4-S105M-85 (R1992), Fire Door Frames Meeting the Performance Required by CAN4-S104.

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:
  - .1 For caulking materials during application and curing.
  - .2 For door materials and adhesives.

.2 Shop Drawings:
- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate door types and cutouts for lights and louvres, sizes, core construction, transom panel construction and cutouts.

1.4 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit one 300 x 300mm corner sample of each type wood door.

.3 Show door construction, core, glazing detail and faces.

.4 Manufacturer's Instructions:
- .1 Submit manufacturer's installation instructions.

1.5 QUALITY ASSURANCE

.1 Regulatory Requirements:
- .1 Wood fire rated doors: labelled and listed by an organization accredited by Standards Council of Canada.

.2 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

.3 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.4 Pre-installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Section 01 31 19 – Project Meetings.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Storage and Protection:
- .1 Protect doors from dampness. Arrange for delivery after work causing abnormal humidity has been completed.
- .2 Store doors in well ventilated room, off floor, in accordance with manufacturer's recommendations.
- .3 Protect doors from scratches, handling marks and other damage. Wrap or crate doors.
- .4 Store doors away from direct sunlight.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Dispose of corrugated cardboard, polystyrene and plastic packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

.3 Unused or damaged glazing materials are not recyclable and must not be diverted to municipal recycling programs.

.4 Divert unused adhesive material from landfill to official hazardous material collections site approved by Prime Consultant.

.5 Do not dispose of unused paint 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 FIRE RATED WOOD DOORS

.1 Wood doors: tested in accordance with CAN4-S104/NFPA 252 to achieve rating as scheduled.

2.2 LAMINATED WOOD FLUSH DOORS

.1 Solid core: to CAN/CSA-O132.2.1.
- .1 Construction:
  - .1 Solid particleboard core: stile and rail frame bonded to particleboard core with wood lock blocks, 7-ply construction.
  - .2 Face Panels: Maple veneer, painted
- .2 Adhesive: Type II (water resistant) for interior doors.

2.3 GLAZING

.1 Wired glass lites as shown on drawings; refer to section 08 80 50 - Glazing.

2.4 TRANSOM AND SIDE PANELS

.1 Construction: to match adjacent door.

2.5 WOOD LOUVERS

.1 Not Used.

2.6 FABRICATION

.1 Vertical edge strips to match face veneer.

.2 Prepare doors for louvers and glazing as detailed. Provide hardwood species to match face veneer and glazing stops with mitred corners.

.3 Bevel vertical edges of single acting doors 3 mm in 50 mm on lock side and 1.5 mm in 50 mm on hinge side.

.4 Radius vertical edges of double acting doors to 60 mm radius.

.5 Provide waterproof non-staining membrane at cutouts on exterior doors to exclude moisture from core.

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 Unwrap and protect doors in accordance with CAN/CSA-O132.2 Series, Appendix A.

.2 Install labelled fire rated doors to NFPA 80.

.3 Install doors and hardware in accordance with manufacturer's printed instructions and CAN/CSA-O132.2 Series, Appendix A.

.4 Adjust hardware for correct function.

.5 Install glazing in accordance with Section [08 80 50 - Glazing.

.6 Install louvers and stops.

.7 Secure transom and side panels by means of concealed fasteners or countersunk screws concealed by means of wood plugs matching panel in grain and colour.

3.3 ADJUSTMENT

.1 Re-adjust doors and hardware just prior to completion of building to function freely and properly.

3.4 CLEANING

.1 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.

.2 Remove traces of primer, caulking; clean doors and frames.

.3 Clean glass and glazing materials with approved non-abrasive cleaner.

.4 On completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 07 92 00 – Joint Sealants

.2 Section 08 71 00 – Door Hardware

.3 Section 08 50 00 - Glazing

1.2 REFERENCES

.1 AAMA 611, Voluntary Standards for Anodized Architectural Aluminum.

.2 AAMA CW-10, Care and Handling of Architectural Aluminum from Shop to Site.

.3 AAMA CW-DG-1, Aluminum Curtain Wall Design Guide Manual.

.4 AAMA/WDMA/CSA 101/I.S.2/A440, Standard Specification for Windows, Doors, and Unit Skylights.

.5 ANSI H35.1M, Alloy and Temper Designation Systems for Aluminum (Metric).

.6 ASTM A167, Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.

.7 ASTM B209M, Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

.8 ASTM B221M, Specification for Aluminum-Alloy Extruded Bars, Rods, Wires, Profiles and Tubes.

.9 ASTM C920, Specification for Elastomeric Joint Sealants.

.10 ASTM E283, Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

.11 ASTM E330, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

.12 ASTM E331, Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.

.13 ASTM F738M, Specification for Stainless Steel Metric Bolts, Screws, and Studs.

.14 CAN/CGSB 1.108-M, Bituminous Solvent Type Paint.

.15 CAN/ULC S702, Thermal Insulation, Mineral Fibre, for Buildings.

.16 NFRC 100, Procedure for Determining Fenestration Product U-factors.

.17 NFRC 200, Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence.

1.3 DEFINITIONS

.1 Aluminum Work: Shall mean aluminum curtainwall, windows, entrances, doors, and framing mentioned in Part 2 of this Specification Section.

1.4 DESIGN REQUIREMENTS

.1 Design Aluminum Work to meet requirements of AAMA/WDMA/CSA 101/I.S.2/A440, AAMA CW-DG-1, ASTM E283, ASTM E330, ASTM E331, NFRC 100, NFRC 200 and to meet intended performance and energy requirements and as required by authorities having jurisdiction.

.2 Design Aluminum Work in accordance with following Climatic Design Data for Timmins contained in the Ontario Building Code:
- .1 Design temperature: January 1%, July 2 1/2% .
- .2 Hourly wind pressures: 1 in 50 year occurrence.

.3 Design Aluminum Work to accommodate following without producing detrimental effect:
- .1 Cyclic 40 degree 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.

.4 Design to prevent accumulation of condensate on interior side of Aluminum Work framing under the following service conditions:
- .1 Interior summer temperature: 21EC.
- .2 Interior winter temperature: 21EC.
- .3 Exterior temperature: -20EC.
- .4 Interior RH: 35%.

.5 Design windows in accordance to AAMA/WDMA/CSA -101/I.S.2/ A440, to the following performance levels:
- .1 Performance class: CW.
- .2 Minimum performance grade (PG): 35.
- .3 Minimum positive design pressure: 1680 Pa.
- .4 Minimum negative design pressure: - 1680 Pa.
- .5 Minimum water penetration test pressure: 290 Pa.
- .6 Minimum air infiltration/exfiltration: A3.
- .7 Condensation resistance: I57

.6 Restrict air infiltration/exfiltration, through Aluminum Work in accordance with ASTM E283 at pressure differential as indicated:
- .1 Curtainwalls and entrance assemblies: 0.0003 m3/s m2 at differential of 300 Pa.
- .2 Doors (per door): 2.78 m3/h m per linear metre of crack at differential of 75 Pa.

.7 Design self-draining aluminum work systems and detail controlled drainage path to actively discharge water, which enters into or forms within Aluminum Work, to exterior; prevent accumulation or storage of water within Aluminum Work. Prevent water from entering interior when tested in accordance with ASTM E331.

.8 Design and detail air barrier, vapour retarder, and rainscreen products and assemblies into continuous and integrated Aluminum Work envelope. Optimize Aluminum Work design to align envelope layers and to minimize thermal bridges.

.9 Prevent deflection and permanent or progressive glazing displacement. Restrict horizontal and vertical mullion deflection to less than L/175 and 19 mm maximum for heights under 4115 mm and L/240 and 25 mm maximum for heights over 4115 mm.

.10 When tested at 150 percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding 0.2 percent of span in accordance with ASTM E330.

.11 Design anchorage inserts for installation as part of other Sections of Work. Design anchorage assemblies to accommodate construction and installation tolerances.

.12 Design curtain wall system to accommodate curved glass and structural glass fin as required by Work of this Project.

.13 Provide all reinforcing within aluminum members as required by

design and OBC to provide structurally sound assembly. In any case, mullion size shall not be increased due to provision of reinforcing.

.14 Design Aluminum Work and connections to substrate where the bottom of the Aluminum Work extends to a point below 1070 mm above finished floor level and separates a floor level from an adjacent interconnected space to withstand the required guard and handrail loads in accordance with the OBC and applicable local regulations. When requested by Consultant, provide a letter signed and sealed by a Professional Engineer certifying that the Aluminum Work conforms to the OBC requirements.

1.5 SUBMITTALS

.1 Shop drawings:

.1 Submit shop drawings in accordance with Section 01 33 00 indicating:

.1 Plans, sections, details, type of extrusions, profiles, finishes, shadow boxes, glass fin work, operating components, doors, related flashings, closures, fillers, and end caps, and sealants.

.2 Products and glazing types.

.3 Calculations or modelling confirming Aluminum Work conforms to specified performance and energy requirements.

.4 Structural integrity of Aluminum Work, anchorage inserts, and system installation tolerances.

.5 Section and hardware reinforcement, anchorage, assembly fixings.

.6 Detailing, locations, and allowances for movement, expansion, contraction

.7 Air barrier and vapour retarder continuity and path of cavity drainage and air pressure equalization.

.2 Samples:

.1 Submit two samples of 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 insulating glass unit.

.3 One complete corner detail of door frame, glazing, and finish for each door type.

.4 250 x 200 mm sample of aluminum sheet material for shadow boxes.

.3 Reports:

.1 Submit substantiating engineering data, and independent test results of pretested, Aluminum Work to substantiate

compliance with the design criteria including air leakage and water penetration conforming to ASTM E283 and ASTM E331.

.2 Submit documentation to substantiate ten years of experience in Aluminum Work manufacture and installation.

.4 Close-out submittals: Submit Aluminum Work data for incorporation into the Operations and Maintenance Manual as part of Section 01 78 00.

1.6 QUALITY ASSURANCE

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

.1 Design of Aluminum Work.
.2 Review, stamp, and sign shop drawings.
.3 Conduct on-Site inspections and prepare and submit inspection reports.

.2 Shop mock-up:

.1 Fabricate and erect one, full scale mock-up in shop of Aluminum Work for shop testing, including air leakage, water penetration, and deflection in accordance with AAMA/WDMA/CSA 101/I.S.2/A440, ASTM E283, ASTM E330, and ASTM E331.
.2 Demonstrate conformance to specified design requirements.

.3 Mock-up shall show full range of Products, finishes, textures, quality of fabrication, and workmanship including, but not limited to, framing members, glazing units, anchorage, opening units, doors and transitions to adjoining assemblies and materials.

1.7 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.

1.8 EXTENDED WARRANTY

.1 Aluminum work: Submit an extended warranty for Aluminum 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 such as interior leakage, finish degradation, frame condensation.

.2 Coverage: Complete replacement including affected adjacent Work.

.2 Glazing:

.1 Provide a 10 year warranty, commencing from date of Substantial Performance, against defects in the insulating glass units and warrant them to be free from material obstruction of vision as a result of dust or film formation on the internal glass surfaces by any cause, under normal design conditions. Warrant the following:

.1 The insulating glass units shall be free from condensation, fogging material obstruction of vision as a result of dust or film formation on the internal glass surfaces by any cause under design conditions.

.2 The insulating glass units shall not change their mechanical design properties and shall not in any way deteriorate, degrade, delaminate or change their visual appearance.

.3 The glass units will not break due to thermal shock and temperature differential due to inherent glass faults, other than extrinsic glass breakage.

.2 Warrant that glazing work is water and weather tight and free from distortion; that glazing materials will not deteriorate from exposure to the atmosphere and weather, will not be displaced, and will be free from permanent deformation under load; and that glass and insulating glass units will not be broken, cracked or scratched by causes resulting from defects in material, workmanship or design of glazing installation.

.3 Cracked or scratched glass, shrinking, cracking, staining, hardening, sagging of glazing materials; loosening or rattling of glass; and leaking of glazed joints will be considered defective work.

.4 Warranty shall provide for the removal of defective Products, replacement with new Products conforming to the specifications, and restoration of work damaged by removal and replacement including labour and installation costs.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS (S) AND

.1 This specification is written on the basis of a products by Oldcastle Building Envelope. Specified manufacturer's products

SYSTEM(S)

establish the minimum acceptable standards for the work of this Section. Approved systems by Alumicor Limited and Kawneer North America will be considered provided they are deemed to be consistent with the specified aluminum work systems system listed below.

.2 Curtain wall: Structural silicone and captured mullion glazed curtain wall system, 'Reliance Artic Series' as manufactured by Oldcastle Building Envelope;
- .1 Foyer 105 – Triple glazing, mullion depth as shown on drawings
- .2 Bridge 201 – Double Glazing, mullion depths as shown on drawings

.3 Windows: Series 1200-6AR frames with Series 2000-3AR as manufactured by Oldcastle Building Envelope.
- .1 Hopper and awning vents as shown on drawings.
- .2 Casement window complete with key lock hardware at access to Winter Garden 202

.4 Interior Vestibules: Series FG-2000 as manufactured by Oldcastle Building Envelope.

.5 Exterior Aluminum Doors: Standard NS-212 / MS-375 / WS-500 doors and frames.
- .1 Rail and stile sized as noted on drawings.

2.2 MATERIALS

.1 All materials under work of this Section, including but not limited to, sealants are to have low VOC content limits.

.2 Aluminum extrusions and channels: ASTM B221 and ANSI H35.1 AA6063 alloy, T6 temper.
- .1 Profile and dimensions: Refer to Contract Drawings.
- .2 Thermal breaks in frame members: Vertically aligned with glazing.

.3 Aluminum sheet: ASTM B209 and ANSI H35.1 AA1100 aluminum alloy, H14 temper, minimum 1.29 mm for sheets less than 610 mm wide and minimum 2.05 mm for sheets of a greater dimension.

.4 Reinforcements and anchors: ASTM A167, Type 304 to AISI No. 2B finish. Size as shown.

.5 Glass and glazing materials: As specified in Section 08 50 00.

.6 Shadow box airseal backpan: ASTM A653/A653M; 0.9 mm thick, Z275 galvanized steel sheet.

.7 Airseal and Aluminum Work sealant: ASTM C920, Type S, Grade NS, Class 100/50; One-part, low-modulus, moisture-curing, silicone. 'Dow Corning 790' by Dow Corning; 'Spectrem 1' by Tremco. Verify compatibility with insulating glass unit manufacturer's secondary sealant. Colour as selected by Consultant. Primer as recommended by manufacturer.

.8 Frame sealant: Type as recommended by the Aluminum Work manufacturer.

.9 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.

.10 Airseal transition membrane: 'Sopraseal Stick 1100' by Soprema Inc., 'Exoair 110' by Tremco or 'Air-Shield' by W.R. Meadows. Membrane to come complete with applicable primer.

.11 Anchors, clips, and angles: Extruded aluminum or stainless steel.

.12 Shims and blocking for frame: Rigid plastic, wood is not permitted.

.13 Flashings, closures and trim: 1.0 mm minimum aluminum sheet, finish to match curtain wall extrusion finish.

.14 Screws, bolts and other fasteners: ASTM F738M; Stainless Steel Type 304.

.15 Isolation coating: CAN/CGSB-1.108-M; Bitumastic coating, acid and alkali resistant material.

.16 Shadow box panel insulation: CAN/ULC S702; Semi-rigid mineral fibre.
- .1 Type 703 by Owens-Corning.
- .2 CurtainRock by Roxul Inc.
- .3 Thickness: As required to fill void.
- .4 Insulation fasteners: Stik-Clip with retaining washer.

.17 Spray Foam Insulation: CFC free, polyurethane foam in place, closed cell low expansion, one component, minimum density 15 kg/m3.
- .1 'ENERFOAM' by Dow Chemical Canada.
- .2 'IPF All Weather Pro' by Rivenco Industries.

.18 Window hardware: Manufacturer's standard heavy duty corrosion resistant hardware with key lock hardware for roof access.

.19 Door hardware: Supplied by finish hardware supplier under Section 08 71 00 for installation by door manufacturer.

.20 Weatherstripping: Durable, non-absorbing material resistant to deterioration by aging and weathering.

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 Aluminum Work in accordance with reviewed shop drawings and manufacturer's written instructions.

.3 Fabricate, fit, and secure framing joints and corners accurately, with flush surfaces, and hairline joints. Apply frame sealant at joints for weatherproof seams.

.4 Conceal anchors, reinforcement and attachments from view. Fabricate reinforcement in accordance with design requirements.

.5 Do not expose manufacturer's identification labels on aluminum assemblies.

.6 Fabricate continuous sill flashings with intermediate anchor clips, and joint reinforcing, form to profile shown. Fabricate filler and closure pieces as necessary for a complete and weather tight installation.

.7 Certify aluminum windows as complying with the AAMA/WDMA/CSA 101/I.S.2/A440 design criteria and requirements using an easily removable label located on the inside face of glazing.

.8 Position operable windows on main frame to provide direction of opening specified, free and smooth operation, without binding or sticking against main frame members.

.9 Fabricate doors and frames complete with internal reinforcements, cut-outs, and recesses to accommodate finish hardware. Reinforce cut-outs to assure adequate strength.

.10 Fabricate Aluminum Work closures and trim from aluminum sheet. Form to profile shown. Make weathertight.

.11 Double weatherstrip windows and doors. Install weatherstripping in specially extruded ports and secure to prevent shrinkage or movement.

.12 Fabricate glazing recess with drainage to exterior.

2.4 ALUMINUM DOORS

.1 Fabricate doors of welded construction.

.2 Glazing stop: Aluminum, square, snap-on type, designed for glazing system.

2.5 INSULATED SHADOW BOXES

.1 Fabricate insulated spandrel panel inner facing of galvanized sheet to form an airseal backpan. Wrap edges with galvanized sheet, enabling installation and minor movement of perimeter seal.

.2 Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.

.3 Provide integral reinforcing and stiffeners as required to reinforce panel against deflection caused by wind and suction loads.

.4 Place continuous layer of insulation to airseal backpan with adhesive and impale clips and fasteners. Ensure there are not gaps between the insulation and airseal backpan. Provide aluminum sheet over exterior face of insulation in shadow box as indicated.

.5 Provide 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 Shadow boxes: Consists of insulated glass unit to the exterior with insulated backpan to the inside complete with prefinished aluminum sheet in colour as selected by Consultant on exterior face of insulation. Seal all joints in shop with high grade butyl sealant, including perimeter seal at backpan.

2.6 FINISH

.1 Extrusion finish: Colour anodized to AAMA 611 per Aluminum Association Designation System for Aluminum Finishes AA-M12C22A44. Colour: #40 Dark Bronze.

.2 Doors: Colour anodized to AAMA 611 per Aluminum Association Designation System for Aluminum Finishes AA-M12C22A44.

Colour: #40 Dark Bronze.

.3 Sheet finish: As indicated on drawings to match adjacent extrusion finish.

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 Aluminum Work in accordance with reviewed shop drawings, manufacturer's instructions, AAMA/WDMA/CSA 101/I.S.2/A440 and to meet requirements of authorities having jurisdiction.

.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 Install flashings, closures, and trim pieces.

.5 Fill voids between aluminum framing and adjacent construction with foam insulation.

.6 Install sills in maximum lengths possible. For sills over 1200 mm in length, maintain 3 mm to 6 mm space at each end.

.7 Refer to Contract Drawings for glazing type locations. Install glazing in accordance with Section 08 50 00.

.8 Insulated shadow boxes:

- .1 Set back pans to framing, apply sealant to cover screw heads to maintain air tight seal between back pans and framing.
- .2 Adhere stick clips to metal back pans at 300 mm o.c. both ways. Apply insulation adhesive over entire surface of barrier and around clips held with adhesive.
- .3 Cut insulation slightly over-size and press insulation

boards firmly to barrier impaling them on clips without bending clips. Butt insulation boards tightly. install retainers to clips.

.4 Wrap aluminum sheet over exterior face of insulation in shadow box.

.9 Automatic door operators to be supplied and installed by Section 08 71 00. Install doors and hardware to manufacturers' written instructions. Clean and adjust hardware for correct performance.

.10 Install aluminum door manufacturer's standard weatherstripping at door frame perimeter. Install weatherstripping throughout entire length and width of doors at jambs and heads.

.11 Install doors and hardware to manufacturers' written instructions. Clean and adjust hardware for correct performance.

.12 Adjust operable parts for correct function.

.13 Remove damaged or unacceptable Products and assemblies from Site and replace to Consultant's acceptance.

.14 Install glass presence markers, in two cross stripes extending from diagonal corners. Maintain markers until final clean-up.

3.3 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 Operable components: Consistent with smooth operation and weatherproof performance.

.6 Maximum perimeter sealant joint between Aluminum Work and adjacent construction: 13 mm.

3.4 GLAZING PERIMETER AIRSEAL

.1 Install glazing perimeter airseal at entire perimeter of each insulating glass unit to achieve an airseal from insulating glass unit to curtain wall frame. Do not obstruct path of cavity drainage and air pressure equalization.

.2 Perform sealant work in accordance with manufacturer’s written requirements.

3.5 AIRSEAL TRANSITION MEMBRANE

.1 Install primer and airseal transition membrane in accordance with manufacturer's instructions. Install airseal transition membrane into extrusion reglet as indicated on drawings. If there is no extrusion reglet, mechanically fasten airseal transition membrane to frame with batten bar fastened at 150 mm o.c.

.2 Overlap airseal transition membrane 75 mm minimum and lap in direction of waterflow.

.3 Coordinate airseal transition to adjacent parts of Work.

.4 Provide end-dams and terminations fabricated from same material as airseal transition membrane or material recommended by membrane manufacturer at sills, lintels, openings, and where horizontal surfaces intersect with vertical surfaces to ensure moisture is shed to exterior.

3.6 JOINT BACKING & ALUMINUM WORK SEALANT

.1 Prepare substrate surface and mask as recommended by sealant manufacturer.

.2 Install joint backing and sealant at Aluminum Work and perimeter joints for weather tight installation in accordance with sealant manufacturer's instructions. Tool sealant. Remove excess sealant.

3.7 CLEANING

.1 Maintain Aluminum Work, inside and outside, in clean condition throughout construction period.

.2 Remove labels, protective material, and glass presence markers from prefinished surfaces.

.3 Remove AAMA/WDMA/CSA 101/I.S.2/A440 certification labelling when directed by Consultant, in writing.

.4 Wash Aluminum 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 21 00 – Allowances.

.2 Section 01 61 00 – Common Product Requirements.

.3 Section 01 78 00 – Closeout Submittals.

.4 Section 08 11 00 – Metal Doors and Frames

.5 Section 08 14 16 – Flush Wood Doors

.6 Section 08 44 00 – Aluminum Work

.7 Appendix D – Hardware Schedule

.8 Appendix E – Hardware Catalogue Cuts

1.2 REFERENCES

.1 Canadian Steel Door and Frame Manufacturers' Association (CSDFMA).

- .1 CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction): standard hardware location dimensions.

.2 Canadian General Standards Board (CGSB).

- .1 CAN/CGSB-69.17-M86(R1993), Bored and Preassembled Locks and Latches.
- .2 CAN/CGSB-69.18-M90/ANSI/BHMA A156.1-1981, Butts and Hinges.
- .3 CAN/CGSB-69.19-93/ANSI/BHMA A156.3-1984, Exit Devices.
- .4 CAN/CGSB-69.20-M90/ANSI/BHMA A156.4-1986, Door Controls (Closers).
- .5 CAN/CGSB-69.21-M90/ANSI/BHMA A156.5-1984, Auxiliary Locks and Associated Products.
- .6 CAN/CGSB-69.22-M90/ANSI/BHMA A156.6-1986, Architectural Door Trim.
- .7 CAN/CGSB-69.24-M90/ANSI/BHMA A156.8-1982, Door Controls - Overhead Holders.
- .8 CAN/CGSB-69.26-96/ANSI/BHMA A156.10-1991, Power-operated Pedestrian Doors.
- .9 CAN/CGSB-69.28-M90/ANSI/BHMA A156.12-1986, Interconnected Locks and Latches.
- .10 CAN/CGSB-69.29-93/ANSI/BHMA A156.13-1987, Mortise

Locks and Latches.

.11 CAN/CGSB-69.30-93/ANSI/BHMA A156.14-1991, Sliding and Folding Door Hardware.

.12 CAN/CGSB-69.31-M89/ANSI/BHMA A156.15-1981, Closer/Holder Release Device.

.13 CAN/CGSB-69.32-M90/ANSI/BHMA A156.16-1981, Auxiliary Hardware.

.14 CAN/CGSB-69.33-M90/ANSI/BHMA A156.17-1987, Self-closing Hinges and Pivots.

.15 CAN/CGSB-69.34-93/ANSI/BHMA A156.18-1987, Materials and Finishes.

.16 CAN/CGSB-69.35-M89/ANSI/BHMA A156.19-1984, Power Assist and Low Energy Power Operated Doors.

.17 CAN/CGSB-69.36-M90/ANSI/BHMA A156.20-1984, Strap and Tee Hinges and Hasps.

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 Samples:

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Identify each sample by label indicating applicable specification paragraph number, brand name and number, finish and hardware package number.

.3 After approval samples will be returned for incorporation in the Work.

.3 Hardware List:

.1 Submit contract hardware list in accordance with Section 01 33 00 - Submittal Procedures.

.2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.

.4 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

.5 Closeout Submittals

.1 Provide operation and maintenance data for door closers, locksets and fire exit hardware for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 QUALITY ASSURANCE

.1 Regulatory Requirements:
- .1 Hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.

.2 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

.3 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.4 Pre-installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.5 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 Package each item of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.

.2 Storage and Protection:
- .1 Store finishing hardware in locked, clean and dry area.

1.6 WASTE DISPOSAL AND MANAGEMENT

.1 Separate and recycle waste materials.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Dispose of corrugated cardboard and plastic packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

1.7 MAINTENANCE

.1 Extra Materials:
- .1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Supply two sets of wrenches for door closers, locksets and fire exit hardware.

PART 2 - PRODUCTS

2.1 HARDWARE SCHEDULE

.1 Refer to Appendix D - Hardware List and Appendix E – Hardware Catalogue Cuts

.2 Narrow profile fire rated door and frame (door D105 only):

.1 General Contractor shall coordinate hardware provided by Technical Glass Products (as required to ship a listed fire rated assembly) with that specified in the hardware list. Specified items not provided by TGP shall be provided by the General Contractor

.2 Additional door closers provided by TGP as required for a listed fire rated assembly shall be removed and turned over to the Owner

2.2 MISCELLANEOUS HARDWARE

.1 Not Used.

2.3 FASTENINGS

.1 Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels.

.2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.

.3 Exposed fastening devices to match finish of hardware.

.4 Where pull is scheduled on one side of door and push plate on other side, supply fastening devices, and install so pull can be secured through door from reverse side. Install push plate to cover fasteners.

.5 Use fasteners compatible with material through which they pass.

2.4 KEYING

.1 Final keying by Owner.

.2 General Contractor shall provide construction cores.

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.

.2 Furnish metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.

.3 Furnish manufacturers' instructions for proper installation of each hardware component.

3.2 INSTALLATION

.1 Install hardware to standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturers' Association.

.2 Where door stop contacts door pulls, mount stop to strike bottom of pull.

.3 Install key control cabinet.

.4 Use only manufacturer's supplied fasteners. Failure to comply may void manufacturer's warranties and applicable licensed labels. Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.

.5 Remove construction cores, locks when directed by Prime Consultant; install permanent cores and check operation of locks.

3.3 ADJUSTING

.1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.

.2 Lubricate hardware, operating equipment and other moving parts.

.3 Adjust door hardware to provide tight fit at contact points with frames.

3.4 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.

.3 Remove protective material from hardware items where present.

.4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.5 DEMONSTRATION

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 45 00 - Quality Control.

.3 Section 01 78 00 - Closeout Submittals.

.4 Section 08 44 00 – Aluminum Work

1.2 REFERENCES

.1 ASTM C920, Specification for Elastomeric Joint Sealants.

.2 ASTM C1048, Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass.

.3 ASTM D2240, Test Method for Rubber Property - Durometer Hardness.

.4 CAN/CGSB-12.1-M, Tempered or Laminated Safety Glass.

.5 CAN/CGSB-12.3-M, Flat, Clear Float Glass.

.6 CAN/CGSB-12.8, Insulating Glass Units.

.7 CAN/CGSB-12.20-M, Structural Design of Glass for Buildings.

.8 Glass Association of North America (GANA) Glazing Manual.

.9 ULC CAN4 S104-M, Standard Method for Fire Tests of Door Assemblies.

.10 ULC CAN4 S106-M, Standard Method for Fire Tests of Window and Glass Block
Assemblies.

1.3 DESIGN PROPERTIES

.1 Glass Design:

- .1 Design glass using a probability of breakage of 8 lites per 1000 at the first application of design load.
- .2 Design glass to CAN/CGSB-12.20-M. Perform stress analysis. Design units to accommodate live, dead, lateral, wind, seismic, handling, transportation, and erection loads. Glass units to include flat to suit Project requirements.
- .3 Perform a thermal stress analysis on each glass unit with

Low-E coating and provide heat strengthening and/or tempered units as necessary to prevent thermal breakage.

.4 Perform a thermal stress analysis on each insulating thermal unit and provide heat strengthening and/or tempered units as necessary to prevent thermal breakage

.5 Where required, design glazing units so as not to allow thermal stress fracture due to heat build-up behind insulating units.

.2 Structural glazing:

.1 Carry out design of structural silicone joints by rational analysis including all movements specified herein. Maximum stress shall not exceed 138 kPa (20 psi) in tension or shear for short term loading. Maximum stress in shear for long term loading due to the dead load of glass shall not exceed 7 kPa (1 psi) or the limit imposed by sealant manufacturer, whichever is less.

.2 The joint shall be essentially rectangular in shape and shall include no internal corners which could precipitate tearing or create high local stresses.

.3 Single Source Responsibility for Sealants, Gaskets and Other Glazing Accessories: In order to ensure consistent quality of performance, provide all glazing sealants and seals from a single manufacturer.

.4 Preconstruction Compatibility and Adhesion Testing: Submit to sealant manufacturer, samples of each glass, gasket, glazing accessory and glass-framing member that will contact or affect glazing sealants for compatibility and adhesion testing. Schedule submission of test samples to provide sufficient time for testing and analysis of results to prevent delay in the progress of work.

.3 Limit glass deflection to flexural limit of glass with full recovery of glazing materials.

.4 Utilize inner light of multiple light sealed units for continuity of air and vapour seal.

1.4 SUBMITTALS

.1 Shop drawings: Submit shop drawings in accordance with Section 01 33 00 for fabrication and erection of glazing elements indicating materials, thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

.2 Samples:
- .1 Submit following samples in accordance with Section 01 33 00.
- .2 Submit one sample of each type of glass.
  - .1 300 x 300 mm of each type of insulating glass unit, complete with each different Low-E coating.
  - .2 300 x 300 mm of glazing at structural glass fin.
  - .3 300 x 300 mm of fire rated glass.
  - .4 300 x 300 mm of each specified colour and type of film.

.3 Certificates: Submit manufacturer's certification that glass and glazing materials are compatible.

.4 Submit compatibility and adhesion test reports from sealant manufacturer indicating that glazing materials were tested for compatibility and adhesion with glazing sealants. Include sealant manufacturer's interpretation of test results relative to sealant performance and recommendations for primers and substrate preparation needed for adhesion.

.5 Compatibility test report from manufacturer of insulating glass edge sealant, indicating that glass edge sealants were tested for compatibility with other glazing materials including sealants, setting blocks, edge blocks and any other material that contacts or can affect the edge seal.

.6 IGMA Compliance Audit: Submit in accordance with Section 01 33 00, a written certification of successful completion of a Compliance Audit within the last six months.

1.5 QUALITY ASSURANCE

.1 Retain a Professional Engineer, licensed in Province of Ontario, with experience in glazing work of comparable complexity and scope to perform the following services as part of the work of this Section and designed in conjunction with work of Section 08 44 00.
- .1 Design of structural glass fin.
- .2 Review, stamp, and sign Shop Drawings.
- .3 Conduct on-Site inspections and prepare and submit inspection reports.

.2 Insulating glass unit fabricators shall be a certified member of the Insulating Glass Manufacturer's Alliance (IGMA). IGMA members must participate in the certification program and shall have successfully passed a Compliance Audit within the last six months.

.3 Installers qualifications: Perform work of this Section by a

company that has a minimum of five years proven experience in the installation of glazing units of a similar size and nature.

.4 Fire protective rated glass: Each lite shall bear permanent, nonremovable label of ULC certifying it for use in tested and rated fire protective assemblies.

1.6 SITE CONDITIONS

.1 Glaze with compounds, sealants, or tapes only when glazing surfaces are at temperatures over 4 oC, and when positive that no moisture is accumulating on them from rain, mist, or condensation.

.2 When temperature of glazing surfaces is below 4 oC, obtain from Consultant approval of glazing methods and protective measures which will be used during glazing operations.

1.7 EXTENDED WARRANTY

.1 In accordance with Sections 08 11 00 and 08 44 00.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

.1 Glass manufacturers:
- .1 AGC Flat Glass.
- .2 Cardinal Glass Industries.
- .3 Guardian Industries.
- .4 PPG Industries Ltd.
- .5 Viracon Inc.

2.2 MATERIALS

.1 All materials under work of this Section, including but not limited to, primers, coatings,sealers, sealants, adhesives and cleaners are to have low VOC content limits.

.2 Low iron glass heat strengthened glass (HSGL):
- .1 CAN/CGSB-12.3-M, low iron heat strengthened glass, clear, glazing quality, minimum 6 mm thick, low iron content, colourless; ‘Ultra White Low Iron’ by Guardian Industries, or ’Starphire Ultra Clear Glass’ by PPG or ‘low-Iron Glass’ by AGC.
- .2 Heat strengthened in accordance with ASTM C1048.

.3 Low iron glass tempered glass (TGL)

:

.1 CAN/CGSB-12.1-M, clear, tempered, glazing quality, minimum 6 mm thick, low iron content, colourless; 'Ultra White Low Iron' by Guardian Industries, 'Starphire Ultra Clear Glass' by PPG or 'low-Iron Glass' by AGC.

.2 Allow for curved glass in locations as required.

.4 Fire rated glass (FRGL): To meet intended fire rating of exterior hollow metal windows, fire rating tested to ULC CAN4 S104-M and ULC CAN4 S106-M, 5 mm thick, with appropriate labelling stating fire rating and approval, clear polished glass. 'Firelite' by Technical Glass Products or approved alternative.

.5 Insulating glass units (typical): To CAN/CGSB-12.8-M and IGMA requirements utilizing approved metallic stainless steel edge spacer, prepainted in grey colour as approved by the Consultant. Dual seal with a PIB primary seal and silicone secondary seal.

.6 Argon gas: 100% pure. Argon gas to be used to fill air space at all insulated glass units.

.7 Low-E coating: High performance sputtered low-E coating. Provide insulating glass units with low-E coating edge deletion and low-E coating. Apply low-E coating to second surface unless otherwise indicated. 'Solarban 60' Clear by PPG Industries Inc. or approved alternative by AGC Flat Glass, Cardinal Glass Industries or Guardian Industries.

.8 Glazing and rebate primers, sealants, sealers, and cleaners: Compatible with each other. Type as recommended by glass manufacturer.

.9 Glazing sealant: Silicone sealant as recommended by glazing manufacturer. Verify compatibility with insulating glass unit secondary sealant.

.10 Glazing Sealant (structural glazing):

.1 Silicone, One Part in accordance with ASTM C920, Type S or M, Grade NS, Class 25.

.2 Structural glazing tensile bead: 'Spectrem 2 Sealant' by Tremco or 'Dow 795' by Dow Corning.

.3 Structural glazing weather bead: 'Spectrem 2 Sealant' by Tremco or 'Dow 795' by Dow Corning.

.4 Structural glazing (factory glazed): Two-part, neutral cure silicone sealant, 'Proglaze II' by Tremco or 'Dow 983' by Dow Corning.

.5 Colour: Grey colour as approved by the Consultant.

.11 Heel & toe bead: Silicone sealant as recommended by glazing manufacturer.

.12 Glazing gasket: 'Visionstrip' by Tremco Ltd., extruded composite glazing seal, size as recommended by manufacturer.

.13 Glazing tape: 'Polyshim II' glazing tape EPDM shim.

.14 Glazing tape (fire rated glass): Closed cell polyvinyl chloride (PVC) foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume of 2 percent. Glass panels that exceed 1,393 sq. inches for 90-minute ratings must be glazed with fire-rated glazing tape supplied by manufacturer.

.15 Glazing splines: EPDM or neoprene, extruded shape to suit glazing channel retaining slot, colour as selected.

.16 Setting blocks (regular): EPDM, 80 - 90 Shore A durometer hardness to ASTM D2240, sized to suit glazing method, glass unit weight and area.

.17 Setting Block (Structural Glazing): Silicone setting blocks with Shore, Type A durometer hardness of 85, plus or minus 5 to ASTM D2240, sized to suit glazing method, glass unit weight and area.

.18 Edge blocks: EPDM, 60-70 Shore A Durometer hardness, sized with 3 mm clearance from glass edge and spanning glass thickness(es). Capable of withstanding weight of glass unit, self adhesive on face.

.19 Glass presence markers: Easily removable, non-residue depositing.

.20 Screws, bolts and fasteners: Type 304 stainless steel.

2.3 MATERIALS

.1 Glazing Type 1: Double Glazing: Minimum 6 mm thick low iron tempered glass (TGL) outside, argon filled air space, minimum 6 mm thick low iron tempered glass (TGL) inside complete with low E coating. 25 mm overall thickness. For use at window assemblies, curtain wall at Bridge 102 and exterior doors.

.2 Glazing Type 2: Triple Glazing: Minimum 6 mm thick low iron tempered glass (TGL) outside, argon filled air space, minimum 6 mm thick low iron tempered glass (TGL) inside complete with low E coating. 44 mm overall thickness. For use at Foyer 105

.3 Glazing Type 3: Interior Glazing: 6mm thick low iron tempered glass (TGL)

.4 Fire rated ceramic glass, 6mm thick

.1 'FireLite' 45 minute fire rated ceramic glass by Technical Glass Products. Contact 1(800)426-0279

2.4 ACCESSORIES

.1 Verify glazing dimensions on Site.

.2 Clearly label each glass lite with maker's name and glass type. Ensure labels are easily removable, non-residue depositing type. Do not remove labels until after Work is accepted by Consultant.

.3 Fabricate glazing not less than 3 mm smaller than rebate size in either dimension; allow for edge spacers, shims, and setting blocks as necessary.

.4 Work shall have smooth finished surfaces free from distortion and defects detrimental to appearance and performance.

.5 Carefully make and fit details. Take special care with exposed finished Work to produce a neat and correct appearance to the Consultant's acceptance.

.6 Grind and polish a 1.5 mm arris to both edges of exposed glazing at locations where glazing is not encapsulated in framing and where edges are exposed to occupants.

.7 Fabricate argon filled thermal units with air space filled minimum 90% with argon gas.

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.

.2 Verify that openings for glazing are correctly sized and within tolerance.

.3 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

3.2 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.

3.3 INSTALLATION

.1 Provide glazing in accordance with IGMA recommendations. Provide continuous contact between glazing tapes and gasket to the glazing.

.2 Install glazing to the work of Section 08 11 00 as required for glazing at exterior hollow metal windows and all glazing required at Section 08 44 00.

.3 Provide neat, straight sight lines. Trim excess glazing material flush with top of stops and fixed leg of frames.

.4 Remove protective coatings, glazing stops, clean rebate and glass contact surfaces with solvent, wipe dry.

.5 Apply primer/sealer to contact surfaces, prior to glazing.

.6 Apply glazing tape as per manufacturer’s instructions including recommended corner sealant.

.7 Use setting blocks at 1/4 points and spacers to centre glass unit in frame.

.8 Install glazing in accordance with reviewed shop drawings and manufacturer's written instructions. Install glazing with full contact and adhesion at perimeter. Maintain edge clearance

recommended by glass manufacturer.

.9 Apply a continuous heel bead of sealant around perimeter of inboard lite of the sealed unit and the metal framing.

.10 Re-install glazing stops ensuring continuous contact and rattle-free installation. Do not distort glass. Trim tape protruding more than 2 mm above stop.

.11 Install glazing gasket in accordance with manufacturer's recommendations.

.12 Do not cut or abrade tempered, heat treated, or coated glass.

.13 Install glass presence markers in two cross stripes extending from diagonal corners. Maintain markers until final clean-up.

.14 Remove, dispose of, and replace broken, cut, abraded glass, and defective glass including but not limited to production dimples, 'tiger-stripping', chips, cracks, etc.

.15 Exterior glass (typical): Glaze units with gasket on exterior side and glazing tape on interior side. Seal gap between glazing and stop with sealant to depth equal to bite of frame. Apply cap head of sealant along void between stop and glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

.16 Structural Glazing: Glaze units in accordance with reviewed shop drawings and in accordance with manufacturer's written instructions.

.17 Exterior glass (with fire rated insulating glass unit):

- .1 Install fire rated insulating glass unit in accordance with manufacturer's written instructions.
- .2 Glaze units with gasket on exterior side and glazing tape on interior side. Seal gap between glazing and stop with sealant to depth equal to bite of frame. Apply cap head of sealant along void between stop and glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.
- .3 Fire rated glass:
  - .1 Place setting blocks located at quarter points of glass with edge block no more than 150 mm from corners.
  - .2 Cut glazing tape to length and set against permanent stops, flush with sight lines to fit openings exactly, with stretch allowance during installation.

.3 Glaze vertically into labeled fire-rated metal frames and push against tape for full contact at perimeter of pane or unit.

.4 Place glazing tape on free perimeter of glazing in same manner described above.

.5 Install so that appropriate ULC markings remain permanently visible.

3.4 INSTALLATION: MIRRORS

.1 Set mirrors with adhesive, applied in accordance with adhesive manufacturer's instructions.

.2 Set mirrors with [clips] [rosettes]. Anchor rigidly to wall construction.

.3 Set in frame.

.4 Place plumb and level.

3.5 INSTALLATION: PLASTIC FILM

.1 Install plastic film with adhesive, applied in accordance with film manufacturer's instructions.

.2 Place without air bubbles, creases or visible distortion.

.3 Fit tight to glass perimeter with razor cut edge.

3.6 CLEANING

.1 Immediately remove sealant and compound droppings from finished surfaces.

.2 Remove labels, protective material, and glass presence markers from prefinished surfaces.

.3 Clean glass surfaces with cleaning agents and methods in accordance with Manufacturer’s written instructions.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 American Society for Testing and Materials International (ASTM)

- .1 ASTM C 36/C 36M-01, Specification for Gypsum Wallboard.
- .2 ASTM C 475-01, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
- .3 ASTM C 645-00, Specification for Nonstructural Steel Framing Members.
- .4 ASTM C 754-00, Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
- .5 ASTM C 840-01, Specification for Application and Finishing of Gypsum Board.
- .6 ASTM C 960/C 960M-01, Specification for Pre-Decorated Gypsum Board.
- .7 ASTM C 1002-01, Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
- .8 ASTM C 1047-99, Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
- .9 ASTM C 1178/C 1178M-01, Specification for Glass Mat Water-Resistant Gypsum Backing Board.

.2 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S102-1988(R2000), Surface Burning Characteristics of Building Materials and Assemblies.

1.2 SUBMITTALS

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures, 01 00 10 - General Instructions.

- .1 Submit 300mm long samples of reveal trim..

.2 Product Data: submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 00 10 - General Instructions. Indicate VOC's for sealants.

.3 Submit test reports in accordance with Section 01 45 00 - Quality Control, from approved independent testing laboratory, certifying partition system complies with sound transmission rating, fire-resistance rating as specified.

1.3 DESIGN REQUIREMENTS

.1 Not Used.

1.4 STORAGE AND HANDLING

.1 Store materials inside, level, under cover. Protect from weather, damage from construction operations and other causes, in accordance with manufacturer's printed instructions.

.2 Handle materials to prevent damage to edges or surfaces. Protect metal accessories and trim from being bent or damaged.

PART 2 - PRODUCTS

2.1 NON-STRUCTURAL METAL FRAMING

.1 Non-load bearing channel stud framing: to ASTM C 645, 64mm and 92mm stud size, roll formed from 0.53mm thickness hot dipped galvanized steel sheet, for screw attachment of gypsum board. Knock-out service holes at 460 mm centres.

.2 Floor and ceiling tracks: to ASTM C 645, in widths to suit stud sizes, 32mm flange height.

2.2 GYPSUM BOARD

.1 Walls: Abuse-resistant board: to ASTM C 36/C 36M regular, 16mm thick and Type X, 16mm thick where noted, 1200 mm wide x maximum practical length, ends square cut, edges tapered. Standard of acceptance: Certain Teed ‘AirRenew Extreme Abuse Resistant Gypsum Board’

.2 Ceilings: Standard board: to ASTM C 36/C 36M regular, 16mm thick and Type X, 16mm thick where noted, 1200 mm wide x maximum practical length, ends square cut, edges tapered.

.3 Fibreglass-faced water-resistant gypsum backing board: to ASTM C 1178/C 1178M, 13mm thick, fire rated, 1200 mm wide x maximum practical length.

.4 Metal furring runners, hangers, tie wires, inserts, anchors.

.5 Drywall furring channels: 0.5mm core thickness galvanized steel channels for screw attachment of gypsum board.

.6 Steel drill screws: to ASTM C 1002.

.7 Casing beads, corner beads, control joints and edge trim: to ASTM C 1047, metal, zinc-coated, 0.5mm base thickness,

perforated flanges, one piece length per location.

.8 Joint compound: to ASTM C 475, asbestos-free.

2.3 ACCESSORIES .1 Not Used.

PART 3 - EXECUTION

3.1 ERECTION OF FRAMING

.1 Install steel framing members to receive screw-attached gypsum board in accordance with ASTM C 754 except where specified otherwise.

.2 Align partition tracks at floor and ceiling and secure at 600mm on centre maximum.

.3 Place studs vertically at 400mm on centre 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.

.4 Erect metal studding to tolerance of 1:1000.

.5 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.

.6 Provide two studs extending from floor to ceiling at each side of openings wider than stud centres specified. Secure studs together, 50mm apart using column clips or other approved means of fastening placed alongside frame anchor clips.

.7 Install heavy gauge single jamb studs at openings.

.8 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs. Secure track to studs at each end, in accordance with manufacturer's instructions. Install intermediate studs above and below openings in same manner and spacing as wall studs.

.9 Provide 38mm wood blocking consisting of two layers of 19mm plywood, 38x89mm wood stud or furring channel secured between studs for attachment of fixtures behind lavatory basins, toilet and bathroom accessories, and other fixtures including grab bars and towel rails, attached to steel stud partitions.

.10 Install steel studs or furring channel between studs for attaching electrical and other boxes.

.11 Extend partitions to ceiling height except where noted otherwise on drawings.

.12 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs. Use double track slip joint.

.13 Install continuous insulating strips to isolate studs from uninsulated surfaces.

.14 Install insulating strip under studs and tracks around perimeter of sound control partitions.

3.2 ERECTION OF GYPSUM BOARD AND ACCESSORIES

.1 Do application and finishing of gypsum board in accordance with ASTM C 840 except where specified otherwise.

.2 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C 840 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 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers and grilles.

.5 Install 19 x 64mm furring channels parallel to, and at exact locations of steel stud partition header track.

.6 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.

.7 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.

.8 Install wall furring for gypsum board wall finishes in accordance with ASTM C 840, except where specified otherwise.

.9 Install acoustical insulation and sealant in sound rated partitions to correspond with tested assembly.

.10 Install gypsum boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.

3.3 APPLICATION

.1 Do not apply gypsum board until bucks, anchors, blocking, sound attenuation, electrical and mechanical work are approved.

.2 Apply single or multiple layers gypsum board as indicated to metal furring or framing using screw fasteners. Maximum spacing of screws 300 mm on centre.

3.4 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 150mm 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 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.

.5 Install access doors to electrical and mechanical fixtures specified in respective sections.
.1 Rigidly secure frames to furring or framing systems.

.6 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.

.7 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.

.8 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.

.9 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

3.5 SCHEDULES

.1 Not Used.

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 00 - Sealants

1.2 SAMPLES

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures

.2 Wall 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.

1.3 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.

1.4 ENVIRONMENTAL CONDITIONS

.1 Maintain air temperature and structural base temperature at ceramic tile installation area above 12 oC for 48 h before, during, and 48 h after, installation.

.2 Do not install tiles at temperatures less than 12 oC or above 38 oC.

.3 Do not apply epoxy mortar and grouts at temperatures below 15 oC or above 25 oC.

1.5 EXTRA MATERIAL

.1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide minimum 2% 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.

PART 2 - PRODUCTS

2.1 FLOOR TILE AT KINDERGARTEN VESTIBULES

.1 Tile #1: Porcelain tile To CAN/CGSB-75.1
- .1 Size: 30x60cm
- .2 Series: 'Zenith'
- .3 Colour: 'Mocha'
- .4 Maximum joint width 1/8".
- .5 Grout: Ardex sanded floor grout.
- .6 Grout Colour: By Architect
- .7 Distributor: Stone Tile International
- .8 Contact: Nancy Brenner 416-515-9000

.2 Tile #2: Porcelain tile To CAN/CGSB-75.1
- .1 Size: 15x75cm
- .2 Series: 'Par Ker Ceramic'
- .3 Colour: 'Canada Copper' 100099181
- .4 Maximum joint width 1/8".
- .5 Grout: Ardex sanded floor grout.
- .6 Grout Colour: By Architect
- .7 Distributor: Porcelanosa
- .8 Contact: Lisa Parise; 647-528-9620

.3 Pattern as indicated on drawings.

.4 Metal trim at resilient flooring: Schluter Systems floor trim – RENO-U #EAU125, 12.5mm satin anodized aluminum.

2.2 MORTAR AND ADHESIVE MATERIALS

.1 Water: Potable and free of minerals which may discolour mortar.

.2 Sand: to CSA A82.56-M1976.

.3 Cement: to CAN/CSA-A5-M88, type 10.

.4 Thin-set mortar; typical: day-set mortar to to ANSI 118.1-1985, Mapei Ultra/Floor with Keraply Adhesive or Laticrete 220 Thin Bed Mortar with 3701 Latex. Use white adhesive for glass tile.

.5 Thin-set adhesive for marble tile and countertops: epoxy, Mapei or Laticrete.

.6 Floor and wall grout: dry-set to ANSI A118.6-1985. Floor tile grout to match floor tile colour, Mapei keracolour or approved alternate.

.7 Floor levelling and repair compound: “Ultra/Plan” High Compressive Strength Self-Levelling Underlayment and manufactured my Mapei.

.8 Fiberglass tape: coated glass mesh tape as recommended by cement board manufacturer, minimum 50 mm (2”) wide.

.9 Reinforcing mesh: 50mm (2”) x 50 mm (2”) x 1.6 mm (0.06) x 1.6 mm (0.06”) galvanized steel wire mesh.

2.3 PATCHING AND LEVELLING COMPOUND

.1 Portland cement base, acrylic polymer compound, manufactured specifically for resurfacing and leveling 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.

2.4 CLEANING COMPOUNDS

.1 Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including patching and leveling 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. Clean existing concrete surface from all debris and adhesive prior to all tile work.

.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. Scarify surface if required.

.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 Sound tiles after setting and replace hollow-sounding units to obtain full bond.

.8 Make internal angles square, external angles square.

.9 Use edged tiles at termination of wall tile panels, except where panel abuts projecting surface or differing plane.

.10 Install divider strips at junction of tile flooring and dissimilar materials.

.11 Allow minimum 24 h after installation of tiles, before grouting.

.12 Clean installed tile surfaces after installation and grouting cured.

.3 Make control joints where indicated. Make joint width same as tile joints. Fill control joints with sealant in accordance with Section 07 92 00 - Joint Sealers. Keep building expansion joints free of mortar and grout.

3.2 FLOOR SEALER AND PROTECTIVE COATING

.1 Apply in accordance with manufacturer's instructions.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 American Society for Testing and Materials International (ASTM)
- .1 ASTM C 635-00, Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
- .2 ASTM C 636-96, Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
- .3 ASTM E 1477-98a(2003), Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.

.2 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-92.1-M89, Sound Absorptive Prefabricated Acoustical Units.

.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
- .1 Material Safety Data Sheets (MSDS).

.4 Underwriter's Laboratories of Canada (ULC)
- .1 CAN/ULC-S102-[2003], Surface Burning Characteristics of Building Materials and Assemblies.

1.2 SUBMITTALS

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures, 01 00 00 - General Instructions.
- .1 Submit duplicate samples of acoustic tiles and t-bar.

.2 Product Data: submit WHMIS MSDS

.3 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures, 01 00 00 - General Instructions.
- .1 Submit reflected ceiling plans for special grid patterns as indicated.
- .2 Indicate lay-out, insert and hanger spacing and fastening details, change in level details, acoustical unit support at ceiling fixture, lateral bracing and accessories.

1.3 DESIGN REQUIREMENTS

.1 Maximum deflection: 1/360th of span to ASTM C 635 deflection test.

1.4 STORAGE AND HANDLING

.1 Store materials inside, level, under cover. Protect from weather, damage from construction operations and other causes, in accordance with manufacturer's printed instructions.

.2 Handle materials to prevent damage to edges or surfaces. Protect metal accessories and trim from being bent or damaged.

PART 2 - PRODUCTS

2.1 ACOUSTICAL CEILING PANELS

.1 Ceiling Type ‘C1’: Acoustic tile units for suspended ceiling system: to CAN/CGSB-92.1.
- .1 Acceptable Manufacturer: CGC
- .2 Tile Pattern: ‘Mars’, High NRC
- .3 Edge Type: Square
- .4 Size: 2’x2’ (610x610mm) and 2’x4’ (610x1220mm) as shown on drawings.

2.2 ACOUTICAL SUSPENSION

.1 Intermediate duty system to ASTM C 635.

.2 Basic materials for suspension system: commercial quality cold rolled steel, zinc coated.

.3 Suspension system: non fire rated, two directional tee bar grid:
- .1 Exposed tee bar grid components: CGC ‘DX’

.4 Hanger wire: galvanized soft annealed steel wire, 3.6 mm diameter for access tile ceilings.

.5 Hanger inserts: purpose made.

.6 Accessories: splices, clips, wire ties, retainers and wall reveal moulding to complement suspension system components, as recommended by system manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION OF SUSPENSION SYSTEM

.1 Installation: in accordance with ASTM C 636 except where specified otherwise.

.2 Do not erect ceiling suspension system until work above ceiling has been inspected by Prime Consultant.

.3 Install hangers spaced at maximum 1200mm centres and within 150mm from ends of main tees.

.4 Lay out [centreline of ceiling both ways, to provide balanced borders at room perimeter] [with border units not less than 50% of standard unit width] [system according to reflected ceiling plan].

.5 Install wall moulding to provide correct ceiling height.

.6 Completed suspension system to support super-imposed loads, such as lighting fixtures, diffusers, grilles, etc.

.8 Support at light fixtures and diffusers] with additional ceiling suspension hangers within 150mm of each corner and at maximum 600mm around perimeter of fixture.

.9 Interlock cross member to main runner to provide rigid assembly.

.10 Finished ceiling system to be square with adjoining walls and level within 1:1000.

3.2 INSTALLATION OF ACOUSTIC PANELS

.1 Install acoustical panels and tiles in ceiling suspension system.

.2 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 REFERENCES

.1 American Society for Testing and Materials International (ASTM)
- .1 ASTM F 1303-[99], Specification for Sheet Vinyl Floor Covering with Backing.

1.2 SUBMITTALS

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures, 01 00 00 - General Instructions.
- .1 Submit duplicate 300 x 300 mm sample pieces of sheet material.
- .2 Submit 300 mm long sample of wall base.

.2 Product Data:
- .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Sections 01 33 00 - Submittal Procedures, 01 00 00 - General Instructions.
- .2 Submit WHMIS MSDS in accordance with Section 01 00 00 - General Instructions. Indicate VOC's for primers and adhesives.

1.3 CLOSEOUT SUBMITTALS

.1 Provide maintenance data for resilient flooring for incorporation into manual specified in Section 01 78 00 - Closeout Submittals and 01 00 00 - General Instructions.

1.4 ENVIRONMENTAL REQUIREMENTS

.1 Provide a high ventilation rate, with maximum outside air, during installation, and for 48 hours after installation. If possible, vent directly to the outside. Do not let contaminated air recirculate through a district or whole building air distribution system. Maintain extra ventilation for at least one month following building occupation.

PART 2 - PRODUCTS

2.1 RESILIENT TILE FLOORING MATERIALS

.1 Vinyl composition tile to ASTM F 1066, Composition 1 - non asbestos; 24”x24” tile; Johnsonite iQ; colours as follows:
- .1 RF#1: #957 ‘Impala’
- .2 RF#2: #892 ‘Raw Ivory’

.2 Flooring pattern to be provided by Architect.

2.2 ALTERNATE RESILIENT TILE FLOORING MATERIALS

.1 Rubber tile to ASTM F 1344; 24"x24" tile; Johnsonite 'Triumph'; colours as follows:
- .1 RF#1: #WG LB4 'Mottled Egg'
- .2 RF#2: #CB LE4 'Log Cabin'

.2 Flooring pattern to be provided by Architect.

2.3 ACCESSORIES

.1 Resilient base: continuous, top set, complete with premoulded end stops and external corners:
- .1 acceptable manufacturer: Johnsonite
- .1 Type: rubber, 3.0 mm thick.
- .2 Style: cove.
- .3 Height: 101.6mm.
- .4 Lengths: cut lengths minimum 2400mm.
- .5 Colour: #80 'Fawn'CB

.2 Primers and adhesives: of types recommended by resilient flooring manufacturer for specific material on applicable substrate, above, on or below grade.
- .1 To minimize emissions from adhesives, use water-based, solvent-free styrene-butadiene-rubber adhesive for linoleum. Butadiene exposure may cause eye and nose irritation, headaches, dizziness, and vomiting.

.3 Sub-floor filler and leveller: as recommended by flooring manufacturer for use with their product.

.4 Metal edge strips: extruded aluminum with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.

.5 Sealer and wax: type recommended by resilient flooring material manufacturer for material type and location.

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 The recommendations of the manufacturer of the resilient floor covering will be considered as minimal.

.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 Old vinyl flooring to be removed by trained personnel (may contain asbestos).

.5 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.

.6 Prime and seal concrete slab to resilient flooring manufacturer's printed instructions.

3.3 APPLICATION: FLOORING

.1 Apply adhesive uniformly using recommended trowel. Do not spread more adhesive than can be covered by flooring before initial set takes place.

.2 Resilient sheet flooring:

.1 Lay flooring [with seams parallel to building lines to produce a minimum number of seams. Border widths minimum 1/3 width of full material.

.3 Run sheets in direction of traffic. Double cut sheet joints and continuously heat weld according to manufacturer's printed instructions.

.4 Heat weld seams of linoleum sheet flooring in accordance with manufacturer's printed instructions.

.5 Resilient tile flooring:

.1 Lay flooring with joints parallel to building lines to produce symmetrical tile pattern. Border tiles minimum half tile width.

.2 Install flooring to square grid pattern with all joints aligned.

.6 As installation progresses, and after installation, roll flooring with 45kg minimum roller to ensure full adhesion.

.7 Cut flooring neatly around fixed objects.

.8 Continue flooring over areas which will be under built-in furniture.

.9 Continue flooring through areas to receive movable type

partitions without interrupting floor pattern.

.10 Terminate flooring at centreline of door in openings where adjacent floor finish or colour is dissimilar.

.11 Install metal edge strips at unprotected or exposed edges where flooring terminates.

3.4 APPLICATION: BASE

.1 Lay out base to keep number of joints at minimum.

.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 Cope internal corners. Use premoulded corner units for right angle external corners. Use formed straight base material for external corners of other angles.

.8 Use toeless type base where floor finish will be carpet, coved type elsewhere.

.9 Install toeless type base before installation of carpet on floors.

3.5 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.

3.6 PROTECTION

.1 Protect new floors in accordance with manufacturer's printed instructions.

3.7 SCHEDULES

.1 Refer to drawings.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
- .1 Material Safety Data Sheets (MSDS).

.2 Master Painters Institute (MPI)
- .1 MPI Architectural Painting Specifications Manual, 2004.
- .2 MPI - Maintenance Repainting Manual, 1998.

.3 Section 09 97 13 – Exterior Steel Coatings

1.2 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures. 01 00 00 - General Instructions.

.2 Product Data:
- .1 Submit duplicate draw-down samples of each paint colour.
- .2 Submit product data and instructions for each paint and coating product to be used.
- .3 Submit product data for the use and application of paint thinner.
- .4 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 - Submittal Procedures 01 00 00 - General Instructions. Indicate VOCs during application and curing.
- .5 Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- .6 Submit manufacturer's installation [and] [application] instructions.

1.3 STORAGE AND HANDLING

.1 Storage and Protection:
- .1 Provide and maintain dry, temperature controlled, secure storage.
- .2 Store materials and supplies away from heat generating devices.
- .3 Store materials and equipment in well ventilated area within temperature as recommended by manufacturer.

.2 Fire Safety Requirements:
- .1 Provide Type ABC fire extinguisher adjacent to storage

area.

.2 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.

.3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada requirements.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling. in accordance with current best practice.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Place materials defined as hazardous or toxic waste, including tubes and containers, in containers or areas designated for hazardous waste.

.4 Paint, stain and wood preservative finishes and related materials (thinners, and solvents) 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.

1.5 SITE CONDITIONS

.1 Heating, Ventilation and Lighting:

.1 Ventilate enclosed spaces.

.2 Co-ordinate use of existing ventilation system with Prime Consultant and ensure its operation during and after application of paint as required.

.3 Provide minimum lighting level of 323 Lux on surfaces to be painted.

.2 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Apply paint finishes when ambient air and substrate temperatures at location of installation can be satisfactorily maintained during application and drying process, within MPI and paint manufacturer's prescribed limits.

.2 Test concrete, masonry and plaster surfaces for alkalinity as required.

.3 Apply paint to adequately prepared surfaces, when moisture content is below paint manufacturer's prescribed limits.

.3 Additional application requirements:
.1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
.2 Apply paint in occupied facilities during silent hours only. Schedule operations to approval of Prime Consultant such that painted surfaces will have dried and cured sufficiently before occupants are affected.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.

.2 Provide paint materials for paint systems from single manufacturer.

.3 Only qualified products with E2 or E3 "Environmentally Friendly" rating are acceptable for use on this project.

.4 Conform to latest MPI requirements for all painting work including preparation and priming.

.5 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) in accordance with MPI - Architectural Painting Specification Manual and MPI - Maintenance Repainting Manual "Approved Product" listing.

.6 Provide paint products meeting MPI "Environmentally Friendly" E2 or E3 ratings based on VOC (EPA Method 24) content levels.

.7 Use MPI listed materials having minimum E2 or E3 rating where indoor air quality (odour) requirements exist.

2.2 COLOURS

.1 Submit proposed Colour Schedule to Prime Consultant.

.2 Colour schedule will be based upon selection of five base colours and three accent colours. Final colours by Prime Consultant

2.3 MIXING AND TINTING

.1 Perform colour tinting operations prior to delivery of paint to site, in accordance with manufacturer's written instructions. Obtain

written approval from Prime Consultant for tinting of painting materials.

.2 Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.

.3 Thin paint for spraying in accordance with paint manufacturer's instructions.

.4 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.4 GLOSS/SHEEN RATINGS

.1 Paint gloss is defined as sheen rating of applied paint, in accordance with following values:

	Gloss @ 60 degrees	Sheen @ 85 degrees
Gloss Level 1 - Matte Finish (flat)	Max. 5	Max. 10
Gloss Level 2 - Velvet-Like Finish	Max.10	10 to 35
Gloss Level 3 - Eggshell Finish	10 to 25	10 to 35
Gloss Level 4 - Satin-Like Finish	20 to 35	min. 35
Gloss Level 5 - Traditional Semi-Gloss Finish	35 to 70	
Gloss Level 6 - Traditional Gloss	70 to 85	
Gloss Level 7 - High Gloss Finish	More than 85	

.2 Gloss level ratings of painted surfaces as indicated below.

2.5 EXTERIOR PAINTING

.1 Structural Steel: columns, beams, joists and miscellaneous metal.

.1 EXT 5.1D – Alkyd, gloss level 4 finish.

2. Metal Fabrications: handrails

.1 EXT 5.1E – Waterborne epoxy, gloss level 4 finish.

2.6 EXTERIOR RE-PAINTING

.1 Structural Steel and Metal Fabrications: columns, beams, joists and miscellaneous metal.
  .1 REX 5.1D - Alkyd gloss level 4 finish.

2.7 INTERIOR PAINTING

.1 Structural Steel and Metal Fabrications: columns, beams, joists and miscellaneous metal (except those to receive thin-film intumescent coating – refer to section 07 81 00 – Applied Fireproofing):
  .1 INT 5.1E Alkyd - gloss level 4 finish.

.2 Concrete Block Masonry walls and partitions (excluding existing elevator shaft):
  .1 INT 4.2E Institutional low odor/low gloss - gloss level 4 finish.

.3 Concrete Floors:
  .1 INT 3.2C Epoxy Finish - gloss level 4 finish.

.4 Galvanized Metal: high contact/high traffic areas (doors, frames, railings and handrails, etc.).
  .1 INT 5.3C - Alkyd gloss level 4 finish (over cementitious primer).

.5 Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock" type material, etc.
  .1 INT 9.2M - Institutional low odour/low VOC, gloss level 4 finish.

2.8 INTERIOR RE-PAINTING

.1 Structural Steel and Metal Fabrications: columns, beams, joists and miscellaneous metal.
  .1 RIN 5.1E - Alkyd gloss level 4 finish.

.2 Concrete Ceilings:
  .1 RIN 3.1M Institutional low odor/low VOC - gloss level 1 finish.

.3 Galvanized Metal: high contact/high traffic areas (doors, frames, railings and handrails, etc.).
  .1 RIN 5.3C – Alkyd gloss level 4 finish.

.4 Plaster and Gypsum Board: gypsum wallboard, drywall, "sheet rock" type material, etc.
  .1 RIN 9.2A - Latex gloss level 4 finish.

PART 3 - EXECUTION

3.1 GENERAL

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheet.

.2 Perform preparation and operations for interior painting in accordance with MPI - Architectural Painting Specifications Manual and MPI - Maintenance Repainting Manual except where specified otherwise.

3.2 EXAMINATION

.1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Prime Consultant damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.

.2 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

3.3 PREPARATION

.1 Protection:

.1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by Prime Consultant.

.2 Protect items that are permanently attached such as Fire Labels on doors and frames.

.3 Protect factory finished products and equipment.

.2 Surface Preparation:

.1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.

.2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.

.3 Place "WET PAINT" signs in occupied areas as painting

operations progress. Signs to approval of Prime Consultant.

.3 Clean and prepare surfaces in accordance with MPI - Architectural Painting Specification Manual and MPI - Maintenance Repainting Manual] specific requirements and coating manufacturer's recommendations.

.4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.

.5 Where possible, prime non-exposed surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.
- .1 Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.
- .2 Apply wood filler to nail holes and cracks.
- .3 Tint filler to match stains for stained woodwork.

.6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.

.7 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements.

.8 Touch up of shop primers with primer as specified.

.9 Do not apply paint until prepared surfaces have been accepted by Prime Consultant.

3.4 APPLICATION

.1 Method of application to be as approved by Prime Consultant. Conform to manufacturer's application instructions unless specified otherwise.

.2 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

.3 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.4 Sand and dust between coats to remove visible defects.

.5 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.

.6 Finish closets and alcoves as specified for adjoining rooms.

.7 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.5 MECHANICAL/ELECTRIC AL EQUIPMENT

.1 Paint conduits, piping, hangers, ductwork and other mechanical and electrical equipment exposed in finished areas, to match adjacent surfaces, except as indicated.

.2 Do not paint over nameplates.

.3 Keep sprinkler heads free of paint.

.4 Paint fire protection piping red.

.5 Paint disconnect switches for fire alarm system and exit light systems in red enamel.

.6 Paint natural gas piping yellow.

.7 Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

END OF SECTION

PART 1 - GENERAL

1.1 DELIVERY, STORAGE AND HANDLING

.1 Package or crate, and brace products to prevent damage during shipment and handling. Label packages and crates, and protect finish surfaces from environmental conditions where required.

PART 2 - PRODUCTS

2.1 GENERAL

.1 Incorporate solid wood blocking reinforcing, fastenings and anchorage required products.

2.2 WASHROOM ACCESSORIES

.1 Grab bars (where noted on drawings): Grab bar material and anchorage to withstand downward pull of 2.2 kN. Acceptable material: Watrous type as follows:

- .1 Toilet grab bar GB1 (rear): Existing salvaged and re-used
- .2 Toilet grab bar GB2 (side): #3700-04, finish to be satin stainless steel, 1-1/4" diameter.
- .3 Toilet grab bar GB3 (folding): #3451, finish to be satin stainless steel, 1-1/4" diameter.

.3 Coat hooks shall be Bobrick #B-6827, stainless steel finish. Two per cubby, installed as noted on details

.4 Mirrors: Watrous #0600, 610x915mm, tempered glazing, stainless steel finish.

.5 Toilet Paper Holders: Bobrick #B-2892, one per WC stall.

2.3 WINDOW SHADES

.1 Window Shades shall be Mechoshade 'Mecho /5' Standard Bracket with manual drive and fascia. Finsh shall be clear anodized aluminum.

.2 Shade cloth shall be Mechoshade 'Thermoveil' 1000 Series (5% openness factor), colour by Architect.

2.4 LOCKERS

.1 Lockers shall be Hadrian 'Emperor', 1525mm (60") high x 305mm (12") wide x 460mm (16") deep with integral base and hasp for padlock by others. Colour to be selected by Architect.

2.5 TOILET PARTITIONS

.1 Toilet partitions shall be Hadrian 'Solid Plastic' headrail-braced with stainless steel hardware and continuous hinges. Colour to be selected by Architect.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Provide manufacturer's information and templates required for installation of work of this Section, and assist or supervise, or both, the setting of anchorage devices, and construction of other work incorporated with products specified in this Section in order that they function as intended.

.2 Install work to meet manufacturers' specifications and installation instructions, true, tightly fitted, and level or flush to adjacent surfaces, as suitable for installation.

.3 Include reinforcing, anchorage and mounting devices required for the installation of each product.

.4 Fit joints and junction between components tightly and in true planes, conceal and weld joints where possible.

3.2 PREPARATION

.1 Verify under work of this Section that installed products function properly, and adjust them accordingly to ensure satisfactory operation.

.2 Refinish damaged or defective Work so that no variation in surface appearance is discernible.

END OF SECTION

PART 1: GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with Division 1, General Requirements and all documents referred to herein.

.2 Provide all material and labour required for the completion of the Contract. Breakdown of Work by Section is for guidance only and is not necessarily complete.

.3 Work Furnished and Installed:

i. Piling

1.2 RELATED WORK SPECIFIED ELSEWHERE

.1 Concrete Reinforcement .

.2 Concrete pile caps.

.3 Structural Steel.

1.3 STANDARDS, CODES AND ACTS

.1 Conform with the Ontario Building Code 2006 under Ontario Regulation 350/06 and any applicable acts of any authority having jurisdiction and the following:

i. CSA Standard A23.1-04 - Concrete Materials and Methods of Concrete Construction, Canadian Standards Association.

ii. CAN/CSA-G30.18-M92 - Billet-Steel Bars for Concrete Reinforcement, Canadian Standards Association.

iii. CSA Standard G40.20-M98 - General Requirements for Rolled or Welded Structural Quality Steel, Canadian Standards Association.

iv. CSA Standard G40.21-M04 - Standard Quality Steel, Canadian Standards Association.

.2 Where there are differences between the specifications, drawings, codes, standards or acts, the most stringent shall govern.

1.4 TOLERANCES

.1 Install piles within the following tolerances:

i. Out of plumb - 2% of pile length.

ii. Location at cut-off - maximum 75 mm from position on plan.

iii. Cut-off elevation - maximum 75 mm from elevation shown.

iv. Pile shafts shall not be less than the diameter specified.

.2 These tolerances are acceptable with regard to structural requirements. Interfacing tolerances may not be compatible with the above. Review and coordinate interfacing tolerances so that the various elements come together properly.

1.5 GEOTECHNICAL INVESTIGATION

.1 A geotechnical investigation of the site has been conducted by Exp Services Ltd. Their report dated April 21, 2017 is available for study at the office of the Consultant.

.2 This information is given solely as a guide. No responsibility is accepted by the Owner or Consultant for its correctness, nor shall its accuracy affect the provisions of the contract.

.3 Read this report, visit the site and thoroughly familiarize yourself with surface and subsurface conditions.

1.6 DESIGN OF PILES

.1 The design has been based upon the use of HP310x110 piles of 1,970 kN capacity each.

.2 A HP310x100 pile with a maximum capacity of 1,970 kN each has been shown on the drawings. In addition, the following assumptions have been made in the pile layout and pile cap design:

i. Minimum depth of pile is 303.;

ii. Minimum centre to centre distance of piles; refer to geotechnical engineer.

.3 Design, provide and install piles with at least a 1,970 kN safe design capacity in accordance with the above minimum assumptions.

1.7 ALTERNATIVE PROPOSALS

.1 If the Contractor wishes to provide an alternative pile type or vary pile diameter or spacing, he shall provide the Consultant for approval, with complete proposals, including calculations.

.2 Any variation to pile caps or grade beams required thereby shall be designed and provided by the Contractor at Contractor's expense and the design shall be submitted to the Consultant for approval along with the information noted above.

.3 Alternative pile types will not necessarily be approved by the Consultant.

.4 The Contractor shall state in tender the type of pile upon which their tender is based.

.5 Include a sum of $9,750 for Consultant's checking of the alternative pile system design and 15 working days.

1.8 SUBMITTALS

.1 Erection and Fabrication Drawings

i. Submit erection and fabrication drawings for review by the Consultant.

ii. The structural drawings shall not be reproduced, in whole or in part, for use as erection and fabrication drawings.

iii. Amongst other items, show the following:

Fully dimensioned layout of piles;

Cut-off elevations;

Assumed founding elevations;

Design load of each pile and driving criteria;

Pile materials, sizes and weights per metre;

Splice and tip reinforcing details.

iv. In advance of construction, provide for the Consultant's review the following:

(i) Complete pile driving information, including type of pile driving hammer, weight of striking part of ram and energy developed;

(ii) Size and thickness of the driving tubes;

(iii) Number of blows to expel the last batch of 0.15 m³. of concrete in the base and the hammer energy developed while doing so for each pile capacity;

(iv) Permanent casing outside diameter and wall thickness for each pile capacity;

(v) Design calculations justifying pile base capacities;

(vi) Shop drawings showing piling layout, pile sizes and load capacity, reinforcement in piles, projecting dowels, cut - off elevations;

(vii) Concrete mix designs for each class of concrete certified by an independent inspection company as meeting the requirements of the specifications and drawings.

.2 Certificates

i. Provide certification from an approved Independent Inspection and Testing Company that materials used for the piling work meet, as a minimum, the values stated in the pile design calculations reviewed by the Consultant. The cost of certification of materials shall be borne by the Contractor.

PART 2: PRODUCTS

2.1 MATERIALS

.1 Concrete: Conform to CSA Standard A23.1, the 28 day compressive strength is indicated on the drawings. The concrete for the pile base shall be zero slump concrete containing not less than 310 kg of cement per cubic metre of concrete.

.2 Reinforcing Steel: Deformed steel conforming to CSA Standards of G30 series and to the material specification shown on the drawings.

.3 Steel Piles, including Splices, Shoes and Caps: Conform to CSA StandardG40.20/G40.21; Grade 300W.

.4 HP Piles: Conform to CSA Standard G40.20/G40.21; Grade 350W.

PART 3: EXECUTION

3.1 LAYOUT

.1 Lines and levels shall be supplied by the Contractor. Check the lines and levels supplied and after checking, this Sub - contractor shall be responsible for their correctness and for their correct observance. Responsibility for the correctness of reference lines and bench marks shall rest with the Contractor.

.2 Commencement of driving of each pile shall be construed as acceptance of the line and level supplied.

.3 From the reference line and bench mark established for this contract, locate each pile and establish its elevation in order to complete the piling to the lines and levels shown on the drawings and to the specified tolerances.

3.2 LOAD TESTS

.1 General

i. Perform load tests on 2 piles for each pile size and type specified. The first load test shall be performed in order to prove the theoretical pile design capacity by testing one of the first six piles driven of each pile size and type specified. The piles to be tested will be chosen by the Consultant. Re-tap a minimum of 10% of the piles in order to confirm the initial set criteria.

ii. If the test pile does not meet the stipulated design capacity, drive piles to a suitably higher set (or deeper penetration) or use a lower pile design capacity and thereby increase the number of piles or employ such other alternatives such that the design loads will be safely supported by the pile system. Any additional costs to grade beams and/or pile caps and redesign of same, shall be the responsibility of the Contractor. After the design capacity of piles has been proven and as pile driving proceeds, the Consultant will select the second pile to be tested.

iii. If a pile load test is not successful, carry out one or more additional load tests until the test is successful. Additional load tests required due to test failure shall be at the Contractor's expense.

.2 Acceptance Criteria

i. Should results of any test pile show net settlement in excess of 0.25 mm per tonne of test load, a further test shall be carried out by reloading the pile gradually to a test load which will produce a maximum net settlement not in excess 0.25 mm per tonne of test load.

ii. The allowable working load of the type of pile involved shall then be established at ½ the last test load and additional piles shall be driven at the Contractor's cost as directed by the Consultant wherever required to make up for the reduced allowable working load.

3.3 DRIVING

.1 General

i. Drive piles to safely develop the design loads shown.

ii. Drive piles to end bearing of at least 1.0 to 1.5m metres into the stratum described in the geotechnical report as bedrock.

iii. The contractor is to have the geotechnical engineer perform a “WEAP” analysis based on the selected piles. The WEAP analysis will determine the following: Drive piles to a terminal set not less than XXX blows/cm for the last XXX cm of driving using a hammer energy of not less than XXX (“the rated energy of the hammer should be limited to a value of 6×10^6 J (Newton metre) times the cross-sectional area of the pile”) joules per blow.

iv. Drive all piles to at least the same terminal set as that determined as being sufficient to develop the design load on the test pile.

v. Provide shells with sufficient strength and rigidity to permit them being driven and not to be distorted by soil pressure or the driving of adjacent piles. Shells shall be sufficiently water - tight to exclude water during placing of concrete.

vi. Driving shall be done with fixed leads which will hold the pile firmly in position and alignment and in axial alignment with the hammer.

vii. Driving of each pile shall be continuous without intermission until the pile has been driven to final resistance. The tops of piles shall be cut off true and level at the elevations indicated on the drawings. All portions battered or buckled or damaged or imperfect in any way shall be removed.

viii. Drive individual piles in pile clusters in such a way as to minimize the generation of increased driving resistance by compaction and displacement of the soil.

ix. At the termination of driving of each pile, take readings of the elevation of the top of the pile. On the completion of all piling in a cluster or nearby clusters, take elevation readings again to determine whether any heaving has occurred. If heaving has occurred, redrive the pile to the proper resistance or proceed as the Consultant directs.

x. Excessive heaving of caisson piles may be a cause for rejection.

xi. Jetting will only be permitted with the approval of the Consultant.

xii. Note that the geotechnical report indicates that in some areas of the site a perched water table exists in the silty sand stratum. Loss of fines may damage the soil capacity to support the loads of slab on grade or other soil bearing items. Carry out the work so that loss of fines which may jeopardize the soils load bearing capacity is prevented.

xiii. The Contractor shall be responsible for additional cost of pile caps or grade beams arising out of misplaced piles which the Consultant may accept as load carrying.

xiv. Note the location of piles close to adjacent existing construction. Use pile driving equipment which can drive the piles in these locations without damaging the existing construction.

xv. The inside of each shell shall be inspected by the Consultant before concreting. If any shell is found damaged or distorted to an extent likely to impair the

capacity of the pile, such pile shall be rejected as "defective" and a substitute pile driven as directed by the Consultant.

.2 Obstructions

i. As indicated on the soil investigation report, the till contains a certain percentage of boulders. The Contractor shall remove these boulders or drill through them in order to drive the piles to rock.

ii. In a case where an obstruction is encountered above the bearing stratum, an attempt shall be made to drive through such obstruction.

iii. If the Consultant is satisfied that a pile cannot be driven down to sound rock at the location specified because of obstructions and if the Consultant is not satisfied that the specified capacity has been obtained, the pile may be abandoned at the Consultant's discretion and shall be paid for as a contract pile.

iv. Quote a price for each complete additional pile. This price shall form the basis for extras should it be found necessary to add piles because of obstructions encountered.

3.4 FIELD RECORDS

.1 Keep a record covering each pile installed. The record shall be jointly certified by the Contractor and the inspection company.

.2 Records shall indicate the following:

i. Pile number and identification as to location;

ii. Tip elevation, cut - off elevation and length of pile, as installed;

iii. Terminal set;

iv. Elevation readings of butt end at completion of installation and subsequent to installing adjacent piles. A record of redriving, if necessary;

v. Record of pile plumbness, position relative to designated position and verification that these are within tolerable limits;

vi. Remarks concerning unusual driving conditions, obstructions, damage to piles caused by driving or other similar data.

3.5 PAYMENT

.1 For purposes of tendering, assume the following estimated total length of piling for each shaft diameter:

i. The quantities indicated have been estimated from information shown on the drawings and from the soils investigation.

ii. If the actual lengths of piles installed differ from the total assumed length, the Contractor shall be reimbursed for the extra cost of such work or shall credit the Owner for deletions based upon the single unit price quoted for each pile shaft diameter plus the quoted markup for overhead and profit if a net extra is involved.

iii. The actual total length of piling of each shaft diameter will be the sum of the distance between refusal (founding elevation) and cut - off elevation for each pile of that diameter.

iv. Quote a single unit price for each pile shaft diameter for extra or deleted length plus a percentage markup for overhead or profit if a net extra is involved.

v. Additional piles of capacity 1,970 kN may be required. Quote a single unit price per unit length for each pile capacity. Unit price shall include base, shaft, layout, overhead and profit and all other related items required to complete the piles.

3.6 ASSUMED FOUNDING ELEVATION

.1 For purposes of tendering, assume that piles will be founded at elevations shown.

.2 Note that these founding elevations are based on driving the piles 1.0 to 1.5m below the surface of bedrock. If suitable bearing is not found at this elevation, the length of pile may be extended, but only with the written permission of the Consultant.

.3 If final founding elevations differ from the assumed founding elevation, the Contractor shall be reimbursed for the extra cost of such work or shall credit the Owner for deletions based upon the single unit price quoted for each size of pile plus the quoted markup for overhead and profit if a net extra is involved.

.4 Extras will be paid only if upon excavating to the assumed founding elevation, it is found that conditions do not meet the requirements set forth but for no other reason. No extras will be paid if the caissons are lowered due to agencies within the control of the Contractor such as weakening of the rock through the action of ground - water, inadequate protection from weather, construction activity or over-excavation.

.5 Quote a single unit price for each pile size for extra or deleted length plus a percentage markup for overhead and profit if a net extra is involved.

.6 Unit price shall include the cost of all dewatering, shoring, lining, concrete, reinforcing steel and all other items relating to caisson work.

.7 Extras or credits shall be calculated by establishing the total net increase or decrease in pile length and then multiplying by the appropriate unit price.

END OF SECTION 31 62 00

PART 1 - GENERAL

1.1 QUALITY ASSURANCE

.1 Subcontractor qualifications:

.1 Paving Work shall be done only by skilled workers, with suitable machinery, supervised by foremen experienced in type of Work specified.

.2 Execute the Work of this Section by a Subcontractor who has equipment adequate for Project, and skilled tradesmen so that Work is performed expeditiously; and is known to have been responsible for satisfactory installations similar to that specified during a period of a least five (5) years.

.3 Materials and mixes that vary to a minor degree from those specified in this Section will be acceptable if they are based on standards of the engineering department of a jurisdiction having authority at the location of the Project and which are approved.

.2 Perform Work on public property in accordance with design and material requirements of applicable local authorities which are imposed in addition to requirements specified in this Section.

1.2 DELIVERY, STORAGE AND HANDLING

.1 Commence placing and perform compaction of granular base courses only when subgrade temperature is at least 2° C and rising.

.2 Commence laying of asphalt binder courses only when base surfaces are at least 2° C, and the temperature is rising.

.3 Commence laying of asphalt surface courses only when binder course surfaces are completely dry, at least 7° C and the temperature rising.

.4 Place concrete only when base and air temperature are over 4° C during placing and until concrete has cured.

.5 Suspend paving operations if temperature drops below specified minimums.

1.3 WARRANTY

.1 Provide a labour, material and workmanship warranty against defects such as ponding, cracking in surfaces, excess settlement areas, for a period of two (2) years.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Asphalt Cement: to meet specified requirements of OPSS and consisting of surface course, in "HL" types as specified herein.
- .1 Asphalt Cement: conforming to Specification Designation 85/100 in Table 1 of OPSS 1101.
- .2 Asphalt Primer: Liquid asphalt emulsion, slow drying for spray or brush application.

.2 Asphalt aggregates:
- .1 Fine course aggregate: to meet specified requirements of OPSS 1003

.2 Mineral filler: dry limestone or other mineral dust, consistently graded as follows:
- .1 Passing 600 urn sieve: 100%.
- .2 Passing 250 urn sieve: not less than 80%.

.3 Joint painting Materials: emulsified asphalt to meet specified requirements of CAN2-16.2-77, Type 3 Slow Setting (SS-I).

.4 Sealer, expansion joints: rubberized asphalt expansion joint sealer as prepared for use on foot traffic surfaces.

.5 Granular fill material: granular material to OPSS Form 1010, to types as indicated in paving schedule. Material shall contain not more than 5% passing 200 sieve.

PART 3 - EXECUTION

3.1 PLACING BASE COURSES

.1 In areas of fill, bring sub-grade to required elevation with compacted fill.

.2 In re-graded areas, compact sub-grade.

.3 Spread base course aggregate in 75 mm (3") to 100 mm (4") layers and shape accurately, finish by blading, and roll to cross-section and profile required by Drawings and Specifications.

.4 Measure specified base course thicknesses after compaction.

.5 At asphalt paving use 9 tonne steel-wheeled roller, or equivalent

vibrating roller. Sprinkle water on base course ahead of compacting machine to aid compaction or reduce dust nuisance, or both.

3.2 PLACING OF FINISH PAVEMENTS

.1 General:

.1 Finish pavement surfaces to elevations indicated on Drawings.

.2 Maintain accuracy of elevations to within specified tolerances.

.3 Ensure that drainage is effected from all areas without formation of puddles.

.4 Inform Consultant if slopes to drains are less than 1% before commencing Work in order that corrective methods may be considered.

.2 Placing of Asphalt:

.1 Lay asphalt mixture only on dry bases from which foreign matter has been removed.

.2 Deliver mixtures to site at minimum workable temperature. After spreading and before initial rolling, temperature of mixture shall be no less than 112° C.

.3 Control spreader alignment by positive means such as, string lines set from grade stakes or alignment stakes, or both. Place these controls on each side of pavement, or utilize other approved methods so that spreader is not guided by edges of preceding courses.

.4 Ensure that containers carrying fuel oil, for cleaning of shovels, rakes or brooms, will not drip of splash oil on freshly laid asphalt.

.5 Adjust course widths so that center joints of successive course do not coincide.

.3 Finishing asphalt pavement edges:

.1 Trim exposed edges to neat straight lines.

.2 Correct alignment and grade irregularities at edges of pavement by addition or removal of asphalt mixture before rolling.

.4 Joints in asphalt pavement:

.1 Make transverse and longitudinal joints, and joints between new and old Work, precisely and carefully.

.2 Make joints by keying or butting and bond them well.

.3 Ensure that a bond is provided between new and old pavements, or between Work of successive days, by cutting through full depth of older course at a 45° angle to expose a clean vertical surface.

.4 Clean and remove loose or broken material from vertical surface.

.5 Heat existing asphalt and apply tack coat on edge surfaces that have been placed within twenty-four (24) hours of placing of succeeding asphalt.

.6 Do not scatter excess material derived from joint making on freshly laid asphalt. Remove it from site.

3.3 ASPHALT PAVING SCHEDULE

.1 New asphalt as noted on drawings:

.1 Remove all topsoil and unsuitable fill materials.

.2 Proof-roll subgrade, compact upper 305 mm (12") layer to 98% SPMDD. Excavate soft or spongy areas and replace with approved backfill compacted to 98% SPMDD.

.3 Raise subgrade with clean approved fill, compacted to 95% SPMMD in 200 mm (8") layers. Final excavation shall be 280mm below grade.

.4 Granular sub-base course: 125mm (5") of 50 mm (2") crusher run limestone.

.5 Granular base course: 75mm (3") of 19 mm (3/4") crusher run limestone.

.6 Asphalt base course: 50mm (2") HL-6 asphalt.

.7 Asphalt finish course: 25mm (1") HL-3A asphalt.

.2 Lay asphalt paving and grade subgrade to a minimum slope of 2% to catch basins (grades shall not exceed 5%) unless otherwise indicated. Top of grates of catch basins' are to be adjusted as necessary to achieve 2% minimum gradients.

3.4 COMPACTION SCHEDULE

.1 Compact asphaltic concrete paving courses to 97% Marshal density.

.2 Compact granular courses to 98% Standard Proctor maximum dry density.

.3 Proof roll and compact subgrade to 98% Standard Proctor density.

3.5 FIELD QUALITY CONTROL

.1 An inspection and testing company will be selected to verify that compaction of granular base courses conform to specified requirements.

.2 Payment for inspection and testing will be by Cash Allowance.

3.6 ADJUSTMENT AND CLEANING

.1 Replace defective asphalt pavements with patches cut into pavement, in rectangular areas, and with joints made as specified.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Materials and installation for chain link fences and gates.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

1.3 MEASUREMENT PROCEDURES

.1 Not Used.

1.4 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).
- .1 ASTM A 53/A 53M-02, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
- .2 ASTM A 90/A 90M-01, Standard Test Method for Weight of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.
- .3 ASTM A 121-99, Standard Specification for Zinc-Coated (Galvanized) Steel Barbed Wire.
- .4 A653/A653M-03, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .5 ASTM C 618-03, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
- .6 ASTM F 1664-01, Standard Specification for Poly(Vinyl Chloride) (PVC)-Coated Steel Tension Wire Used with Chain-Link Fence.

.2 Canadian General Standards Board (CGSB).
- .1 CAN/CGSB-138.1-96, Fabric for Chain Link Fence.
- .2 CAN/CGSB-138.2-96, Steel Framework for Chain Link Fence.
- .3 CAN/CGSB-138.3-96, Installation of Chain Link Fence.
- .4 CAN/CGSB-138.4-96, Gates for Chain Link Fence.
- .5 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.

.3 Canadian Standards Association (CSA International).
- .1 CAN/CSA-A23.1/A23.2-00(August 2001), Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
- .2 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of

Irregularly Shaped Articles.

.3 CAN/CSA-A3000-[98(R2002)], Cementitious Materials Compendium. Includes:
.1 CAN/CSA-A23.5-98, Supplementary Cementing Materials

.4 Department of Justice Canada (Jus).
.1 Canadian Environmental Protection Act (CEPA), 1999, c. 33.

.5 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
.1 Material Safety Data Sheets (MSDS).

.6 The Master Painters Institute (MPI) - Architectural Painting Specification Manual - March 1998.
.1 MPI # 18, Organic Zinc Rich Primer.

.7 Transport Canada (TC).
.1 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.

1.5 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit WHMIS MSDS - Material Safety Data Sheets

.3 Shop Drawings to indicate: Fencing layout, location of posts, elevations, accessories and connection to existing fencing.

1.6 HEALTH AND SAFETY

.1 Not Used.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Store material onsite so as not to damage existing vegetation, site furnishings, fencing to remain and playground structure.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper, plastic and corrugated cardboard packaging material in appropriate on-site bins.

.4 Place materials defined as hazardous or toxic in designated containers.

.5 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal regulations.

.7 Divert unused metal and wiring materials from landfill to metal recycling facility.

.8 Divert unused concrete materials from landfill to local quarry facility.

.9 Unused paint or coating material must be disposed of at official hazardous material collections site.

.10 Do not dispose of unused paint material into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.

.11 Fold up metal banding, flatten and place in designated area for recycling.

1.9 SUSTAINABLE REQUIREMENTS

.1 Not Used.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Concrete mixes and materials: in accordance with CAN/CSA-A23.1.
- .1 Nominal coarse aggregate size: 20-5.
- .2 Compressive strength: 20 MPa minimum at 28 days.
- .3 Additives: fly ash to CAN/CSA-A23.5, ASTM C 618.

.2 Chain-link fence fabric: to CAN/CGSB-138.1.
- .1 Type: 6gauge black vinyl coated wire, 38x38mm (1.5”x1.5”) mesh.
- .2 Height of fabric: as noted on drawings

.3 Posts, braces and rails: to CAN/CGSB-138.2, galvanized steel pipe. Dimensions as indicated.
- .1 Type: Schedule 40.
- .2 Finish: Finish on posts, top, bottom, middle rail and fittings to be black gloss enamel by powder coat application. All surfaces to be Chemically cleaned and

treated prior to coating with parker bonderite and chlorothene solvent or approved equals. Powder coating must be a polyester 2000 series, thickness of 4-5 mils by electrostatic process, oven-cured to a smooth and Even surface.

.4 Top and bottom tension wire: to CAN/CGSB-138.2, single strand, vinyl coated steel wire.

.5 Tie wire fasteners: steel wire vinyl coated.

.6 Tension bar: to ASTM A 653/A 653M, 5 x 20 mm minimum galvanized steel.

.7 Fittings and hardware: to CAN/CGSB-138.2, galvanized steel.
- .1 Tension bar bands: 3 x 20 mm minimum galvanized steel or 5 x 20 mm minimum aluminum.
- .2 Post caps to provide waterproof fit, to fasten securely over posts and to carry top rail.

.8 Organic zinc rich coating: to CAN/CGSB-1.181, MPI #18.

2.2 FINISHES

.1 Galvanizing:
- .1 For chain link fabric: to CAN/CGSB-138.1 Grade 2.
- .2 For pipe: 550g/m^2 minimum to ASTM A 90.
- .3 For barbed wire: to ASTM A 121, Class 2 CAN/CGSB-138.2.
- .4 For other fittings: to CAN/CSA-G164.

.2 Aluminum coating:
- .1 For barbed wire: to ASTM A 121, Class 2.

.3 Vinyl coating: to ASTM F 1664.
- .1 0.045mm dry film thickness minimum.

PART 3 - EXECUTION

3.1 GRADING

.1 Remove debris and correct ground undulations along fence line to obtain smooth uniform gradient between posts.
- .1 Provide clearance between bottom of fence and ground surface of 50mm.

3.2 ERECTION OF FENCE

.1 Erect fence along lines as directed by Prime Consultant and to CAN/CGSB-138.3.

.2 Excavate post holes to minimum 1220mm depth below grade x 300mm diameter.

.3 Space line posts 2.44m apart, measured parallel to ground surface.

.6 Install corner post where change in alignment exceeds 10 degrees.

.7 Install end posts at end of fence and at buildings.
- .1 Install gate posts where new fence meets existing.

.8 Place concrete in post holes then embed posts into concrete to minimum 1220mm depth below grade.
- .1 Extend concrete 50mm above ground level and slope to drain away from posts.
- .2 Brace to hold posts in plumb position and true to alignment and elevation until concrete has set.

.9 Do not install fence fabric until concrete has cured minimum of 5 days.

.10 Install brace between end and gate posts and nearest line post, [placed in centre of panel and parallel to ground surface] [at inclination as indicated].
- .1 Install braces on both sides of corner and straining posts in similar manner.

.11 Install overhang tops and caps.

.12 Install top rail between posts and fasten securely to posts and secure waterproof caps and overhang tops.

.13 Install bottom tension wire, stretch tightly and fasten securely to end, corner, gate and straining posts with turnbuckles and tension bar bands.

.14 Lay out fence fabric. Stretch tightly to tension recommended by manufacturer and fasten to end, corner, gate and straining posts with tension bar secured to post with tension bar bands spaced at 300mm intervals.
- .1 Fabric to be installed outside of posts
- .2 Knuckled selvedge at bottom.
- .3 Twisted selvedge at top.

.15 Secure fabric to top rails, line posts and bottom tension wire with tie wires at 450mm intervals.

.1 Give tie wires minimum two twists.
.2 All cut wires are located outside the perimeter of fenced-in area shown on drawings.

3.3 INSTALLATION OF GATES

.1 Not Used.

3.4 VERIFICATION

.1 Not Used.

3.5 OPERATIONAL REQUIREMENTS

.1 Operational requirements to include:
.1 Cleaning materials and schedules.
.2 Repair and maintenance materials and instructions.

3.6 TOUCH UP

.1 Clean damaged surfaces with wire brush removing loose and cracked coatings. Apply two coats of organic zinc-rich paint to damaged areas.
.1 Pre-treat damaged surfaces according to manufacturers' instructions for zinc-rich paint.

3.7 CLEANING

.1 Clean and trim areas disturbed by operations.
.1 Dispose of surplus material and replace damaged turf with sod, repair damaged asphalt and replace displaced mulch as directed by Prime Consultant.

END OF SECTION

Ontario Association of Architects

The following supplementary conditions to the Stipulated Price Contract -- CCDC 2, 2008 have been developed in consultation and agreement with the Ontario General Contractors Association (OGCA) and are in alignment with supplementary conditions that have been established previously in consultation with specific owner groups and industry partners.

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

RECOMMENDED SUPPLEMENTARY CONDITIONS FOR THE STIPULATED PRICE CONTRACT – CCDC 2, 2008

August 11, 2009 *(July 7, 2009 version revised to place all defined terms in italics)*

The Standard Construction Document for Stipulated Price Contract, 2008 English version, consisting of the Agreement Between *Owner* and *Contractor*, Definitions, and General Conditions of the Stipulated Price Contract, Parts 1 to 12 inclusive, governing same is hereby made part of these *Contract Documents*, with the following amendments, additions and modifications. Where these amendments, additions, and modifications specifically reference a change to the Agreement, Definitions, or General Conditions, these amendments, additions and modifications shall govern.

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

Delete Article A-6.1 and substitute new article 6.1:

6.1 *Notices in Writing* between the parties or between them and the *Consultant* shall be considered to have been received by the addressee on the date of receipt if delivered by hand or by commercial courier or if sent during normal business hours by fax and addressed as set out below. Such *Notices in Writing* will be deemed to be received by the addressee on the next business day if sent by fax after normal business hours or if sent by overnight commercial courier. Such *Notices in Writing* will be deemed to be received by the addressee on the fifth *Working Day* following the date of mailing, if sent by pre-paid registered post, when addressed as set out below. An address for a party may be changed by *Notice in Writing* to the other party setting out the new address in accordance with this Article.

DEFINITIONS

Add the following definition:

19a. Submittals

Submittals are documents or items required by the *Contract Documents* to be provided by the *Contractor*, such as:

- *Shop Drawings*, samples, models, mock-ups to indicate details or characteristics, before the portion of the *Work* that they represent can be incorporated into the *Work*; and
- As-built drawings and manuals to provide instructions to the operation and maintenance of the *Work*.

1 GENERAL

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

GC 1.1 CONTRACT DOCUMENTS

.1 Add to the end of subparagraph 1.1.2.2

Except where the *Consultant* shall be indemnified as a third party beneficiary as provided in subparagraphs 9.2.7.4, 9.5.3.4 and in 12.1.3.

.2 Add new subparagraph 1.1.7.5:

1.1.7.5 In case of discrepancies, noted materials and annotations shall take precedence over graphic indications in the *Contract Documents.*

GC 2.2 ROLE OF THE CONSULTANT

.1 Add at the end of paragraph 2.2.9. "The *Owner* and the *Contractor* shall waive any claims against the *Consultant* arising out of the making of such interpretations and findings made in accordance with paragraphs 2.2.7., 2.2.8. and 2.2.9".

.2 Delete the comma after the word "*submittals*" and add the words "which are provided" before the words "in accordance" in paragraph 2.2.14.

GC 2.4 DEFECTIVE WORK

.1 Add new subparagraphs 2.4.1.1 and 2.4.1.2:

2.4.1.1 The *Contractor* shall rectify, in a manner acceptable to the *Owner* and the *Consultant*, all defective work and deficiencies throughout the *Work*, whether or not they are specifically identified by the *Consultant*.

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

GC 3.1 CONTROL OF THE WORK

.1 Add new paragraph 3.1.3:

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

GC 3.4 DOCUMENT REVIEW

.1 Delete paragraph 3.4.1 in its entirety and substitute new paragraph 3.4.1:

3.4.1 The *Contractor* shall review the *Contract Documents* and shall report promptly to the *Consultant* any error, inconsistency or omission the *Contractor* may discover. Such review by the *Contractor* shall comply with the standard of care described in paragraph 3.14.1 of the *Contract*. Except for its obligation to make such review and report the result, the *Contractor* does not assume any responsibility to the *Owner* or to the *Consultant* for the accuracy of the *Contract Document*s. The *Contractor* shall not be liable for damage or costs resulting from such errors, inconsistencies, or omissions in the *Contract Documents*, which the *Contractor* could not reasonably have discovered. If the *Contractor* does discover any error, inconsistency or omission in the *Contract Documents,* the *Contractor* shall not proceed with the work affected until the *Contractor* has received corrected or missing information from the *Consultant*.

GC 3.8 LABOUR AND PRODUCTS

.1 Add new paragraph 3.8.4:

3.8.4 The *Contractor* is responsible for the safe on-site storage of *Products* and their protection (including *Products* supplied by the *Owner* and other contractors to be installed under the *Contract*) in such ways as to avoid dangerous conditions or contamination to the *Products* or other persons or property and in locations at the *Place of the Work* to the satisfaction of the *Owner* and the *Consultant*. The *Owner* shall provide all relevant information on the *Products* to be supplied by the *Owner*.

GC 3.10 SHOP DRAWINGS

.1 Add the words "AND OTHER SUBMITTALS" to the Title after SHOP DRAWINGS.

.2 Add "and *Submittals*" after the words "*Shop Drawings*" in paragraphs 3.10.1, 3.10.2, 3.10.4, 3.10.7, 3.10.8, 3.10.8.2, 3.10.9, 3.10.10, 3.10.11, and 3.10.12.

.3 Delete 3.10.3 in its entirety and substitute new paragraph 3.10.3

GC.3.10.3 Prior to the first application for payment, the *Contractor* and the *Consultant* shall jointly prepare a schedule of the dates for submission and return of *Shop Drawings* and any *Submittals*.

.4 Delete the words *"*with reasonable promptness so as to cause no delay in the performance of the *Work"* and replace with *"*within 10 working days or such longer period as may be reasonably required*"* in paragraph 3.10.12.

GC 3.14 PERFORMANCE BY CONTRACTOR

.1 Add new General Condition 3.14.1

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

.2 Add new General Condition 3.14.2

3.14.2 The *Contractor* further represents, covenants and warrants to the *Owner* that:

.1 The personnel it assigns to the *Project* are appropriately experienced;

.2 It has a sufficient staff of qualified and competent personnel to replace its designated supervisor and project manager, subject to the *Owner's* approval, in the event of death, incapacity, removal or resignation.

GC 4.1 CASH ALLOWANCES

.1 Delete paragraph 4.1.4 in its entirety and substitute new paragraph 4.1.4:

4.1.4 Where costs under a cash allowance exceed the amount of the allowance, unexpended amounts from other cash allowances shall be reallocated at the *Consultant's* direction to cover the shortfall.

.2 Delete paragraph 4.1.5 in its entirety and substitute new paragraph 4.1.5:

4.1.5. The net amount of any unexpended cash allowances, after providing for any reallocations as contemplated in paragraph 4.1.4, shall be deducted from the *Contract Price* by *Change Order*.

.3 Delete paragraph 4.1.7 in its entirety and substitute new paragraph 4.1.7.

4.1.7 At the commencement of the *Work*, the *Contractor* shall prepare for the review and acceptance of the *Owner* and the *Consultant,* a schedule indicating the times, within the construction schedule referred to in GC 3.5, that items called for under cash allowances and items that are specified to be *Owner* purchased and *Contractor* installed or hooked up are required at the site to avoid delaying the progress of the *Work*.

.4 Add new paragraph 4.1.8:

4.1.8 The *Owner* reserves the right to call, or to have the *Contractor* call, for competitive bids for portions of the *Work*, to be paid for from cash allowances.

GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

.1 Add new subparagraph 6.4.5:

6.4.5 The *Contractor* confirms that, prior to bidding the *Project*, it carefully investigated the *Place of the Work* and applied to that investigation the degree of care and skill described in paragraph 3.14.1, given the amount of time provided between the issue of the bid documents and the actual closing of bids, the degree of access provided to the *Contractor* prior to submission of bid, and the sufficiency and completeness of the information provided by the *Owner*. The *Contractor* is not entitled to compensation or to an extension of the *Contract Time* for conditions which could reasonably have been ascertained by the *Contractor* by such careful investigation undertaken prior to the submission of the bid.

GC 6.5 DELAYS

.1 Delete the period at the end of paragraph 6.5.1, and substitute the following words:

", but excluding any consequential, indirect or special damages."

.2 Add new subparagraph 6.5.6.

6.5.6 If the *Contractor* is delayed in the performance of the *Work* by an act or omission of the *Contractor* or anyone employed or engaged by the *Contractor* directly or indirectly, or by any cause within the *Contractor's* control, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may decide in consultation with the *Contractor*. The *Owner* shall be reimbursed by the *Contractor* for all reasonable costs incurred by the *Owner* as the result of such delay, including all services required by the *Owner* from the *Consultant* as a result of such delay by the *Contractor* and, in particular, the cost of the *Consultant's* services during the period between the date of *Substantial Performance of the Work* stated in Article A-1 herein as the same may be extended through the provisions of these General Conditions and any later, actual date of *Substantial Performance of the Work* achieved by the *Contractor*.

GC 6.6 CLAIMS FOR A CHANGE IN CONTRACT PRICE

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

GC 8.2 NEGOTIATION, MEDIATION AND ARBITRATION

.1 Add the following new paragraphs 8.2.9, 8.2.10, 8.2.11, 8.2.12., 8.2.13., and 8.2.14.

8.2.9 Within five days of receipt of the notice of arbitration by the responding party under paragraph 8.2.6, the *Owner* and the *Contractor* shall give the *Consultant* a written notice containing:

a) a copy of the notice of arbitration
b) a copy of supplementary conditions 8.2.9 to 8.2.14 of this *Contract*, and;
c) any claims or issues which the *Contractor* or the *Owner*, as the case may be, wishes to raise in relation to the *Consultant* arising out of the issues in dispute in the arbitration

8.2.10 The *Owner* and the *Contractor* agree that the *Consultant* may elect, within ten days of receipt of the notice under paragraph 8.2.9, to become a full party to the arbitration under paragraph 8.2.6 if the *Consultant*:

a) has a vested or contingent financial interest in the outcome of the arbitration;
b) gives the notice of election to the *Owner* and the *Contractor* before the arbitrator is appointed;
c) agrees to be a party to the arbitration within the meaning of the rules referred to in paragraph 8.2.6, and,
d) agrees to be bound by the arbitral award made in the arbitration.

8.2.11 If an election is made under paragraph 8.2.10, the *Consultant* may participate in the appointment of the arbitrator and, notwithstanding the rules referred to in paragraph 8.2.6, the time period for reaching agreement on the appointment of the arbitrator shall begin to run from the date the respondent receives a copy of the notice of arbitration.

8.2.12 The arbitrator in the arbitration in which the *Consultant* has elected under paragraph 8.2.10 to become a full party may:

a) on application of the *Owner* or the *Contractor*, determine whether the *Consultant* has satisfied the requirements of paragraph 8.2.10, and;
b) make any procedural order considered necessary to facilitate the addition of the *Consultant* as a party to the arbitration.

8.2.13 The provisions of paragraph 8.2.9 shall apply mutatis mutandis to written notice to be given by the *Consultant* to any sub-consultant;

8.2.14 In the event of notice of arbitration given by the *Consultant* to a sub-consultant, the sub-consultant is not entitled to any election with respect to the proceeding as outlined in 8.2.10, and is deemed to be bound by the arbitration proceeding.

GC 9.1 PROTECTION OF WORK AND PROPERTY

.1 Delete subparagraph 9.1.1.1 in its entirety and substitute new subparagraph 9.1.1.1:

9.1.1.1 errors in the *Contract Documents* which the *Contractor* could not have discovered applying the standard of care described in paragraph 3.14.1;

.2 Delete paragraph 9.1.2 in its entirety and substitute the following new paragraph 9.1.2:

9.1.2 Before commencing any *Work*, the *Contractor* shall determine the locations of all underground utilities and structures indicated in the *Contract Documents*, or that are discoverable by applying to an inspection of the *Place of the Work* the degree of care and skill described in paragraph 3.14.1.

GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

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

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

.2 Add "and the *Consultant*" after the word "*Contractor*" in subparagraph 9.2.7.4.

.3 Add to paragraph 9.2.8 after the word "responsible", the following new words:

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

GC 9.5 MOULD

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

GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

.1 Delete from the first line of paragraph 10.2.5 the word, "The" and substitute the words:
"Subject to paragraph 3.14.1, the".

GC 12.1 INDEMNIFICATION

.1 Add new clause 12.1.1.3.

12.1.1. 3. The *Contractor* shall indemnify and hold harmless the *Consultant*, its agents and employees from and against claims, demands, losses, costs, damages, actions, suits, or proceedings by third parties that arise out of, or are attributable to, the *Contractor's* performance of the *Contract*, provided such claims are attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property, and caused by negligent acts or omissions of the *Contractor* or anyone for whose acts the *Contractor* may be liable, and made in writing within a period of 6 years from the date of *Substantial Performance of the Work* as set out in the certificate of *Substantial Performance of the Work*, or within such shorter such period as may be prescribed by any limitation statute or the province or territory of the *Place of Work.*

GC 12.3 WARRANTY

.1 Delete from the first line of paragraph 12.3.2 the word, "The" and substitute the words:

"Subject to paragraph 3.14.1, the…".

March 6, 2017

Northeastern Catholic District School Board
383 Birch Street North
Timmins, ON P4N 6E8

E-mail: dhorton@ncdsb.on.ca

Attention: David Horton
Manager of Plant & Maintenance

Re: Summary of Sampling Analysis
Various Buildings
Pinchin File: 121248

1.0 INTRODUCTION AND SCOPE

Northeastern Catholic District School Board (Client) retained Pinchin Ltd. (Pinchin) to perform laboratory analysis, and provide a summary of the findings and recommendations. The sampling was limited to specific materials as part of the planning for proposed renovations at various school board facilities.

The collection of specified building materials, as identified by the Client, was performed by Michel Bernier on January 5, 2017. The surveyor was accompanied by David Horton, manager of plant & maintenance and Pat Atkinson of PAD Systems.

2.0 METHODOLOGY

Refer to Appendix I.

3.0 FINDINGS

3.1 Access and Education Centre, 383 Birch Street N, Timmins, ON

Drywall joint compound, sampled in the Storage Room in the east portion of the building, does not contain asbestos (Samples 0001A-C).

Texture finished cementitious stucco, containing chrysotile asbestos in the finish coat, is present on the exterior of the building (Samples 0003A-C). The grey cementitious base coat, installed on the wire lath, does not contain asbestos. The stucco is a non-friable material, which may become friable during removal. The material is painted and in good condition.



Painted non-friable asbestos-containing texture finished cementitious stucco, present on the exterior of the building.



Chrysotile asbestos is present in the white finish coat of the cementitious stucco, but no asbestos is present in the grey base layer.

3.2 St. Paul School, 387 Balsam Street N, Timmins, ON

Black mastic associated with the 9" vinyl floor tiles, sampled in room 13 of the second floor of the building, does not contain asbestos (Samples 0002A-C).

Black mastic on the whitebead insulation, sampled in rooms 11, 12 and 13 of the second floor of the building, does not contain asbestos (Samples 0004A-C).

Light brown caulking, present around windows, does not contain asbestos or PCBs (Samples 0005A-C, P001). A second phase was present in Sample 0005C, consisting of black tar, containing <0.5% chrysotile asbestos. As per Ontario Regulation 278/05, materials containing <0.5% asbestos content are not defined as asbestos-containing.

3.3 O'Gorman Intermediate Catholic School, 490 MacLean Drive, Timmins, ON

Beige caulking, present on the exterior cladding below windows on the south elevation of the building, does not contain asbestos (Samples 0006A-C).

Exterior aggregate stucco, present as the exterior cladding, does not contain asbestos (Samples 0007A-C).

4.0 RECOMMENDATIONS

Update the asbestos inventory of any new information obtained, and upon completion of the abatement and removal of asbestos-containing materials.

Renovations impacting the textured stucco finish at the Access and Education Centre will require asbestos procedures as defined in Ontario Regulation 278/05. The disturbance could require Type 1, 2 or

© 2017 Pinchin Ltd.

MEMBER OF PG THE PINCHIN GROUP

3 asbestos procedures, dictated by the method of disturbance (i.e., full removal, drilling holes, etc.) and the tools or method used.

5.0 LIMITATIONS

This work was performed subject to the Terms and Limitations presented or referenced in the Authorization to Proceed document for this project.

Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.

6.0 CLOSURE

Should you have any questions or concerns regarding the contents of this letter, please contact the undersigned.

Yours truly,

Pinchin Ltd.

Prepared by:

Michel Bernier, B.Sc.
Project Technologist
705.531.2404
mbernier@pinchin.com

Reviewed by:

Michael Harrett, C.E.T.
Regional Practice Lead, Hazardous Materials
613.541.1013 ext. 1601
mharrett@pinchin.com

Encl.: Pinchin Asbestos Laboratory Analytical Report
Aevitas Laboratory Analytical Report

© 2017 Pinchin Ltd.

MEMBER OF THE PINCHIN GROUP

1.0 GENERAL

1.1 Asbestos

Pinchin conducts an inspection for the presence of friable and non-friable asbestos-containing materials (ACM). A friable material is a material that when dry can be crumbled, pulverized or powdered by hand pressure.

A separate set of samples is collected of each type of homogenous material suspected to contain asbestos. A homogenous material is defined by the US EPA as material that is uniform in texture and appearance, was installed at one time, and is unlikely to consist of more than one type or formulation of material. The homogeneous materials are determined by visual examination and available information on the phases of construction and prior renovations.

Pinchin collects samples at a rate that is in compliance with Table 1 of O.Reg. 278/05.

The sampling strategy is also based on known ban dates and phase out dates of the use of asbestos; sampling of certain building materials is not conducted after specific construction dates. In addition, to be conservative, several years past these dates are added to account for some uncertainty in the exact start/finish date of construction and associated usage of ACM.

In some cases, manufactured products such as asbestos cement pipe are visually identified without sample confirmation.

Pinchin submits the bulk samples to a NVLAP accredited laboratory for analysis. The analysis is performed in accordance with Test Method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, July 1993.

In Ontario an ACM is defined as materials containing 0.5% or more asbestos by weight.

The asbestos analysis is completed using a stop positive approach. Only one result meeting the above regulated criteria is required to determine that a material is asbestos-containing, but all samples must be analyzed to conclusively determine that a material is non-asbestos. The laboratory stops analyzing samples from a homogeneous material once a result equal to or greater than the regulated criteria is detected in any of the samples of that material. All samples of a homogeneous material are analyzed if no asbestos is detected. In some cases, all samples are analyzed in the sample set regardless of result. Where building materials are described in the report as non-asbestos, this means that either no asbestos was detected by the analytical method utilized in any of the multiple samples or, if detected, it is below the lower limit of an asbestos-containing material in the applicable regulation.

© 2017 Pinchin Ltd.

MEMBER OF
THE PINCHIN GROUP

1.2 Polychlorinated Biphenyls

Pinchin samples exterior caulking or sealants for PCBs based on the date of construction or installation. Caulking installed after 1985 is presumed to be free of PCBs and hence not sampled. If sampled, analysis for PCBs is performed using an ASTM test method appropriate to the sample matrix at an accredited laboratory.

Master Template: Methodology Document for Hazardous Building Materials Pre-Construction, HAZ, October 18, 2016

© 2017 Pinchin Ltd.

MEMBER OF
THE PINCHIN GROUP

Pinchin Ltd. Asbestos Laboratory
Certificate of Analysis

Project Name:	**Northeastern Catholic School Board, 383 Birch Street North**		
Project No.:	**0121248.000**		
Prepared For:	**M. Bernier**		
Lab Reference No.:	**b163541**		
Analyst(s):	**A. Di Giulio**		
Date Received:	**January 6, 2017**	**# Samples submitted:**	**21**
Date Analyzed:	**January 19, 2017**	**# Phases analyzed:**	**30**

Method of Analysis:

EPA 600/R-93/116 - Method for the Determination of Asbestos in Bulk Building Materials dated July, 1993

Bulk samples are checked visually and scanned under a stereomicroscope. Slides are prepared and observed under a Polarized Light Microscope (PLM) at magnifications of 40X, 100X or 400X as appropriate. Asbestos fibres are identified by a combination of morphology, colour, refractive index, extinction, sign of elongation, birefringence and dispersion staining colours. A visual estimate is made of the percentage of asbestos present. A reported concentration of less than (<) the regulatory threshold (see chart below) indicates the presence of confirmed asbestos in trace quantities, limited to only a few fibres or fibre bundles in an entire sample. This method complies with provincial regulatory requirements where applicable. Multiple phases within a sample are analyzed and reported separately.

Provincial Jurisdiction	Regulatory Threshold	Provincial Jurisdiction	Regulatory Threshold
Ontario, British Columbia, Nova Scotia	0.5%	Manitoba	0.1% friable 1% non-friable
Quebec	0.1%	Saskatchewan	0.5% friable 1% non-friable
Alberta, NWT, Yukon, Nunavut	1%	Newfoundland and Labrador, PEI and New Brunswick	1%

All bulk samples submitted to this laboratory for asbestos analysis are retained for a minimum of three months. Samples may be retrieved, upon request, for re-examination at any time during that period.

Pinchin Ltd. is accredited by the National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP Lab Code 101270-0) for the 'EPA-600/M4-82-020: Interim Method for the Determination of Asbestos in Bulk Insulation Samples,' and the 'EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials'; and meets all requirements of ISO/IEC 17025:2005.

This report relates only to the items tested.

NOTE: ***This test report may not be reproduced, except in full, without the written approval of the laboratory. The client may not use this report to claim produc endorsement by NVLAP or any agency of the U.S. Government. This report is valid only when signed in blue ink by the analyst. Vinyl asbestos floor tiles contain very fine fibres of asbestos and may be missed by some laboratories using the PLM method. Internal verification studies performed by Pinchin indicate that the chance of missing asbestos in floor tiles is no higher than about 2%. The vinyl tile study and laboratory documentation on measurement uncertainty is available upon request. The analysis of dust samples by PLM cannot be used as an indicator of past or present airborne asbestos fibre levels.***

Pinchin Ltd. Asbestos Laboratory
Certificate of Analysis

Project Name: **Northeastern Catholic School Board, 383 Birch Street North**
Project No.: **0121248.000**
Prepared For: **M. Bernier**

Lab Reference No.: **b163541**
Date Analyzed: **January 19, 2017**

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
0001A DJC, Storage Room East of Boardroom, School Board Building	Homogeneous, off-white, drywall joint compound.	None Detected	Non-Fibrous Material > 75%
Comments:	Cellulose is present on the surface of this sample.		
0001B DJC, Storage Room East of Boardroom, School Board Building	Homogeneous, off-white, drywall joint compound.	None Detected	Non-Fibrous Material > 75%
Comments:	Cellulose is present on the surface of this sample.		
0001C DJC, Storage Room East of Boardroom, School Board Building	Homogeneous, off-white, drywall joint compound.	None Detected	Non-Fibrous Material > 75%
Comments:	Cellulose is present on the surface of this sample.		
0002A 9X9 VFT, Mastic, 2nd Floor St Paul School, room 13	Homogeneous, black, soft, sticky material.	None Detected	Tar and other non-fibrous > 75%
0002B 9X9 VFT, Mastic, 2nd Floor St Paul School, room 13	Homogeneous, black, soft, sticky material.	None Detected	Tar and other non-fibrous > 75%
Comments:	This sample is small in size.		
0002C 9X9 VFT, Mastic, 2nd Floor St Paul School, room 13	Homogeneous, black, soft, sticky material.	None Detected	Tar and other non-fibrous > 75%
Comments:	This sample is small in size.		

Pinchin Ltd. Asbestos Laboratory
Certificate of Analysis

Project Name: Northeastern Catholic School Board, 383 Birch Street North
Project No.: 0121248.000
Prepared For: M. Bernier

Lab Reference No.: b163541
Date Analyzed: January 19, 2017

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
0003A Texture Finish, Exterior, School Board Building	2 Phases: a) Homogeneous, grey, hard, cementitious material. b) Homogeneous, white, finishing or texture coat.	None Detected Chrysotile 0.5-5%	Non-Fibrous Material > 75% Non-Fibrous Material > 75%
0003B Texture Finish, Exterior, School Board Building	2 Phases: a) Homogeneous, grey, hard, cementitious material. b) Homogeneous, white, finishing or texture coat.	None Detected	Non-Fibrous Material > 75% Not Analyzed
Comments:	Analysis of phase b) was stopped due to a previous positive result.		
0003C Texture Finish, Exterior, School Board Building	2 Phases: a) Homogeneous, grey, hard, cementitious material. b) Homogeneous, white, finishing or texture coat.	None Detected	Non-Fibrous Material > 75% Not Analyzed
Comments:	Phase a) is small in size. Analysis of phase b) was stopped due to a previous positive result.		
0004A Black Mastic on backside whitebead Insulation, 2nd Floor, St-Paul School, Backside of Room 11	Homogeneous, black, soft, sticky material.	None Detected	Tar and other non-fibrous > 75%
Comments:	Foam is present on the surface of this sample.		

Pinchin Ltd. Asbestos Laboratory
Certificate of Analysis

Project Name: Northeastern Catholic School Board, 383 Birch Street North
Project No.: 0121248.000
Prepared For: M. Bernier

Lab Reference No.: b163541
Date Analyzed: January 19, 2017

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
0004B Black Mastic on backside whitebead Insulation, 2nd Floor, St-Paul School, Backside of Room 12	Homogeneous, black, soft, sticky material.	None Detected	Tar and other non-fibrous > 75%
0004C Black Mastic on backside whitebead Insulation, 2nd Floor, St-Paul School, Backside of Room 13	Homogeneous, black, soft, sticky material.	None Detected	Tar and other non-fibrous > 75%
0005A Caulking, Light Brown, St-Paul School	Homogeneous, beige, caulking material.	None Detected	Non-Fibrous Material > 75%
0005B Caulking, Light Brown, St-Paul School	Homogeneous, beige, caulking material.	None Detected	Non-Fibrous Material > 75%
0005C Caulking, Light Brown, St-Paul School	2 Phases: a) Homogeneous, beige, caulking material. b) Homogeneous, black, tar material.	None Detected Chrysotile < 0.5%	Non-Fibrous Material > 75% Tar and other non-fibrous > 75%
Comments:	The asbestos present in phase b) may be due to contamination.		
0006A Cladding Caulking, South Side O'Gorman under window	Homogeneous, beige, caulking material.	None Detected	Non-Fibrous Material > 75%

Pinchin Ltd. Asbestos Laboratory
Certificate of Analysis

Project Name: Northeastern Catholic School Board, 383 Birch Street North
Project No.: 0121248.000
Prepared For: M. Bernier

Lab Reference No.: b163541
Date Analyzed: January 19, 2017

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
0006B Cladding Caulking, South Side O'Gorman under window	Homogeneous, white, caulking material.	None Detected	Non-Fibrous Material > 75%
0006C Cladding Caulking, South Side O'Gorman under window	4 Phases: a) Homogeneous, beige, caulking material.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, white, caulking material.	None Detected	Non-Fibrous Material > 75%
	c) Homogeneous, off-white, hard material.	None Detected	Man-made Vitreous Fibres 5-10% Non-Fibrous Material > 75%
	d) Homogeneous, black, tar material.	None Detected	Tar and other non-fibrous > 75%
0007A Exterior Aggregate Cladding, South Side O'Gorman Intermediate	2 Phases: a) Non-homogeneous, off-white, hard material.	None Detected	Man-made Vitreous Fibres 10-25% Non-Fibrous Material > 75%
	b) Homogeneous, white, caulking material.	None Detected	Non-Fibrous Material > 75%

Pinchin Ltd. Asbestos Laboratory
Certificate of Analysis

Project Name: Northeastern Catholic School Board, 383 Birch Street North
Project No.: 0121248.000
Prepared For: M. Bernier

Lab Reference No.: b163541
Date Analyzed: January 19, 2017

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
0007B Exterior Aggregate Cladding, South Side O'Gorman Intermediate	2 Phases: a) Non-homogeneous, off-white, hard material.	None Detected	Man-made Vitreous Fibres 10-25% Non-Fibrous Material > 75%
	b) Homogeneous, beige, caulking material.	None Detected	Non-Fibrous Material > 75%
0007C Exterior Aggregate Cladding, South Side O'Gorman Intermediate	3 Phases: a) Non-homogeneous, off-white, hard material.	None Detected	Man-made Vitreous Fibres 10-25% Non-Fibrous Material > 75%
	b) Homogeneous, beige, caulking material.	None Detected	Non-Fibrous Material > 75%
	c) Homogeneous, white, caulking material.	None Detected	Non-Fibrous Material > 75%

Reviewed by: **Reporting Analyst:**

PINCHIN ENVIRONMENTAL

Member of PG The Pinchin Group

Professional Engineers Ontario

Analyzed by: AD

Reviewed by: KB

Report Sent by: EL

Pinchin Ltd. - Asbestos Laboratory
Internal Asbestos Bulk Sample Chain of Custody

Client Name:	Northeastern Catholic School Board			**Project Address:**	383 Birch Street North		
Portfolio/Building No:				**Pinchin File:**	121248		
Submitted by:	Michel Bernier			**Email:**	mbernier@pinchin.com		
CC Results to:				**CC Email:**			
Date Submitted:	January	5	2017	**Required by:**	January	13	2017
# of Samples:	21			**Priority:**	5 Day Turnaround		
Year of Building Construction (*Mandatory, Years ONLY*):	1960						
Do NOT Stop on Positive (Sample Numbers):							
Pinchin Group Company (*Mandatory Field*):	Pinchin						

To be Completed by Lab Personnel Only:					
Lab Reference #:	b1635411	**Time:**	24 hour clock		
Received by:	JAN 0 6 2017 EL	**Date:**	Month	Day	Year
Name(s) of Analyst(s):	(JS)		01	19	17

Sample Prefix	Sample No.	Sample Suffix	Sample Description/Location (Mandatory)
	0001	A	DJC, Storage Room East of Boardroom, School Board Building ND
	0001	B	DJC, Storage Room East of Boardroom, School Board Building ND
	0001	C	DJC, Storage Room East of Boardroom, School Board Building ND
	0002	A	9X9 VFT, Mastic, 2nd Floor St Paul School, room 13 ND (checked other debris in bag) not reported.
	0002	B	9X9 VFT, Mastic, 2nd Floor St Paul School, room 13 ND
	0002	C	9X9 VFT, Mastic, 2nd Floor St Paul School, room 13 ND
	0003	A	Texture Finish, Exterior, School Board Building a) ND b) Chr. 5-5%
	0003	B	Texture Finish, Exterior, School Board Building a) ND b) N/A

Sample Prefix	Sample No.	Sample Suffix	Sample Description/Location (Mandatory)
	0003	C	Texture Finish, Exterior, School Board Building a) ND b) N/A -
	0004	A	Black Mastic on backside whitebead Insulation, 2nd Floor, St-Paul School, Backside of Room 11 ND -
	0004	B	Black Mastic on backside whitebead Insulation, 2nd Floor, St-Paul School, Backside of Room 12 ND
	0004	C	Black Mastic on backside whitebead Insulation, 2nd Floor, St-Paul School, Backside of Room 13 ND.
	0005	A	Caulking, Light Brown, St-Paul School ND
	0005	B	Caulking, Light Brown, St-Paul School ND.
	0005	C	Caulking, Light Brown, St-Paul School a) ND. b) CH<0.5%.
	0006	A	Cladding Caulking, South Side O'Gorman under window ND
	0006	B	Cladding Caulking, South Side O'Gorman under window ND -
	0006	C	Cladding Caulking, South Side O'Gorman under window a) ND b) ND c) ND d) ND.
	0007	A	Exterior Aggregate Cladding, South Side O'Gorman Intermediate a) ND b) ND.
	0007	B	Exterior Aggregate Cladding, South Side O'Gorman Intermediate a) ND b) ND.
	0007	C	Exterior Aggregate Cladding, South Side O'Gorman Intermediate a) ND b) ND c) ND.

b) 16354 AD.

AEVITAS INC. (AYR)
ANALYTICAL CHEMISTRY DEPARTMENT
75 WANLESS COURT, AYR, ONTARIO, N0B 1E0, CANADA
WWW.AEVITAS.CA

Certificate of Analysis

Aaron Rehel

Pinchin Ltd. (Sudbury)
850 Barrydowne Road, Suite 302, Sudbury, Ont, P3A 3T7

Printed: Jan 13, 2017

Report Description: ***1 solid sample was submitted for the following chemical analysis***

Project Name:	Exterior Buildings Assessment	**Date Sampled:**	Jan 05, 2017
Project No.:	121248	**Date Tested:**	Jan 13, 2017
Site Location:	Various Locations, Timmins, ON	**Sampled by:**	Aaron Rehel

Report Number: 17-0042

No.	Analyte	Result	Units	MDL	Comments	Technique / Test Method
1	*Sample ID.:* ***P001 - Aggragate panel caulking under window, west elevation of St. Pauls***					
	PCBs in Solid	**<0.5**	mg/kg	0.5		LAB-M06 (EPA 3550C/8082A modified)
	Comment(s)	-	N/A	N/A	"mg/kg" is equivalent to "ppm"	N/A

Results relate only to the samples tested above, as received.

Approved By:

Son C.H. Le, *B. Eng. (Chem.)*
Lab Manager
Phone: (519) 740-1333 Ext.: 230
Fax: (519) 740-2320
Email: SonLe@aevitas.ca

The Analytical Chemistry Laboratory of Aevitas Inc. (Ayr) is accredited for specific tests in accordance with the recognised International Standard ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation (CALA) Inc. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009). The laboratory quality management system of Aevitas Inc. (Ayr) meets the principles of ISO 9001:2008.

All Analytical data is subject to uncertainty which, may vary with sample matrices, sample preparation techniques and instrumental parameters. As a general guideline, uncertainty may be expressed as approximately +/- 50% of the reported value at or near the Method Detection Limit (MDL) and +/-10% or less, of the reported result that is greater than 10 times the MDL. Method Detection Limits are defined as approximately 3 times the standard deviation value (at 99% confidence level), which is obtained from replicate analysis of a low-level standard as per the Ontario MOE - MISA Protocol for the Sampling and Analysis of Industrial / Municipal Wastewater (1999). MDL determination is based on undiluted samples with relatively low matrix interferences. Where dilutions are required, the reported MDL value will be scaled proportionally.

All testing procedures follow strict guidelines and quality assurance / quality control (QA/QC) protocols. QA/QC data is available for review at any time upon client's request.

1.0 GENERAL

1.1 Asbestos

Pinchin conducts an inspection for the presence of friable and non-friable asbestos-containing materials (ACM). A friable material is a material that when dry can be crumbled, pulverized or powdered by hand pressure.

A separate set of samples is collected of each type of homogenous material suspected to contain asbestos. A homogenous material is defined by the US EPA as material that is uniform in texture and appearance, was installed at one time, and is unlikely to consist of more than one type or formulation of material. The homogeneous materials are determined by visual examination and available information on the phases of construction and prior renovations.

Pinchin collects samples at a rate that is in compliance with Table 1 of O.Reg. 278/05.

The sampling strategy is also based on known ban dates and phase out dates of the use of asbestos; sampling of certain building materials is not conducted after specific construction dates. In addition, to be conservative, several years past these dates are added to account for some uncertainty in the exact start/finish date of construction and associated usage of ACM.

In some cases, manufactured products such as asbestos cement pipe are visually identified without sample confirmation.

Pinchin submits the bulk samples to a NVLAP accredited laboratory for analysis. The analysis is performed in accordance with Test Method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, July 1993.

In Ontario an ACM is defined as materials containing 0.5% or more asbestos by weight.

The asbestos analysis is completed using a stop positive approach. Only one result meeting the above regulated criteria is required to determine that a material is asbestos-containing, but all samples must be analyzed to conclusively determine that a material is non-asbestos. The laboratory stops analyzing samples from a homogeneous material once a result equal to or greater than the regulated criteria is detected in any of the samples of that material. All samples of a homogeneous material are analyzed if no asbestos is detected. In some cases, all samples are analyzed in the sample set regardless of result. Where building materials are described in the report as non-asbestos, this means that either no asbestos was detected by the analytical method utilized in any of the multiple samples or, if detected, it is below the lower limit of an asbestos-containing material in the applicable regulation.

© 2017 Pinchin Ltd.

MEMBER OF
THE PINCHIN GROUP

1.2 Polychlorinated Biphenyls

Pinchin samples exterior caulking or sealants for PCBs based on the date of construction or installation. Caulking installed after 1985 is presumed to be free of PCBs and hence not sampled. If sampled, analysis for PCBs is performed using an ASTM test method appropriate to the sample matrix at an accredited laboratory.

Master Template: Methodology Document for Hazardous Building Materials Pre-Construction, HAZ, October 18, 2016

© 2017 Pinchin Ltd.

MEMBER OF
THE PINCHIN GROUP

APPENDIX D – HARDWARE SCHEDULE

Refer also to Section 08 71 00 – Door Hardware and Appendix E – Hardware Catalogue Cuts

Heading 01

1 PR Door DX101
2/965 X 2135 X 45 X HMD X HMF X 45MIN

Each Assembly to have:

6	EA	HW HINGE	5BB1HW 127 X 114	652	IVE
2	EA	FIRE EXIT HARDWARE	9849-L-BE-F-06-249-LBL	626	VON
1	EA	OH STOP	100S	630	GLY
2	EA	SURFACE CLOSER	4040XP EDA	689	LCN
2	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	SMOKE SEAL	W-21	BLK	KNC
2	EA	ASTRAGAL	W-25	628	KNC

Heading 02

1 SGL Door DX102 CORRIDOR / RECEPTION
965 X 2135 X 45 X WD X HMF X 45MIN

Each Assembly to have:

3	EA	HINGE	5BB1 127 X 114	652	IVE
1	EA	CLASSROOM LOCK	ND70PD RHO	626	SCH
1	EA	OH STOP	90S	630	GLY
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	SMOKE SEAL	W-21	BLK	KNC

Note: Key cylinders to existing owners standards C123 keyway.

Heading 03

1 SGL Door DX103 RECEPTION / PRINCIPAL OFFICE
1 SGL Door DX104 RECEPTION / VP OFFICE
965 X 2135 X 45 X WD X HMF X NONRTD

Each Assembly to have:

3	EA	HINGE	5BB1 127 X 114	652	IVE
1	EA	CLASSROOM LOCK	ND70PD RHO	626	SCH
1	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	FLOOR STOP	FS439	682	IVE

APPENDIX D – HARDWARE SCHEDULE

Refer also to Section 08 71 00 – Door Hardware and Appendix E – Hardware Catalogue Cuts

Heading 04

1	SGL	Door DX114	CORRIDOR / SLEEPING ROOM	
		965 X 2135 X 45 X HMD X HMF X NONRTD		
1	SGL	Door DX117	RECEPTION / CHILD LAB	
		965 X 2135 X 45 X WD X HMF X NONRTD		

Each Assembly to have:

3	EA	HINGE	5BB1 127 X 114	652	IVE
1	EA	CLASSROOM LOCK	ND70PD RHO	626	SCH
1	EA	OH STOP	90S	630	GLY
1	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH

Heading 05

1	SGL	Door D105	CORRIDOR / RECEPTION *Hardware for this door to be coordinated with package supplied and listed by manufacturer.*	
		965 X 2135 X 45 X HMD X HMF X 45MIN		
1	SGL	Door DX117A	CORRIDOR / RECEPTION	
		965 X 2135 X 45 X WD X HMF X 45MIN		

Each Assembly to have:

3	EA	HW HINGE	5BB1HW 127 X 114	652	IVE
1	EA	CLASSROOM LOCK	ND70PD RHO	626	SCH
1	EA	ELECTRIC STRIKE	6211 FSE CON	630	VON
1	EA	OH STOP	100S ADJ	630	GLY
1	EA	SURF. AUTO OPERATOR	9531 MS	ANCLR	LCN
1	EA	KEYSWITCH	8310-806K	BLK	LCN
2	EA	ACTUATOR, WALL MOUNT	8310-852	630	LCN
2	EA	ESCUTCHEON	8310-876	689	LCN
1	EA	MOUNTING PLATE	9530-18	689	LCN
1	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	SMOKE SEAL	W-21	BLK	KNC
1	EA	WIRE HARNESS	CON-6W		VON

APPENDIX D – HARDWARE SCHEDULE

Refer also to Section 08 71 00 – Door Hardware and Appendix E – Hardware Catalogue Cuts

Heading 06

1 SGL Door DX118 VESTIBULE / RECEPTION
965 X 2135 X 45 X ALD X ALF X NONRTD

Each Assembly to have:

1	EA	CONT. HINGE	112HD	628	IVE
1	EA	DUMMY PUSH BAR	350	626	VON
1	EA	DOOR PULL	CBH 7008-1 #6 MTG.	630	CBH
1	EA	SURF. AUTO OPERATOR	9542 MS	ANCLR	LCN
2	EA	ACTUATOR, WALL MOUNT	8310-852	630	LCN
2	EA	ESCUTCHEON	8310-876	689	LCN
1	EA	WALL STOP	WS406/407CVX	630	IVE

Heading 07

1 SGL Door D204 CORRIDOR / CLASSROOM
1 SGL Door D207 CORRIDOR / CLASSROOM
1 SGL Door D210 CORRIDOR / CLASSROOM
1 SGL Door DX126 CORRIDOR / TEACHERS LOUNGE
965 X 2135 X 45 X WD X HMF X NONRTD

Each Assembly to have:

3	EA	HINGE	5BB1 127 X 114	652	IVE
1	EA	CLASSROOM LOCK	ND70PD RHO	626	SCH
1	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	WALL STOP	WS406/407CVX	630	IVE

Heading 08

1 SGL Door DX127 TEACHERS LOUNGE / WASHROOM
965 X 2135 X 45 X WD X HMF X NONRTD

Each Assembly to have:

3	EA	HINGE	5BB1 127 X 114	652	IVE
1	EA	PRIVACY LOCK	ND40S RHO	626	SCH
1	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	WALL STOP	WS406/407CCV	630	IVE

APPENDIX D – HARDWARE SCHEDULE

Refer also to Section 08 71 00 – Door Hardware and Appendix E – Hardware Catalogue Cuts

Heading 09

1 PR Door DX129 STAIR / CORRIDOR
2/965 X 2135 X 45 X HMD X HMF X 45MIN

Each Assembly to have:

6	EA	HW HINGE	5BB1HW 127 X 114	652	IVE
2	EA	FIRE EXIT HARDWARE	9849-L-BE-F-06-249-LBL	626	VON
2	EA	OH STOP	100S	630	GLY
2	EA	SURFACE CLOSER	4040XP EDA	689	LCN
2	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	SMOKE SEAL	W-21	BLK	KNC
2	EA	ASTRAGAL	W-25	628	KNC

Heading 10

1 SGL Door DX
1 SGL Door DX2
965 X 2135 X 45 X WD X HMF X NONRTD

Each Assembly to have:

1	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	HARDWARE	ALL EXISTING HARDWARE TO REMAIN		UNK

Note: WD Door to be sanded and stained w/ new SS Kick plates

Heading 11

1 PR Door DX201 STAIR / CORRIDOR
1 PR Door DX217 STAIR / CORRIDOR
2/965 X 2135 X 45 X HMD X HMF X 45MIN

Each Assembly to have:

6	EA	HW HINGE	5BB1HW 127 X 114 NRP	652	IVE
2	EA	FIRE EXIT HARDWARE	9849-L-F-06-249-LBL	626	VON
2	EA	RIM CYLINDER	20-021	626	SCH
2	EA	OH STOP	100S	630	GLY
2	EA	SURFACE CLOSER	4040XP EDA	689	LCN
2	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	SMOKE SEAL	W-21	BLK	KNC
2	EA	ASTRAGAL	W-25	628	KNC

APPENDIX D – HARDWARE SCHEDULE

Refer also to Section 08 71 00 – Door Hardware and Appendix E – Hardware Catalogue Cuts

Heading 12

1 PR Door D100 CORRIDOR / FOYER
2/965 X 2135 X 45 X HMD X HMF X 45MIN

Each Assembly to have:

6	EA	HW HINGE	5BB1HW 127 X 114	652	IVE
2	EA	FIRE EXIT HARDWARE	9849-L-BE-F-06-249-LBL	626	VON
1	EA	OH STOP	100S	630	GLY
2	EA	SURFACE CLOSER	4040XP EDA	689	LCN
2	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	SMOKE SEAL	W-21	BLK	KNC
2	EA	ASTRAGAL	W-25	628	KNC

Heading 13

1 SGL Door D102 CORRIDOR / MEETING
965 X 2135 X 45 X HMD X ALF X NONRTD

Each Assembly to have:

3	EA	HINGE	5BB1 127 X 114	630	IVE
1	EA	CLASSROOM LOCK	ND70PD RHO	626	SCH
1	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	WALL STOP	WS406/407CVX	630	IVE

Heading 14

1 SGL Door D103 CORRIDOR / BF WASHROOM
965 X 2135 X 45 X WD X HMF X NONRTD

Each Assembly to have:

3	EA	HINGE	5BB1 127 X 114	652	IVE
1	EA	PRIVACY LOCK	ND40S RHO	626	SCH
1	EA	OH STOP	90S	630	GLY
1	EA	KICKPLATE	CBH 903 300 X LDW	630	CBH

APPENDIX D – HARDWARE SCHEDULE

Refer also to Section 08 71 00 – Door Hardware and Appendix E – Hardware Catalogue Cuts

Heading 15

1 SGL Door D104A CORRIDOR / EX. STOR
965 X 2135 X 45 X HMD X HMF X 45MIN

Each Assembly to have:

3	EA	HINGE	5BB1 127 X 114 NRP	652	IVE
1	EA	STOREROOM LOCK	ND80PD RHO	626	SCH
1	EA	SURFACE CLOSER	1461 DEL SCUSH	689	LCN
1	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	SMOKE SEAL	W-21	BLK	KNC

Heading 16

1 PR Door D106 FOYER / HALLWAY
2/965 X 2135 X 45 X HMD X HMF X NONRTD

Each Assembly to have:

6	EA	HW HINGE	5BB1HW 127 X 114 NRP	652	IVE
2	EA	FIRE EXIT HARDWARE	9849-L-F-06-249-LBL	626	VON
2	EA	RIM CYLINDER	20-021	626	SCH
2	EA	OH STOP	100S	630	GLY
2	EA	SURFACE CLOSER	4040XP EDA	689	LCN
2	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	SMOKE SEAL	W-21	BLK	KNC
2	EA	ASTRAGAL	W-25	628	KNC

Heading 17

1 PR Door D107 CORRIDOR / CARETAKER/STORAGE
2/965 X 2135 X 45 X HMD X HMF X 45MIN

Each Assembly to have:

6	EA	HINGE	5BB1 127 X 114 NRP	652	IVE
1	SET	AUTO FLUSH BOLT	FB31P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	STOREROOM LOCK	ND80PD RHO 14-042	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	OH STOP	100S	630	GLY
2	EA	SURFACE CLOSER	1461 DEL TOP JAMB	689	LCN
2	EA	MOUNTING PLATE	1460-18	689	LCN
2	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	SMOKE SEAL	W-21	BLK	KNC
2	EA	ASTRAGAL	W-25	628	KNC

APPENDIX D – HARDWARE SCHEDULE

Refer also to Section 08 71 00 – Door Hardware and Appendix E – Hardware Catalogue Cuts

Heading 18

1	SGL	Door	D108	CORRIDOR / KINDERGARTEN
1	SGL	Door	D114	CORRIDOR / KINDERGARTEN
1	SGL	Door	D115	CORRIDOR / KINDERGARTEN
1	SGL	Door	D121	CORRIDOR / KINDERGARTEN

965 X 2135 X 45 X WD X HMF X NONRTD

Each Assembly to have:

3	EA	HINGE	5BB1 127 X 114	652	IVE
1	EA	CLASSROOM LOCK	ND70PD RHO	626	SCH
1	EA	OH STOP	90S	630	GLY
1	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	FINGER GUARD	FINGER SAFE USA INC. MK1A	WHI	USA
1	EA	FINGER GUARD	FINGER SAFE USA INC. MK1B	WHI	USA

Heading 19

1	SGL	Door	D109	KINDERGARTEN / WC
1	SGL	Door	D110	KINDERGARTEN / BF WASHROOM
1	SGL	Door	D116	CORRIDOR / KINDERGARTEN
1	SGL	Door	D117	CORRIDOR / KINDER

965 X 2135 X 45 X WD X HMF X NONRTD

Each Assembly to have:

3	EA	HINGE	5BB1 127 X 114	652	IVE
1	EA	PASSAGE SET	ND10S RHO	626	SCH
1	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	FINGER GUARD	FINGER SAFE USA INC. MK1A	WHI	USA
1	EA	FINGER GUARD	FINGER SAFE USA INC. MK1B	WHI	USA

APPENDIX D – HARDWARE SCHEDULE

Refer also to Section 08 71 00 – Door Hardware and Appendix E – Hardware Catalogue Cuts

Heading 20

1	SGL	Door	D111	VESTIBULE / CUBBY AREA
1	SGL	Door	D112	VESTIBULE / KINDERGARTEN
1	SGL	Door	D118	VESTIBULE / CUBBY AREA
1	SGL	Door	D119	VESTIBULE / CUBBY AREA

965 X 2135 X 45 X ALD X ALF X NONRTD

Each Assembly to have:

1	EA	CONT. HINGE	112HD	628	IVE
1	EA	PANIC HARDWARE	98-NL-OP-110MD	626	VON
1	EA	RIM CYLINDER	20-021	626	SCH
1	EA	DOOR PULL	CBH 7008-1 #6 MTG.	630	CBH
1	EA	OH STOP	100S ADJ	630	GLY
1	EA	SURF. AUTO OPERATOR	9542 MS	ANCLR	LCN
1	EA	KEYSWITCH	8310-806K	BLK	LCN
2	EA	ACTUATOR, WALL MOUNT	8310-852	630	LCN
2	EA	ESCUTCHEON	8310-876	689	LCN

Heading 21

1	SGL	Door	D113	EXTERIOR / VESTIBULE
1	SGL	Door	D120	EXTERIOR / VESTIBULE

965 X 2135 X 45 X ALD X ALF X NONRTD

Each Assembly to have:

1	EA	CONT. HINGE	112HD	628	IVE
1	EA	PANIC HARDWARE	98-NL-OP-110MD	626	VON
1	EA	RIM CYLINDER	20-021	626	SCH
1	EA	DOOR PULL	CBH 7008-1 #6 MTG.	630	CBH
1	EA	OH STOP	100S ADJ	630	GLY
1	EA	SURF. AUTO OPERATOR	9542 MS	ANCLR	LCN
1	EA	WEATHER RING	8310-802	PLA	LCN
1	EA	KEYSWITCH	8310-806K	BLK	LCN
2	EA	ACTUATOR, WALL MOUNT	8310-852	630	LCN
2	EA	ESCUTCHEON	8310-876	689	LCN
1	EA	WEATHER STRIPPING	BY DOOR AND FRAME SUPPLIER		UNK
1	EA	DOOR SWEEP	W-24S	628	KNC
1	EA	THRESHOLD	CT-10	627	KNC
1	EA	DOOR CONTACT	679-05HM	BLK	SCE

APPENDIX D – HARDWARE SCHEDULE

Refer also to Section 08 71 00 – Door Hardware and Appendix E – Hardware Catalogue Cuts

Heading 22

1 SGL Door D122 STAIR / CORRIDOR
965 X 2135 X 45 X HMD X HMF X 45MIN

Each Assembly to have:

3	EA	HW HINGE	5BB1HW 127 X 114 NRP	652	IVE
1	EA	FIRE EXIT HARDWARE	98-L-F-06	626	VON
1	EA	RIM CYLINDER	20-021	626	SCH
1	EA	SURFACE CLOSER	4040XP EDA	689	LCN
1	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	SMOKE SEAL	W-21	BLK	KNC

Heading 23

1 SGL Door D122A EXTERIOR / STAIR
965 X 2135 X 45 X ALD X ALF X NONRTD

Each Assembly to have:

1	EA	CONT. HINGE	112HD	628	IVE
1	EA	PANIC HARDWARE	98-NL-OP-110MD	626	VON
1	EA	RIM CYLINDER	20-021	626	SCH
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	4021	689	LCN
1	EA	MOUNTING PLATE	4020-18G	689	LCN
1	EA	WEATHER STRIPPING	BY DOOR AND FRAME SUPPLIER		UNK
1	EA	DOOR SWEEP	W-24S	628	KNC
1	EA	THRESHOLD	CT-10	627	KNC
1	EA	DOOR CONTACT	679-05HM	BLK	SCE

Heading 24

1 PR Door D123 CORRIDOR / GYM
2/965 X 2135 X 45 X HMD X HMF X 45MIN

Each Assembly to have:

6	EA	HW HINGE	5BB1HW 127 X 114 NRP	652	IVE
2	EA	FIRE EXIT HARDWARE	9849-L-F-06-249-LBL	626	VON
2	EA	RIM CYLINDER	20-021	626	SCH
2	EA	OH STOP	100S	630	GLY
2	EA	SURFACE CLOSER	4040XP EDA	689	LCN
2	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	SMOKE SEAL	W-21	BLK	KNC
1	EA	ASTRAGAL	W-25	628	KNC

APPENDIX D – HARDWARE SCHEDULE

Refer also to Section 08 71 00 – Door Hardware and Appendix E – Hardware Catalogue Cuts

Heading 25

1	PR	Door D124	VESTIBULE / FOYER	
1	PR	Door D125	VESTIBULE / FOYER	
1	PR	Door D126	VESTIBULE / FOYER	

2/965 X 2135 X 45 X ALD X ALF X NONRTD

Each Assembly to have:

2	EA	CONT. HINGE	112HD	628	IVE
1	EA	KEYED REMOVABLE MULLION	KR4854-STAB	689	VON
1	EA	PANIC HARDWARE	35A-EO	626	VON
1	EA	PANIC HARDWARE	35A-NL-OP-388	626	VON
1	EA	MORTISE CYLINDER	20-001 (Removable Mullion)	626	SCH
1	EA	RIM CYLINDER	20-021	626	SCH
1	EA	ELECTRIC STRIKE	6111 FSE CON	630	VON
2	EA	DOOR PULL	CBH 7008-1 #6 MTG.	630	CBH
1	EA	OH STOP	100S	630	GLY
1	EA	OH STOP	100S ADJ	630	GLY
1	EA	SURFACE CLOSER	4021	689	LCN
1	EA	SURF. AUTO OPERATOR	9542 MS	ANCLR	LCN
1	EA	MOUNTING PLATE	4020-18G	689	LCN
2	EA	ACTUATOR, WALL MOUNT	8310-852	630	LCN
2	EA	ESCUTCHEON	8310-876	689	LCN
1	EA	WIRE HARNESS	CON-6W		VON
2	EA	DOOR CONTACT	679-05HM	BLK	SCE
1	EA	CARD READER	BY OTHERS		UNK

A hardware removable mullion will be used for latching.

Heading 26

1	PR	Door D124A	EXTERIOR / VESTIBULE	
1	PR	Door D125A	EXTERIOR / VESTIBULE	
1	PR	Door D126A	EXTERIOR / VESTIBULE	

2/965 X 2135 X 45 X ALD X ALF X NONRTD

Each Assembly to have:

2	EA	CONT. HINGE	112HD	628	IVE
1	EA	KEYED REMOVABLE MULLION	KR4854-STAB	689	VON
1	EA	PANIC HARDWARE	35A-EO	626	VON
1	EA	PANIC HARDWARE	35A-NL-OP-388	626	VON
1	EA	MORTISE CYLINDER	20-001 (Removable Mullion)	626	SCH
1	EA	RIM CYLINDER	20-021	626	SCH
1	EA	ELECTRIC STRIKE	6111 FSE CON	630	VON
2	EA	DOOR PULL	CBH 7008-1 #6 MTG.	630	CBH
1	EA	OH STOP	100S	630	GLY
1	EA	OH STOP	100S ADJ	630	GLY
1	EA	SURFACE CLOSER	4021	689	LCN
1	EA	SURF. AUTO OPERATOR	9542 MS	ANCLR	LCN
1	EA	MOUNTING PLATE	4020-18G	689	LCN
1	EA	WEATHER RING	8310-802	PLA	LCN

APPENDIX D – HARDWARE SCHEDULE

Refer also to Section 08 71 00 – Door Hardware and Appendix E – Hardware Catalogue Cuts

2	EA	ACTUATOR, WALL MOUNT	8310-852	630	LCN
2	EA	ESCUTCHEON	8310-876	689	LCN
1	EA	WEATHER STRIPPING	BY DOOR AND FRAME SUPPLIER		UNK
2	EA	DOOR SWEEP	W-24S	628	KNC
1	EA	THRESHOLD	CT-10	627	KNC
1	EA	WIRE HARNESS	CON-6W		VON
2	EA	DOOR CONTACT	679-05HM	BLK	SCE
1	EA	CARD READER	BY OTHERS		UNK

A hardware removable mullion will be used for latching.

Heading 27

1 PR Door D201 CORRIDOR / BRIDGE
2/965 X 2135 X 45 X HMD X HMF X 45MIN

Each Assembly to have:

6	EA	HW HINGE	5BB1HW 127 X 114	652	IVE
2	EA	FIRE EXIT HARDWARE	9849-L-BE-F-06-249-LBL	626	VON
1	EA	OH STOP	100SE	630	GLY
1	EA	FIRE/LIFE CLOSER	4040SE WMS	689	LCN
1	EA	FIRE/LIFE CLOSER	4040SE WMS ST-2806	689	LCN
1	EA	MOUNTING PLATE	4040-18G	689	LCN
2	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	SMOKE SEAL	W-21	BLK	KNC
2	EA	ASTRAGAL	W-25	628	KNC

Note: Mount closer on pull side.

Heading 28

1 SGL Door D201A STAIR / CORRIDOR
965 X 2135 X 45 X WD X ALF X NONRTD

Each Assembly to have:

3	EA	HINGE	5BB1 127 X 114 NRP	652	IVE
1	EA	CLASSROOM LOCK	ND70PD RHO	626	SCH
1	EA	SURFACE CLOSER	4040XP EDA	689	LCN
1	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	WALL STOP	WS406/407CVX	630	IVE
1	EA	FIRE/LIFE WALL MAG	SEM7850	689	LCN
1	EA	SMOKE SEAL	W-21	BLK	KNC

APPENDIX D – HARDWARE SCHEDULE

Refer also to Section 08 71 00 – Door Hardware and Appendix E – Hardware Catalogue Cuts

Heading 29

1 PR Door D203 CORRIDOR / CORRIDOR
2/965 X 2135 X 45 X HMD X HMF X 45MIN

Each Assembly to have:

6	EA	HW HINGE	5BB1HW 127 X 114	652	IVE
2	EA	FIRE EXIT HARDWARE	9849-L-BE-F-06-249-LBL	626	VON
2	EA	SURFACE CLOSER	4040XP EDA	689	LCN
2	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	WALL STOP	WS406/407CVX	630	IVE
2	EA	FIRE/LIFE WALL MAG	SEM7850	689	LCN
1	EA	SMOKE SEAL	W-21	BLK	KNC
2	EA	ASTRAGAL	W-25	628	KNC

Heading 30

1 SGL Door D205 CORRIDOR / CLASSROOM
1 SGL Door D209 CORRIDOR / BOOK ROOM
965 X 2135 X 45 X WD X HMF X NONRTD

Each Assembly to have:

3	EA	HINGE	5BB1 127 X 114	652	IVE
1	EA	CLASSROOM LOCK	ND70PD RHO	626	SCH
1	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	WALL STOP	WS406/407CVX	630	IVE

Heading 31

1 SGL Door D206 CORRIDOR / CLASSROOM
965 X 2135 X 45 X HMD X ALF X NONRTD

Each Assembly to have:

3	EA	HINGE	5BB1 127 X 114	630	IVE
1	EA	CLASSROOM LOCK	ND70PD RHO	626	SCH
1	EA	SURFACE CLOSER	4040XP	689	LCN
1	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	WALL STOP	WS406/407CVX	630	IVE

APPENDIX D – HARDWARE SCHEDULE

Refer also to Section 08 71 00 – Door Hardware and Appendix E – Hardware Catalogue Cuts

Heading 32

1 SGL Door D208 CORRIDOR / UNIVERSAL WASHROOM
965 X 2135 X 45 X WD X HMF X NONRTD

Each Assembly to have:

3	EA	HINGE	5BB1 127 X 114	652	IVE
1	EA	STOREROOM LOCK	ND80PD RHO	626	SCH
1	EA	INTERFACE BOX	JB7	GRAY	VON
1	EA	MORTAR GUARD	TAC-LD1-ES	GRY	TAC
1	EA	ELECTRIC STRIKE	6211 FS CON	630	VON
1	EA	OH STOP	100S	630	GLY
1	EA	SURF. AUTO OPERATOR	9142 WMS	ANCLR	LCN
1	EA	PUSH TO LOCK	CM-400/8	630	CAM
1	EA	LED ANNUNCIATOR	CM-AF500		CAM
2	EA	ACTUATOR, WALL MOUNT	8310-852	630	LCN
2	EA	ESCUTCHEON	8310-876	689	LCN
1	EA	KICKPLATE	CBH 903 300 X LDW	630	CBH
1	EA	ADVANCED LOGIC RELAY	CX-33		CAM
1	EA	EMERGENCY CALL KIT	CX-WEC10		CAM
1	EA	WIRE HARNESS	CON-6W		VON
1	EA	MORTAR GUARD	TAC-LD1-DC		TAC

Heading 33

1 SGL Door D211 STAIR / CORRIDOR
965 X 2135 X 45 X HMD X HMF X 45MIN

Each Assembly to have:

3	EA	HW HINGE	5BB1HW 127 X 114 NRP	652	IVE
1	EA	FIRE EXIT HARDWARE	98-L-F-06	626	VON
1	EA	RIM CYLINDER	20-021	626	SCH
1	EA	SURFACE CLOSER	4040XP EDA	689	LCN
1	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	SMOKE SEAL	W-21	BLK	KNC

Heading 34

1 SGL Door D212 BOOK ROOM / LAN ROOM
965 X 2135 X 45 X HMD X HMF X NONRTD

Each Assembly to have:

3	EA	HINGE	5BB1 127 X 114	652	IVE
1	EA	STOREROOM LOCK	ND80PD RHO	626	SCH
1	EA	SURFACE CLOSER	1461	689	LCN

APPENDIX D – HARDWARE SCHEDULE

Refer also to Section 08 71 00 – Door Hardware and Appendix E – Hardware Catalogue Cuts

1	EA	KICKPLATE	CBH 903 200 X LDW	630	CBH
1	EA	WALL STOP	WS406/407CVX	630	IVE

Heading 35

Each Assembly to have:

100	EA	KEY BLANKS	35-101		SCH
2	EA	CONST CONTROL KEY	48-056 ICX		SCH
2	EA	CONSTRUCTION KEY	48-101 (SPECIFY A, B OR C)		SCH
3	EA	CONSTRUCTION KEY	48-104		SCH
2	EA	CUT PERM CONT. KEY	49-052	626	SCH
6	EA	MASTER KEY	49-101		SCH
2	EA	BORING JIG	M204-198		SCH
2	EA	EXTRACTOR TOOL	35-057		SCH

End of Schedule

Catalog Cuts

for

Pope Francis Elementary School

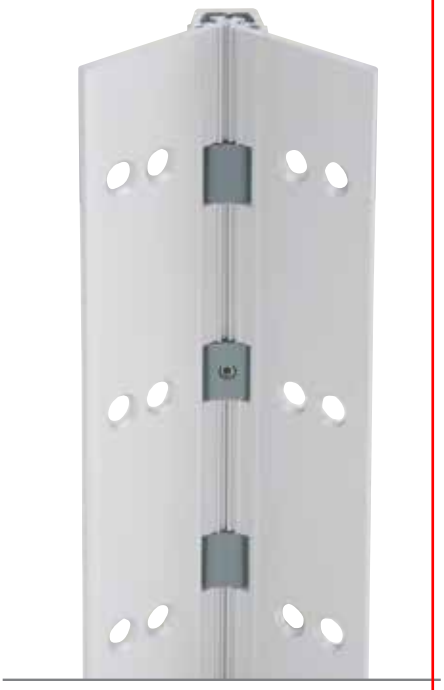
Sorted by DHI Sequence

Prepared By
ALAN D. MCMURTRIE, DAHC

1076 LAKESHORE ROAD EAST

MISSISSAUGA ON
Phone 905-403-1958

Created 5/4/2017



112HD Full Mortise - Narrow Frame and Door Leaf

UL10C certified
Meets ANSI 156.26 for 150lbs

- For 1 3/4" Doors
- Spread bearing design
- Non Handed for custom cut lengths
- Flush Mounted, No inset
- 48" Maximum Door Width
- Beveled or Square Edge Doors
- For doors weighing up to 450 pounds without reinforcing, 600 pounds with reinforcing

Standard lengths 83", 85", 95", 120"

Standard Mounting Hardware

12-24 x 3/4" Steel Self Drilling / Self Tapping Phillips Head Screw

Finishes

Clear Anodized (US28), Dark Bronze Anodized (313AN)
Custom Anodizing and Painting are available, consult factory

Options:

HT	Hospital Tip
EPT	Electric Power Transfer
TWP CON*	Through Wire Panel with Allegion Connect
TWP*	Electrical Through Wire Panel
TW8	Electrical Through Wire

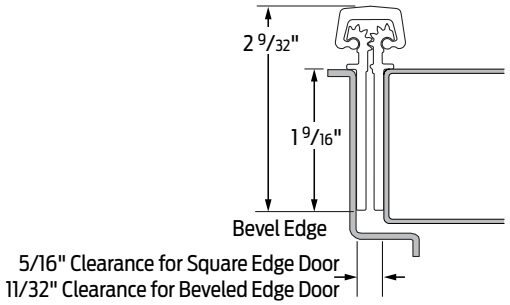
*TWP only available on lengths <= 95"

Optional Mounting Hardware:

SEC/HM	Security Screws - Hollow Metal Door and Frame
SEC/WD/HM	Security Screws - 1/2 Wood, 1/2 Hollow Metal
TF	Thread Forming Screws
TEK/WD	1/2 Self Drill, Self Tap 1/2 Wood
WD	Wood Door and Frame

For Single Door Applications

For pairs of doors see chart and general information
Hospital tip recommended for retrofit only





Meets ANSI/BHMA A156.1
A8133 – Steel
A5133 – Stainless Steel
A2133 – Brass

5PB1 5 Knuckle, Plain Bearing Full Mortise Hinge

- For standard weight doors
- Low frequency usage
- Packed with wood and metal screws

Not for use with a door closer.

Options

- NRP, Non-Removable Pin
- SH, Security Stud
- HT, Hospital Tip
- RC, Round Corners - 1/4" or 5/8" Radius
- SEC, Security Fastners - Pin-in-Socket

Dimensions

Size (Inches)	Size (mm)	Gauge
3.5 x 3.5	89 x 89	0.123
4 x 4	102 x 102	0.134
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	0.134



Meets ANSI/BHMA A156.1
A8112 – Steel
A5112 – Stainless Steel
A2112 – Brass

5BB1 5 Knuckle, Ball Bearing Full Mortise Hinge

- For standard weight doors
- Medium frequency usage
- 2 ball bearing
- Packed with wood and metal screws

Options

- NRP, Non-Removable Pin
- SH, Security Stud
- HT, Hospital Tip
- RC, Round Corners - 1/4" or 5/8" Radius
- SEC, Security Fastners - Pin-in-Socket

Dimensions

Size (Inches)	Size (mm)	Gauge	Size (Inches)	Size (mm)	Gauge
3.5 x 3.5	80 x 102	0.130	5 x 4.5	127 x 114	0.146
4 x 4	102 x 102	0.130	5 x 5	127 x 127	0.146
4.5 x 4	114 x 102	0.134			
4.5 x 4.5	114 x 114	0.134			

Finishes *brass*

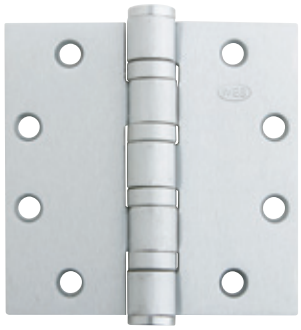
Ives Finish	US3	US4	US10	US10B	US10A	US11	US15	US26	US26D
BHMA	605	606	612	613	614	616	619	625	626

Finishes *steel*

Ives Finish	USP	US3	US4	US10	US10B	US10A	US11	US15	US26	US26D
BHMA	600	632	633	639	640	641	643	646	651	652

Finishes *stainless steel*

Ives Finish	US32	US32D
BHMA	629	630



Meets ANSI/BHMA A156.1
A8111 – Steel
A5111 – Stainless Steel
A2111 – Brass

5BB1HW 5 Knuckle, Ball Bearing, Heavy Weight Full Mortise Hinge

- For heavy weight doors
- High frequency usage
- 4 ball bearing
- Packed with wood and metal screws

Options

- NRP, Non-Removable Pin
- SH, Security Stud
- HT, Hospital Tip
- RC, Round Corners - 1/4" or 5/8" Radius
- SEC, Security Fastners - Pin-in-Socket

Dimensions

Size (Inches)	Size (mm)	Gauge	Size (Inches)	Size (mm)	Gauge
4.5 x 4	114 x 102	0.180	5 x 4.5	127 x 114	0.190
4.5 x 4.5	114 x 114	0.180	5 x 5	127 x 127	0.190



Meets ANSI/BHMA A156.1
A8111 – Steel

5BB1WT 5 Knuckle, Ball Bearing, Wide Throw Full Mortise Hinge

- For medium weight doors
- Medium frequency usage
- 2 ball bearing
- Packed with wood and metal screws

Options

- NRP, Non-Removable Pin
- SH, Security Stud
- HT, Hospital Tip
- RC, Round Corners - 1/4" or 5/8" Radius
- SEC, Security Fastners - Pin-in-Socket

Dimensions

Size (Inches)	Size (mm)	Gauge
4.5 x 5	114 x 127	0.134
4.5 x 6	114 x 152	0.134
5 x 6	127 x 152	0.146
5 x 7	127 x 178	0.146
5 x 8	127 x 203	0.146

Finishes *brass*

Ives Finish	US3	US4	US10	US10B	US10A	US11	US15	US26	US26D
BHMA	605	606	612	613	614	616	619	625	626

Finishes *steel*

Ives Finish	USP	US3	US4	US10	US10B	US10A	US11	US15	US26	US26D
BHMA	600	632	633	639	640	641	643	646	651	652

Finishes *stainless steel*

Ives Finish	US32	US32D
BHMA	629	630



Meets ANSI A156.3 Type 25.
UL Listed 3 Hour Fire Doors 8'0" x 10'0"

FB31P Top and Bottom Bolts (Pair)

- Fully Automatic—inactive door is latched, bolts are extended when active door closes, door is unlatched, bolts retract when active door is opened.
- Low Actuation Forces—Top Bolt Has No Spring Tension.
- Fits standard ANSI A115.4 Door Frame Preparations.
- Non-handed.
- Bolt throw is 3/4" with a 7/8" vertical adjustment.
- Bolt backset is 3/4"
- Standard Rod Length is 12", which is measured from the center of the flush bolt body to the bolt tip. Optional rod lengths available for top bolt only on non-fire rated openings—18", 24", 36" and 48.

DP1 or DP2 optional dust proof strike available, see page C11.

FB31T Top Bolt Only
FB31B Bottom Bolt Only

FB32 Top Bolt with Auxiliary Fire Latch

- FB32 Model with Auxiliary Fire Latch eliminates the bottom bolt and is UL Listed for Fire Doors.

FB33 Top Bolt with Auxiliary Fire Latch and Retrofit Plate

- FB33 Model with Auxiliary Fire Latch eliminates the bottom bolt and includes a retrofit plate to cover existing bottom bolt prep. UL Listed for Fire Doors.



Meets ANSI A156.3 Type 25.
UL Listed 3 Hour Fire Doors 8'0" x 8'0"

Dimensions

Body Size: 1" Wide x 6-3/4" Long x 2" Deep
Guide Size: 1" Wide x 1-27/32" Long x 27/32" High x 3/32" Thick
Strike Size: 15/16" Wide x 2-1/4" Long x 1/16" Thick
Rub Plate Size: 1-1/4" Wide x 1-11/16" Long x 3/64" Thick
Auxiliary Fire Latch Size: 1" Wide x 1-3/4" Long x 3-1/4" Deep
Retrofit Plate Size: 1" Wide x 6-3/4" Long x 3/32" Thick

Finishes

Ives Number	US3	US4	US10	US10B	US32	US32D
BHMA	605	606	612	613	629	630



DP1



DP2

Meets Meets ANSI/BHMA 156.16, L14011.

DP1
DP2 Dust Proof Strikes

- Designed for use with the bottom bolt of all flush bolts.
- Spring-loaded plunger returns to floor or threshold level anytime flush bolt is retracted, eliminating need to clean standard floor strikes.
- Strike hole is 3/4" Diameter and 1-1/8" Deep

Dimensions

DP1 Face Plate: 1-7/16" Diameter
DP2 Face Plate: 1-5/8" W x 3-1/2" L x 1/8" Thick
Body: 1-3/16" Diameter x 1-7/8" Deep

Finishes

Ives Number	US3	US4	US10	US10B	US26	US26D
BHMA	605	606	612	613	625	626

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.**

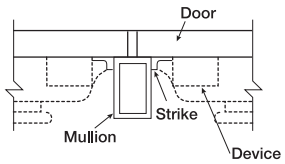
4954 Prepared for 264 or 299 strikes. For use with all Von Duprin Panic rim devices. **Note: specify strike choice with device.**

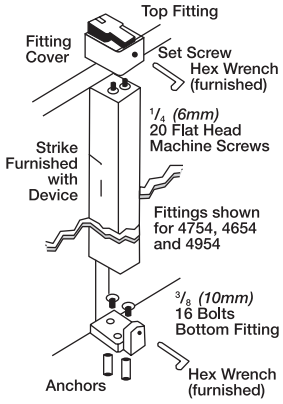
9954 Prepared for and must be used with two 268 strikes (88-F device), or two 499F (22-F, 98-F, 99F devices). UL fire labeled mullion for up to 3 hour opening using Von Duprin fire exit rim devices. This mullion is not easily removed due to special fittings.

22-F and 88-F devices are rated up to 8' x 8" (2438mm x 2438mm).

98-F and 99-F devices are rated up to 10'0" (3048mm).

Note: If 268 or 499F strikes are not specified on the order, two per mullion will be added. Additional charges apply.



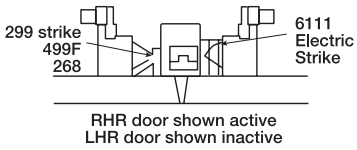


4754 Prepared for two 4263 monitor strikes.

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

4854/9854 – Using one electric strike



Aluminum mullions

5654 Prepared for two 264 or 299 strikes with weatherstripping. Includes one set of 154 stabilizers.

5754 Prepared and furnished with one 1408 double door strike. Includes one 154 stabilizer set. Note: specify device "less strike".

Sizes for mullions

1654, 4954, 4754, 4854, 5654	**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 and all blank 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

ALLEGION™

SCHLAGE®

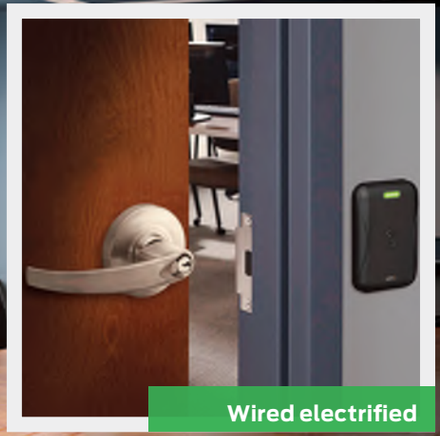
ND Series

Grade 1 cylindrical locks

Mechanical
Wired electrified
Wireless electronic



Mechanical



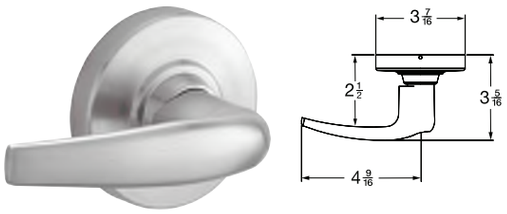
Wired electrified



Wireless electronic

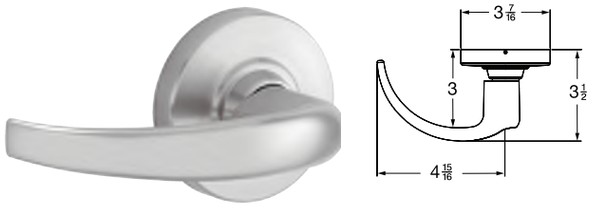
Lever designs and finishes

Athens (ATH)[2]



Mechanical | Wired electrified | Wireless electronic

Sparta (SPA)[1, 2]



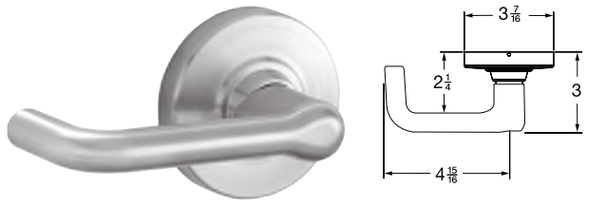
Mechanical | Wired electrified | Wireless electronic

Rhodes (RHO)[1, 2]



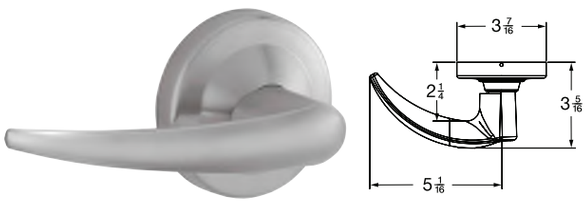
Mechanical | Wired electrified | NDE wireless electronic

Tubular (TLR)[1, 2]



Mechanical | Wired electrified

Omega (OME)[1]



Mechanical | Wired electrified

Add "All levers comply with the Americans with Disabilities Act (ADA)".

1 Rhodes, Sparta, Tubular and Omega levers comply with California State code for return within ½" of door face.

2 All levers except Omega can support cylinders from other manufacturers, see cylinder section page 24 for details.

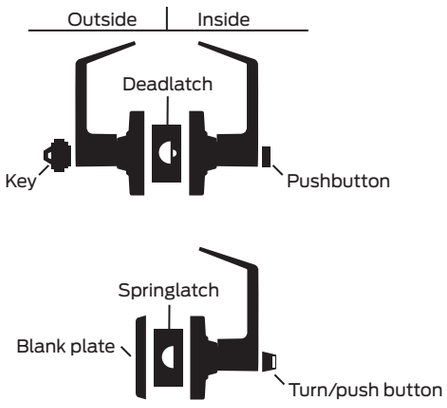
Finish options	Bright brass	Satin brass	Satin bronze	Oil rubbed bronze	Satin nickel	Matte black	Bright chrome	Satin chrome	Aged bronze
ANSI/BHMA number	605	606	612	613	619	622	625	626/626AM	643e
US number	US3	US4	US10	US10B	US15	US19	US26	US26D	US11
Mechanical	■	■	■	■	■	■	■	■	■
Wired electrified	■	■	■	■	■	■	■	■	■
Wireless electronic	■	■	■	—	■	■	■	■	■

Product information and specifications contained in this catalog are subject to change without notice. Please consult the factory.

006501_SC_ND_Series Catalog_081016.indd 10 8/10/16 3:07 PM

ND Series mechanical lock
Keyless function list

Legend



Schlage ANSI

ND10S F75

Passage latch

- Both levers always unlocked.

Inside



Available with RX

Schlage ANSI

ND12D F89

Exit lock

- Outside lever always fixed.
- Inside lever always unlocked.

Outside Inside



Available with RX

Schlage ANSI

ND25D -

Exit lock

- Blank plate outside.
- Inside lever always unlocked.

Outside Inside



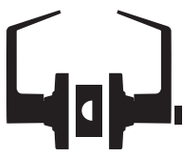
Schlage ANSI

ND40S F76

Bath/bedroom privacy lock

- Push-button locking.
- Can be opened from outside with a small screwdriver.
- Turn inside lever or close door to release button.

Outside Inside



Schlage ANSI

ND44S -

Hospital privacy lock

- Push-button locking.
- Unlocked from outside by turning emergency turn-button.
- Turn inside lever or close door to release button.

Outside Inside



Schlage ANSI

ND170 -

Single dummy trim

- Dummy trim for one side of door.
- Used for door pull or as matching inactive trim.

Outside/Inside



006501_SC_ND_Series Catalog_081016.indd 13 8/10/16 3:07 PM

ND Series mechanical lock
Keyless function list

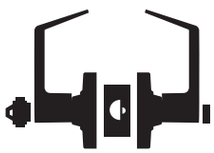
Schlage ANSI

ND50PD F82

Entrance/office lock

- Push-button locking.
- Push-button locks outside lever until it is unlocked with key or by turning inside lever.

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.

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 unlocked for immediate egress.

Outside **Inside**



Schlage ANSI

ND66PD F91

Store lock†

- Key in either lever locks or unlocks both levers.

Outside **Inside**



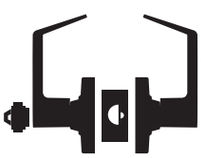
Schlage ANSI

ND70PD F84

Classroom lock

- Outside lever locked and unlocked by key.
- Inside lever always unlocked.

Outside **Inside**



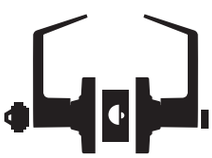
Schlage ANSI

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 is always unlocked.

Outside **Inside**



Schlage ANSI

ND75PD -

Classroom security lock

- Key in either lever locks or unlocks outside lever.
- Inside lever is always unlocked.

Outside **Inside**



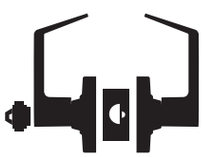
Schlage ANSI

ND80PD F86

Storeroom lock

- Outside lever is fixed.
- Entrance by key only.
- Inside lever always unlocked.

Outside **Inside**



Available with RX

006501_SC_ND_Series Catalog_081016.indd 14 8/10/16 3:07 PM

98/99 Rim exit device





The 299 Strike ships standard, optional strikes available

98 and 99 Rim exit devices 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 98 device has a smooth mechanism case and the 99 device has a grooved case. The rim device is non-handed except when the following device options are used: SD (special dogging), -2 (double cylinder) or SS (signal switch). See Opposite page for available outside trim and device functions. Covers stock hollow metal doors with 86 or 161 cutouts on single doors (may cover cutouts on pairs – consult template).

Finishes – US3, US3A, US4, US4A, US10, US26, US26D, US26D-AM Antimicrobial, US28, 313, 315 & 643E. US15 and US32D available with 98 Series only.

Hex key dogging comes standard on 98/99 Rim exit devices



Specifications

Device functions	Device ships EO/DT/NL. Field selectable. For TP, K or L remove NL drive screw from device.
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" x 2 3/4" x2 3/8" (203mm x 70mm x 60mm)
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 screw pack for 1 3/4" (44mm) and 2 1/4" (57mm) thick metal or wood doors. Optional 425 SNB available, see page 9 for quantities.
Electric options	**LX** Latchbolt monitor switch **RX** Pushpad monitor switch **RX2** Double pushpad monitor switch **E** Electric locking & unlocking trim **EL** Electric latch retraction **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 **AX** Accessible device **GBK** Glass bead kit **PN** Pneumatic latch retraction **XP** Extra protection **SNB** Sex bolts **SEC** Security screws
Dogging feature Dogging options	Hex key dogging standard **CD** Cylinder dogging **SD** Special center case dogging **LD** Less dogging **DI** Dogging indicator **CI** Cylinder dogging indicator
Strikes	**299** – Dull black

XP
Extra protection
- 90° latch-to-strike contact
- Force resistance of 2,000+ lbs.

CD
Cylinder dogging
- Replaces hex key dogging
- Requires 1 1/4" mortise cylinder with inverted cam

QEL
Quiet electric latch retraction
- Bolt retraction via switch
- Converts exit door to push-pull operation

RX
Pushpad monitor switch
- Signals use of an opening
- SPDT switch to monitor pushpad

CX
Chexit delayed exit
- Meets NFPA 101 requirements
- Self-contained controls, locking, alarm

AX
Accessible device
- UL certified to meet new 5 lb. maximum operating force requirement
- Exceeds ANSI/BHMA requirements

EL
Electric latch retraction
- Enables remote unlatching
- Alternative to manual dogging

ALK
Alarm exit kit
- Unauthorized opening triggers 85-decibel horn
- Set in armed or disarmed mode by key

PN
Pneumatic latch retraction
- For areas where electrical devices banned
- Special linkage for mechanical or pneumatic dogging

CON
Allegion Connectors
- Common connectors to connect various door hardware all the way to the power supply

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	98EO 99EO	98DT 99DT	98NL 99NL	98NL-OP 99NL-OP
Trim description	—	990DT	990NL-R/V	110NL-MD 110NL-WD
Escutcheon plate size	—	3" x 14 13/16" x 3/32" (76x360x2mm)	3" x 14 13/16" x 3/32" (76x360x2mm)	—
Pull center to center	—	5 1/2" (140mm)	5 1/2" (140mm)	—
Projection	—	2" (51mm)	2" (51mm)	—
ANSI function	01	02	03	03
Cylinder type	—	—	Rim	Rim
Handing	—	—	—	—
Optional trim	x990EO x996EO	x996K-DT x996L-DT x696DT x697DT	x996K-NL x996L-NL x696NL x697NL	
Optional #425 SNB quantity for device	6	2	2	6

	L	L-NL	L-BE	L-DT
	 **Lever** Key locks & unlocks	 **Lever – night latch** Key retracts latchbolt	 **Lever – blank escutcheon** Always operable (no cylinder)	 **Lever dummy trim** pull when dogged
Product description	98L 99L	98L-NL 99L-NL	98L-BE 99L-BE	98L-DT 99L-DT
Trim description	996L-R/V*	996L-NL-R/V	996L-BE-R/V*	996L-DT
Escutcheon plate size	2 3/4" x 10 3/4" x 27/32" (70x273x21mm)	2 3/4" x 10 3/4" x 27/32" (70x273x21mm)	2 3/4" x 10 3/4" x 27/32" (70x273x21mm)	2 3/4" x 10 3/4" x 27/32" (70x273x21mm)
Pull center to center	—	—	—	—
Projection	2 7/8" (73mm)	2 7/8" (73mm)	2 7/8" (73mm)	2 7/8" (73mm)
ANSI function	08	03	14	02
Cylinder type	Rim	Rim	—	—
Handing	Handed/Reversible	Handed/Reversible	Handed/Reversible	Handed/Reversible
Optional #425 SNB quantity for device	2	2	2	2

* Electrified lever operation available

Notes

98-F/99-F Rim exit device





The 299F Strike ships standard, optional strikes available



499F Strike with 9854/9954 mullion

98-F and 99-F Rim fire exit devices for all types of single doors up to 4' x 10' (1219mm x 3048mm) or 8' x 10' (2438mm x 3048mm) double doors with 9954 or 9854 mullion, UL listed for fire exit hardware. See page 76 for detailed information on UL listed fire exit hardware label and door opening size information. Devices are ANSI A156.3 – 2014 Grade 1. 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). See opposite page for available outside trim and device functions.

Finishes – US3, US3A, US4, US4A, US10, US26, US26D, US26D-AM Antimicrobial, US28, 313, 315 & 643E. US15 and US32D available with 98 Series only.

Specifications

Device functions	Device ships EO/DT/NL. Field selectable. For TP, K or L remove NL drive screw from device.
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" x 2 3/4" x2 3/8" (203mm x 70mm x 60mm)
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 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 & 825 SNB required on wood doors without SLM blocking. See page 11 for quantities.
Electric options	**LX** Latchbolt monitor switch **RX** Pushpad monitor switch **RX2** Double pushpad monitor switch **E** Electric locking & unlocking trim **EL** Electric latch retraction **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 **AX** Accessible device **GBK** Glass bead kit **PN** Pneumatic latch retraction **XP** Extra protection **SNB** Sex bolts **SEC** Security screws **SLM** Special Laminate Material Blocking
Dogging option	No mechanical dogging. EL and QEL option available
Strikes	**299F** – Dull black, 499F with mullions

XP
Extra protection
- 90° latch-to-strike contact
- Force resistance of 2,000+ lbs.

RX
Pushpad monitor switch
- Signals use of an opening
- SPDT switch to monitor pushpad

EL
Electric latch retraction
- Enables remote unlatching
- Alternative to manual dogging

ALK
Alarm exit kit
- Unauthorized opening triggers 85-decibel horn
- Set in armed or disarmed mode by key

QEL
Quiet electric latch retraction
- Bolt retraction via switch
- Converts exit door to push-pull operation

CX
Chexit delayed exit
- Meets NFPA 101 requirements
- Self-contained controls, locking, alarm

AX
Accessible device
- UL certified to meet new 5 lb. maximum operating force requirement
- Exceeds ANSI/BHMA requirements

SG
Safety glow
- Shows exit door location in darkness or smoke
- Developed to meet MEA standards

PN
Pneumatic latch retraction
- For areas where electrical devices banned
- Special linkage for mechanical or pneumatic dogging

CON
Allegion Connectors
- Common connectors to connect various door hardware all the way to the power supply

9849-F/9949-F Concealed vertical cable fire exit device





9849/9949 Concealed vertical cable device for use on single or double metal doors, UL listed for panic exit hardware. See page 76 for detailed information on UL listed fire exit hardware label and door opening size information. Devices are ANSI A156.3 – 2014 Grade 1. The 9849 device has a smooth mechanism case and the 9949 device has a grooved case. The concealed vertical cable device is non-handed except when the following device options are used: SD (special dogging), or SS (signal switch). See opposite page for available outside trim and device functions.

Finishes – US3, US3A, US4, US4A, US10, US26, US26D, US26D-AM Antimicrobial, US28, 313, 315 & 643E. US15 and US32D available with 98 Series only.

Specifications

Device functions	Device ships EO/DT/NL. Field selectable. For TP, K or L remove NL drive screw from device.	
Device lengths	2'	2' (610 mm) Door size
	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 5/8" (1006 mm) Standard	
Center case dimensions	8" x 2 3/4" x2 3/8" (203mm x 70mm x 60mm)	
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 anti-friction top & bottom bolt, 5/8" (16mm) throw	
Door undercut	3/4" (19mm) maximum (24231516 spacer block kit needed for 3/4" undercut)	
Top & bottom Latch case	5 13/16" x 1 1/4" x 1 7/16" (147mm x 32mm x 37mm)	
Vertical cable	7/32" (6mm) Diameter stainless steel cables	
Fasteners & sex bolts (SNB)	Includes screw pack for 1 3/4" (44mm) to 2 1/4" (57mm) thick metal doors. Optional 425 SNB available.	
Electric options	**ALK**	Alarm exit kit
	CX	Chexit delayed exit
	E	Electric unlocking and locking trim
	EL	Electric latch retraction
	HD-EL	Electric latch retraction w/ hex dogging
	QEL	Quiet electric latch retraction
	***LX**	Latchbolt monitor switch
	RX2	Double pushpad monitor switch
	RX996L	Trim monitor switch
	RX	Pushpad monitor switch
	RXLC	Pushpad monitor switch - low current
	SS	Signal switch
	WP-RX	Waterproof request to exit
	CON	Allegion Connect
Mechanical options	**GBK**	Glass bead kit
	LBL	Less bottom latch
	AX	Accessible device (LBL only)
	PN	Pneumatic latch retraction
	SEC	Security screws
	SG	Safety glow
	SNB	Sex bolts
Dogging option	No mechanical dogging. EL and QEL option available	
Strikes	Top – **249** - Unfinished, Bottom – **349** - Unfinished	

CX
Chexit delayed exit
- Meets NFPA 101 requirements
- Self-contained controls, locking, alarm

SS
Signal switch
- Signals unauthorized use of an opening
- Switch makes latch bolt tamper-resistant

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

QEL
Quiet electric latch retraction
- Bolt retraction via switch
- Converts exit door to push-pull operation

E (E996L)
Electrified breakaway lever
- Electrified remote locking/unlocking
- Standard in fail safe condition

AX
Accessible device
- UL certified to meet new 5 lb. maximum operating force requirement
- Exceeds ANSI/BHMA requirements

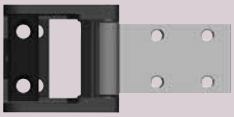
CON
Allegion Connectors
- Common connectors to connect various door hardware all the way to the power supply

PN
Pneumatic latch retraction
- For areas where electrical devices banned
- Special linkage for mechanical or pneumatic dogging

*For 98/9949 devices, LX switch monitors trim input or electric dogging of EL/QEL devices. LX switch does not monitor latchbolt condition.

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 – 2001 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

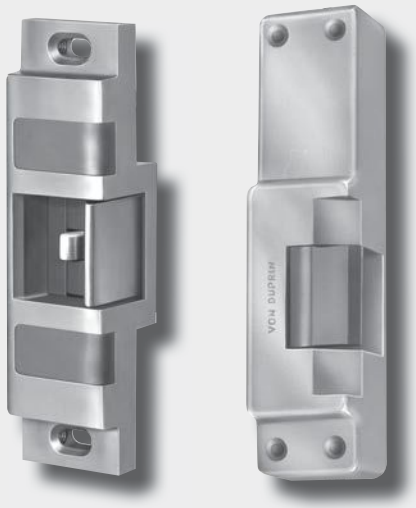
CD
Cylinder dogging
- Replaces hex key dogging
- Requires standard 1 1/4" mortise cylinder

ALLEGION

VON DUPRIN

6100 Series

Strikes for rim exit devices



Overview

Von Duprin electric strikes are known for their reliability, durability and security. The 6100 Series strikes are designed to withstand abuse. Their heavy-duty stainless steel construction is UL1034 listed and meets ANSI/BHMA Grade 1.

6100 Series electric door strikes are designed for use with a variety of rim exit devices including rim nightlatch. Electrified strikes allow remote release of a locked door by activating a movable lip (keeper) using an entry/exit button or credential reader and can be a cost effective means for managing access. 6100 Series strikes come standard as 24 VDC in fail secure mode. 12 VDC and AC operation can be selected, as can fail safe mode and other options that enable you to configure these strikes to fit your exact needs.

Use 6100 Series electric strikes for retrofit applications or new construction. 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 if retrofitting a strike to an existing application, please contact Von Duprin technical support for application assistance.

Features and benefits

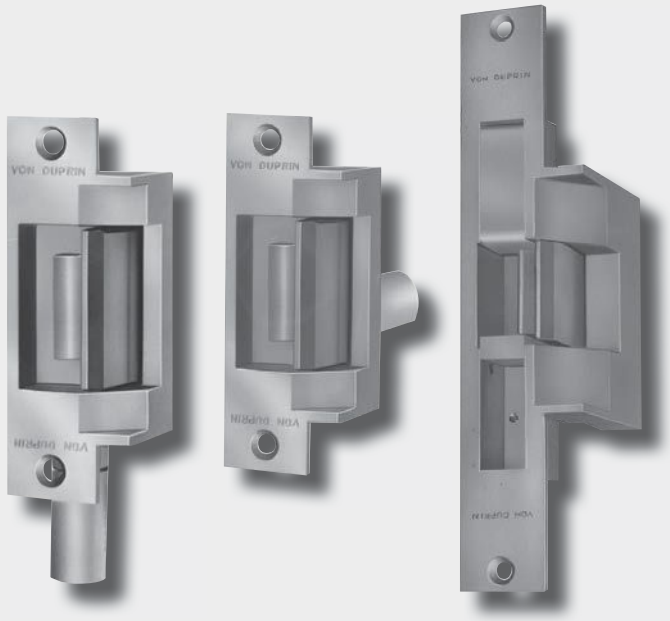
- Five configurations available for rim exit and nightlatch devices
- Heavy-duty stainless steel construction
- Strike box allows horizontal adjustment to compensate for misalignment of the door or frame
- 24 VDC standard with 12 VDC and AC operation optional
- Two-piece plug connectors are furnished for ease of installation and removal during strike servicing
- Options include rectifier kit for VAC to VDC conversion, dual monitor switches, entry buzzer and Allegion Connect wire extension
- Six popular finishes available to suite with existing hardware
- Suitable for interior or exterior doors
- UL 10C 3-hour fire-rated electric strike (models 6111, 6112 and 6113)
- UL 1034 listed for burglary-resistant electric door strikes
- Meets ANSI/BHMA A156.31, Grade 1 for endurance and dynamic strength
- Meets ANSI/BHMA A156.31, Grade 1, 1500 lbs static strength
- Dynamic strength 70 ft lbs
- Endurance 1,000,000 cycles

ALLEGION™

VON DUPRIN®

6200 Series

Strikes for mortise or cylindrical devices



Overview

Von Duprin electric strikes are known for their reliability, durability and security. The 6200 Series strikes are designed to withstand abuse. Their heavy-duty stainless steel construction is fully UL1034 and UL10C listed and meets ANSI/BHMA Grade 1.

6200 Series electric door strikes are designed for use with a variety of mortise or cylindrical locksets. Electrified strikes allow remote release of a locked door by activating a movable lip (keeper) using an entry/exit button or credential reader and can be a cost effective means for managing access. 6200 Series strikes come standard as 24 VDC in fail secure mode. 12 VDC and AC operation can be selected, as can fail safe mode and other options that enable you to configure these strikes to fit your exact needs.

Use 6200 Series electric strikes for retrofit applications or new construction. 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.

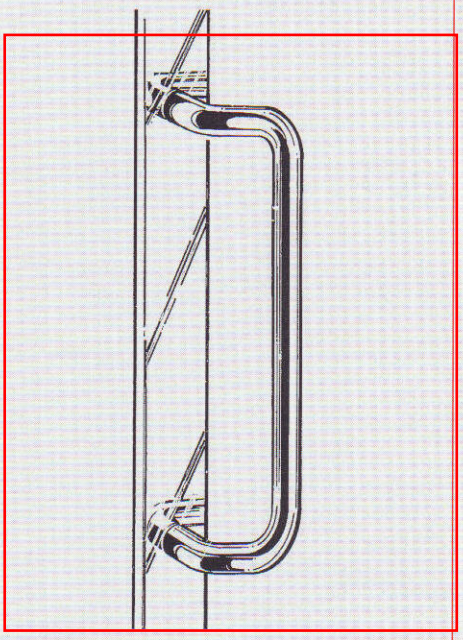
Features and benefits

- 17 configurations available for cylindrical and mortise applications
- Heavy-duty stainless steel construction
- 24 VDC standard with 12, 16 and 28 VDC operation optional
- Two-piece plug connectors are furnished for ease of installation and removal during strike servicing
- Options include rectifier kit for VAC to VDC conversion, dual monitor switches, entry buzzer and Allegion Connect wire extension
- Six popular finishes available to suite with existing hardware
- Suitable for interior and exterior doors
- UL 10C 3-hour fire-rated (fail secure only)
- UL 1034 listed for burglary-resistant electric door strikes
- Meets ANSI/BHMA A156.31, Grade 1 for endurance and dynamic strength
- Meets ANSI/BHMA A156.31, Grade 1, 1500 lbs static strength
- Dynamic strength 70 ft-lbs
- Endurance 1,000,000 cycles

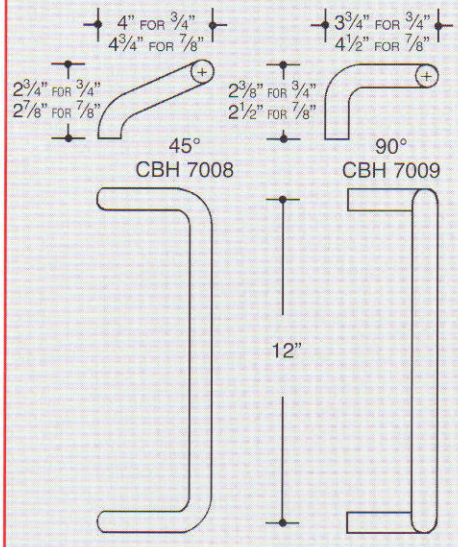
Offset Door Pulls

CBH 7008 12" PULL 45°
CBH 7009 12" PULL 90°

OTHER SIZES AVAILABLE UPON REQUEST.



MOUNTING: 1, 3 OR 6.
#1 MTG 5/16–18 NC
#3 MTG 5/16–18 NC
#6 MTG 3/8–16 NC

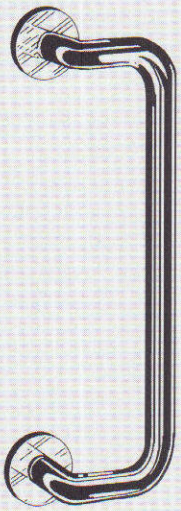


MATERIAL:
3/4" BRASS, BRONZE AND STAINLESS STEEL.
7/8" ALUMINUM

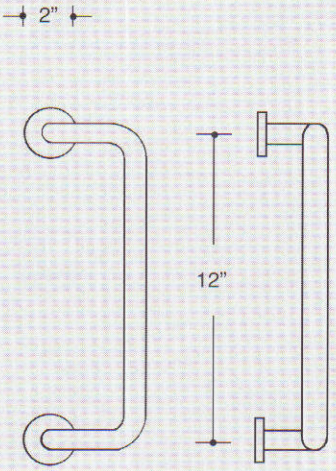
FINISHES: ALL STANDARD

CBH 7108 12" PULL 45°
CBH 7109 12" PULL 90°

WITH ROUND ROSETTES 1/8" x 2" DIA.



MOUNTING: 1, 3 OR 6.
#1 MTG 5/16–18 NC
#3 MTG 5/16–18 NC
#6 MTG 3/8–16 NC

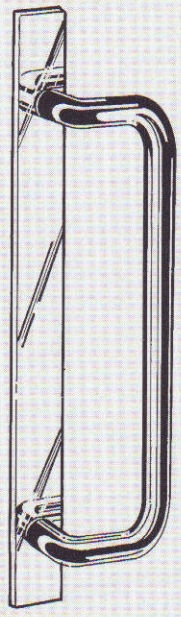


MATERIAL:
3/4" BRASS, BRONZE AND STAINLESS STEEL.
7/8" ALUMINUM

FINISHES: ALL STANDARD

CBH 7508 12" PULL 45°
CBH 7509 12" PULL 90°

WITH NARROW BACKPLATE

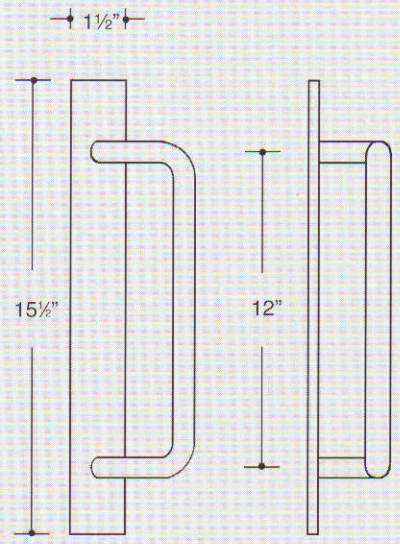


.050 GAUGE PLATES WILL BE SUPPLIED STANDARD, FOR THICKER PLATES USE SUFFIX

B	1/8	**.125**
C	3/16	**.187**
D	1/4	**.250**

EXAMPLE:
CBH 7508 = 7008 1½" x 15½" x .050

MOUNTING: 1, 3 OR 6.
#1 MTG 5/16–18 NC
#3 MTG 5/16–18 NC
#6 MTG 3/8–16 NC



MATERIAL:
3/4" BRASS, BRONZE AND STAINLESS STEEL.
7/8" ALUMINUM

FINISHES: ALL STANDARD



COR Series Bar Coodinators

Meets ANSI/BHMA A156.3, Type 21A.
UL Listed for installation on labeled frame.

- The COR Series Coordinators are designed for use on pairs of doors when one door needs to close before the other.
- All COR units function easily. The active door lever, located nearest to the active stop, holds the active door open until the trigger mechanism is released by the closing of the inactive leaf.
- All COR units may not function correctly with swingclear hinges.
- All COR units are equipped with an adjustable override feature which allows the active door to close under extreme pressure.
- All COR units are compatible with Flush Bolts.
- The COR Series is available in five sizes for variable door opening widths.
- The COR Series does not cover the entire length of the stop, so a FL filler bar can be provided to maintain architecturally clean lines.
- COR Series Coordinator Channels and FL fillers are made of aluminum.
- Optional Filler Bars: FL20 - 20", FL32 - 32" and FL44 - 44", available to maintain clean line.
- Optional Mounting Brackets available: MB1, MB2, MB1F, MB2F, MB3F, MB1V, MB2V, and MB3V for other stop applied hardware.

For Openings Where Doors Are Same Size

Coordinator Number	Length of Channel	For Opening Widths	Common Applications
COR32	32"	34" - 52"	Pair of 2'0" Doors
COR42	42"	52" - 72"	Pair of 2'6" Doors
COR52	52"	62" - 92"	Pair of 3'0" Doors
COR60	60"	70" - 108"	Pair of 3'6" Doors
COR72	72"	84" - 132"	Pair of 4'0" Doors

For Openings Where Doors Are Unequal Size

The coordinator length should equal the active door width plus approximately 1/2 the inactive door width. The coordinator must be 6" longer than the active door width and shorter than the overall frame opening between stops.

Finishes

Ives Finish	US28	US26D	315AN
BHMA	628	713	711



FL Series Filler Bars

- The FL Filler Bars are available in three sizes for variable frame openings.
- FL Filler Bars are made of aluminum
- FL Filler Bars are field sized to frame opening.

Filler Bar Number	Length	Dimensions
FL20	20"	1-5/8" W x 5/8" D x 20" L
FL32	32"	1-5/8" W x 5/8" D x 32" L
FL44	44"	1-5/8" W x 5/8" D x 44" L

Finishes

Ives Finish	US28	US26D	315AN
BHMA	628	713	711

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.

90S Series Stop-Only

(Suffix S) When the Hold-Open function is not a requirement, Stop-Only models provide a reliable method of door control. Stop-Only models provide the same shock-absorbing capability as Hold-Open models. The Stop-Only model may be used on fire doors.

90F Series Friction Hold-Open

(Suffix F) Friction Hold-Open models are ideal for patient room doors, wardrobe and closet doors or similar applications where multiple Hold-Open positions are desired. The friction tension can be adjusted through the top of the channel using an allen wrench. The friction 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 LCN5030 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.

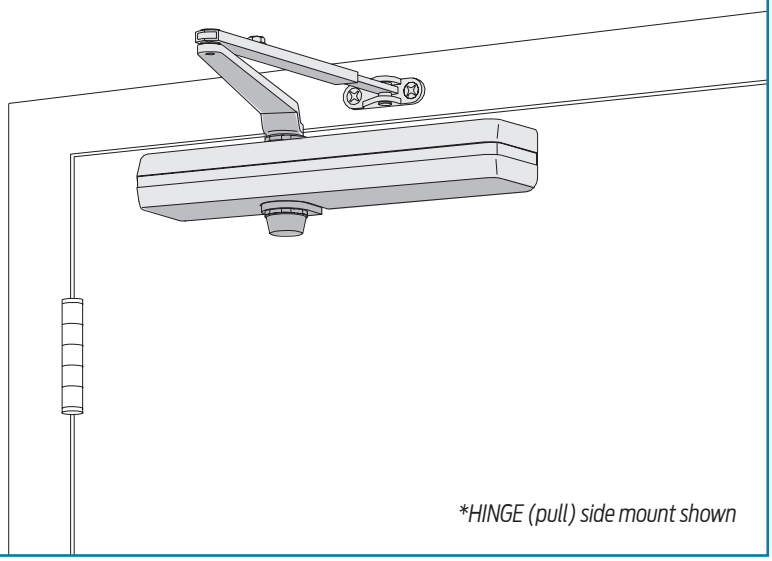
100HP Series Internal Hold-Open

These models provide a Hold-Open unit with the Hold-Open mechanism built into the channel, thus reducing the door prep. The 100HP have a preset Hold-Open force that is not adjustable. The Hold-Open feature is not selectable in these units, so the doors are always held open.

1460 SERIES

FEATURES

CLOSER MOUNTS
***HINGE (PULL) SIDE**
TOP JAMB (PUSH SIDE)
PARALLEL ARM (PUSH SIDE)



**HINGE (pull) side mount shown*

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.

- Cast Iron
- All weather fluid
- Non-handed
- Peel-n-stick templates for fast and accurate installation
- UL and cUL listed

- Standard 1460 series closer shipped with regular arm, a slim line plastic cover, and self reaming and tapping screws. See 1460 Series Pages 16 & 17 for options.
- Multiple cover options include; Standard (Slim line), Full and Designer Series.
- Non-sized (1-6) cylinder is adjustable for interior doors to 5´0˝ and exterior doors to 4´0˝.
- Closer mounts hinge side, top jamb and parallel arm on either right or left swinging doors.
- Closer meets ADA requirements. See 1460 Series page 18.
- Standard or optional custom powder coat finish.
- Optional plated finish on Designer Series metal cover, arm and fasteners. (Available with powder coat finishes only.)
- Optional SRI primer for installations in corrosive conditions.
- Tested and certified under ANSI Standard A156.4, grade one.

MOUNTING					FINISH		COVER			CYLINDER				*ARM FUNCTION							
HINGE (PULL) SIDE	TOP JAMB (PULL)	TOP JAMB (PUSH)	PARALLEL ARM	STOP FACE	POWDER COAT	PLATED	PLASTIC	METAL	DESIGNER SERIES	NON-HANDED	NON-SIZED	ACCESSIBILITY	DELAYED ACTION	REGULAR (DOUBLE)	STANDARD (SINGLE)	HEAVY DUTY	HOLD-OPEN	EDA/HEDA	CUSH/HCUSH	SCUSH/SHCUSH
●	○	●	●	○	●	●D	●	○	●	●	●	♿	●	180°	○	180°	180°	110°	100°	100°

● 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.

PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

1460 SERIES

MOUNTING DETAILS

HINGE (PULL) SIDE MOUNTING

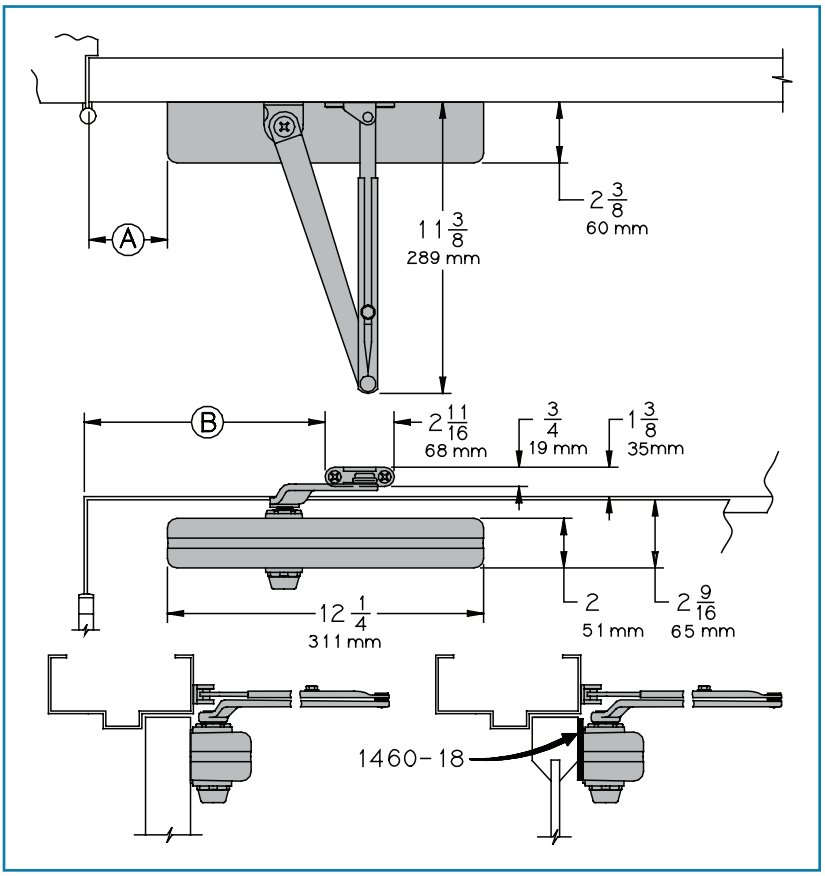
MAXIMUM OPENING

110º
- Ⓐ = 5-7/8″ (149 mm)
- Ⓑ = 10-7/8″ (276 mm)

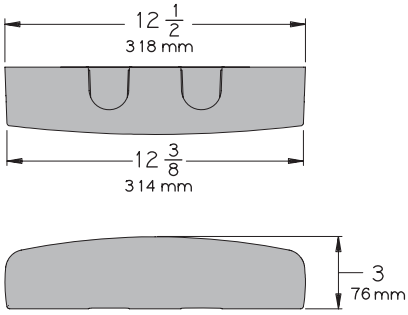
or *180º
- Ⓐ = 2-7/8″ (73 mm)
- Ⓑ = 7-7/8″ (200 mm)

Hold-open points up to maximum opening with hold-open arm.

**Frame and trim permitting.*



Optional, Non-handed Designer Series Metal Cover



Options

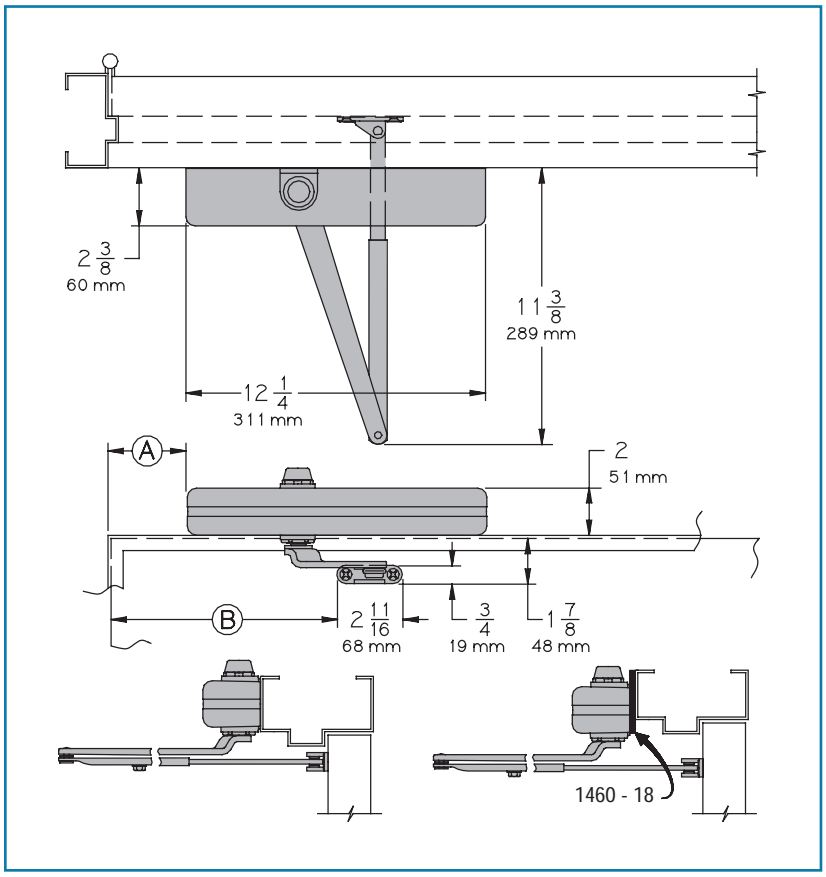
- Delayed action cylinder.
- Hold-open arm.
- ► Full cover. (FC)
- Designer Series metal cover.(DS)

Special Templates

Customized installation templates or products may be available to solve unusual applications. Contact LCN Product Support for assistance.

- **Butt Hinges** should not exceed 5″ (127 mm) in width.
- **Auxiliary Stop** is recommended at hold-open point or where a door cannot swing 180º.
- **Reveal** should not exceed 3/4″ (19 mm) for regular arm or 1/2″ (13 mm) for hold-open arm.
- **Top Rail** less than 2-1/2″ (64 mm) requires PLATE, 1460-18. With Full cover, use PLATE, 1460-18FC. Plate requires 1-1/2" (38 mm) minimum. With Designer Series metal cover, use PLATE, 1460-18DS1.
- ► **Clearance** of 2-3/8" (60 mm) behind door required for installation.
- **Delayed Action** Add suffix "DEL" to selected cylinder (eg. 1461 DEL). Delays closing from 110º to 65º or 160º to 75º depending on templating. Delay time adjustable up to approximately 1 minute.

PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14



TOP JAMB (PUSH SIDE) MOUNTING

MAXIMUM OPENING

110º

Ⓐ = 6-3/4″ (169 mm)

Ⓑ = 11-1/4″ (286 mm)

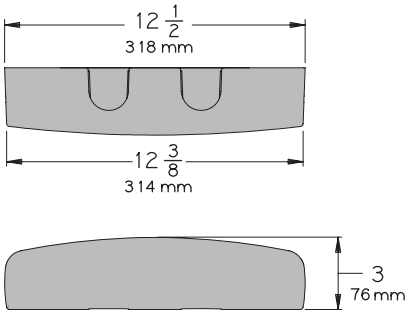
180º

Ⓐ = 3″ (76 mm)

Ⓑ = 7-1/2″ (191 mm)

Hold-open points up to maximum opening with hold-open arm.

Optional, Non-handed Designer Series Metal Cover



- **Butt Hinges** should not exceed 5″ (127 mm) in width.
- **Auxiliary Stop** is recommended at hold-open point or where a door cannot swing 180º.
- **Reveal** of 2-1/2″ (64 mm) allows 180º opening with REGULAR HOLD-OPEN ARM. 3-1/2″ (89 mm) allows up to 180º opening with REGULAR ARM or 180º with optional LONG HOLD-OPEN ARM when standard head and tube is replaced with optional LONG HEAD AND TUBE, 1460-78HL. 4-7/8″ (124 mm) allows up to 140º with REGULAR ARM or LONG HOLD-OPEN ARM. 7″ (178 mm) allows up to 140º opening with LONG ARM when standard rod and shoe is replaced with optional LONG ROD AND SHOE, 1460-79LR.
- **Top Rail** requires 1-7/8″ (48 mm) minimum. 2-3/4″ (70 mm) minimum with closer on PLATE, 1460-18.
- **Head Frame** less than 1-3/4″ (44 mm) requires PLATE, 1460-18. For flush ceiling condition with 2″ (51 mm) headframe, use PLATE, 1460-18.
- **Delayed Action** Add suffix "DEL" to selected cylinder (eg. 1460 DEL). Delays closing from 110º to 75º or 180º to 95º depending on templating. Delay time adjustable up to approximately 1 minute.

Options

- Delayed action cylinder.
- Long arm, hold-open arm, long hold-open arm.
- Full cover. (FC)
- Designer Series metal cover. (DS)

Special Templates

Customized installation templates or products may be available to solve unusual applications. Contact LCN Product Support for assistance.

PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

1460 SERIES

MOUNTING DETAILS

PARALLEL ARM (PUSH SIDE) MOUNTING

Optional mounting requires PA SHOE, 1460-62PA for REGULAR or HOLD-OPEN arms. Add prefix "P" to closer description (e.g. P1460). P1460 closer includes 1460-201 FIFTH HOLE SPACER to support PA SHOE.

MAXIMUM OPENING

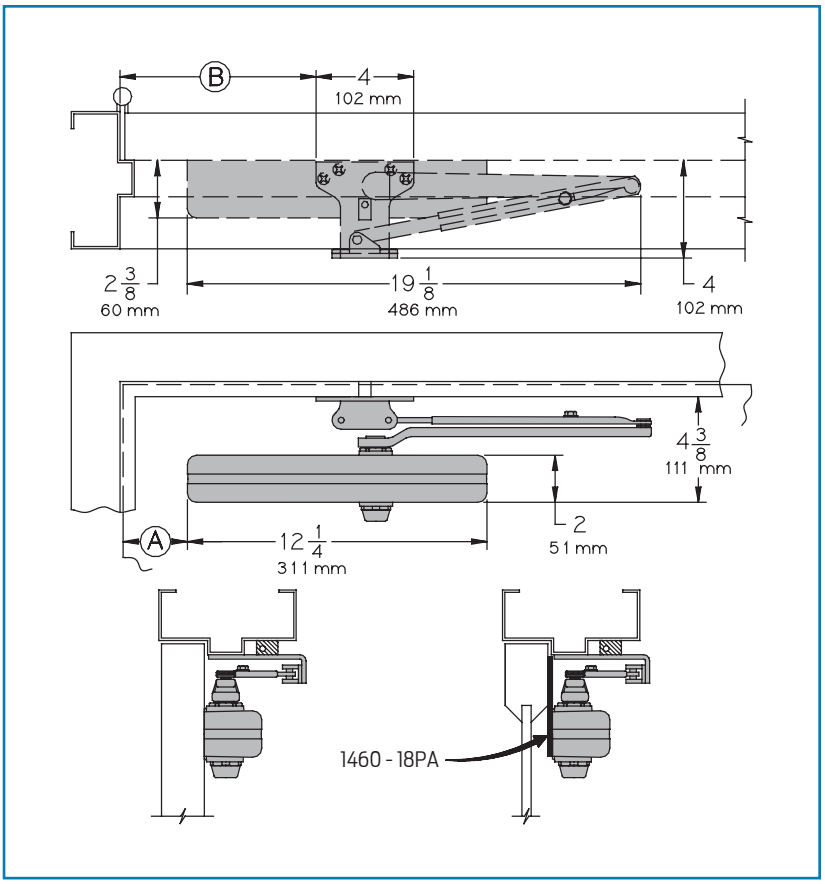
Regular or hold-open arm can be templated for 100º

Ⓐ = 4-1/4″ (108 mm)
Ⓑ = 9-1/4″ (235 mm)

or 180º.

Ⓐ = 1-3/4″ (44 mm)
Ⓑ = 6-3/4″ (171 mm)

Hold-open points up to maximum opening with hold-open arm.



1460 REGULAR OR HOLD-OPEN MOUNT

- **Butt Hinges** should not exceed 5″ (127 mm) in width.
- **Auxiliary Stop** is recommended at hold-open point, where a door cannot swing 180º, or where CUSH-N-STOP arm is not used.
- **Clearance** for 1460-62PA shoe is 4″ (102 mm) from door face.
- **Top Rail** less than 4-3/8″ (111 mm) measured from the stop requires PLATE, 1460-18PA. With Full cover, use PLATE, 1460-18PAFC. Plate requires 1-3/4″ (44 mm) minimum. Plate requires 1-1/4″ (32 mm) minimum. With Designer Series metal cover, use PLATE, 1460-18PADS1.
- **Head Frame** flush or single rabbeted requires PA SHOE ADAPTER, 1460-418.
- **Stop Width** minimum 1″ (25 mm).
- **Blade Stop** clearance, requires 1/2″ (13 mm) BLADE STOP SPACER, 1460-61.
- **Auxiliary Shoe,** 1460-62A allows installation of regular arm with overhead holder/stop. Special templating required.
- **Delayed Action** Add suffix "DEL" to selected cylinder (eg. P1460 DEL). Delays closing from maximum opening to approximately 75º. Delay time adjustable up to approximately 1 minute.

Options

- Delayed action cylinder.
- Hold-open, EDA, HEDA, CUSH, HCUSH, SPRING CUSH, or SPRING HCUSH arms.
- Full cover. (FC)
- Designer Series metal cover. (DS)

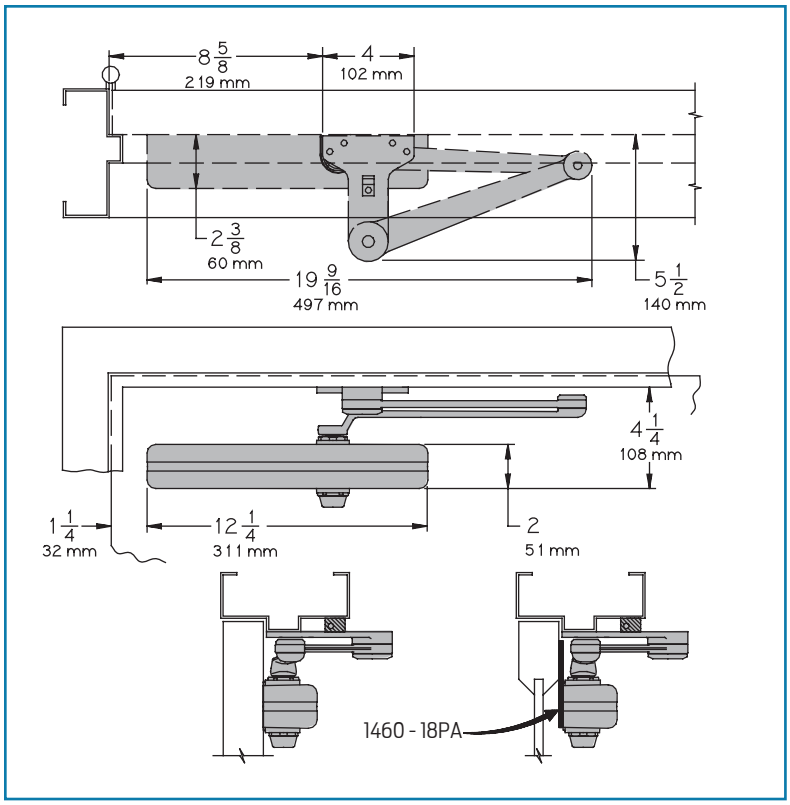
Special Templates

Customized installation templates or products may be available to solve unusual applications. Contact LCN Product Support for assistance.

PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

1460 SERIES

1460 EDA MOUNT



1460 EDA OR CUSH-N-STOP MOUNTING

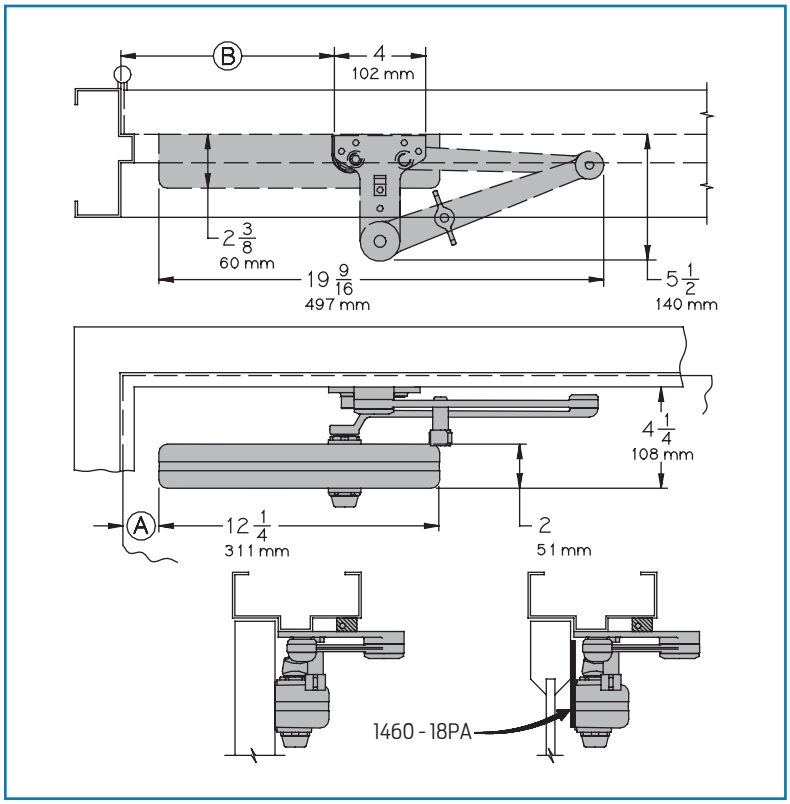
1460 closers ordered with EDA, CUSH or SPRING CUSH arms include 1460-201 FIFTH HOLE SPACER to support the shoe.

MAXIMUM OPENING

EDA template allows 110º.
Hold-open point up to maximum opening.

CUSH arms can be templated for maximum opening/hold-open point at
85º,
Ⓐ = 2-3/8″ (60 mm)
Ⓑ = 9-9/16″ (243 mm)
90º,
Ⓐ = 1-5/8″ (41 mm)
Ⓑ = 9-1/16″ (230 mm)
or 100º.
Ⓐ = 5/8″ (16 mm)
Ⓑ = 8-1/16″ (205 mm)

1460 CUSH MOUNT

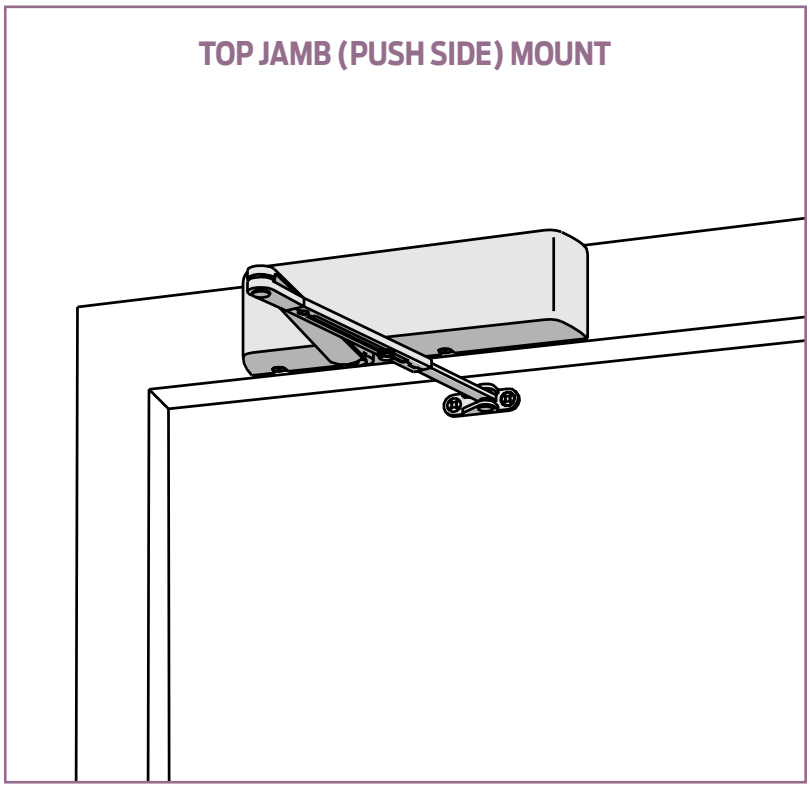


- **Spring CUSH** hold open points are approximately 5º less than dead stop point.
- **Clearance** for 1460-62EDA or CUSH shoe is 5-1/2″ (140 mm) from door face.
- **Head Frame** flush or rabbeted requires PA FLUSH PANEL ADAPTER, 1460-419.
- **EDA or CUSH ARM** requires SHOE SUPPORT, 1460-30 for fifth screw anchorage where reveal is less than 3-1/16″ (78 mm).

PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

4020 SERIES

TOP JAMB (PUSH SIDE) MOUNT



The 4020 is LCN's best performing heavy duty closer designed specifically for institutional and other rugged high traffic applications.

FEATURES

- Cast Iron
- Forged Steel Main Arm
- Double Heat Treated Steel Pinion
- All Weather Fluid
- LCN Patented Green Dial
- UL & cUL Listed
- Peel-n-Stick Templates for Fast and Accurate Installations

- Standard 4020 Series closer is shipped with regular arm, standard plastic cover, and self reaming and tapping screws. See 4020 Series page 15 for options.
- Size 6 cylinder for interior doors to 5´0˝ and exterior doors to 4´0˝.
- Non-sized cylinder (4021) adjustable for interior doors to 4´6˝ and exterior doors to 3´6˝.
- Closer mounts top jamb (push side), specify right or left swinging door.
- 4021 cylinder meets ADA requirements. See 4020 Series page 16.
- Standard or optional custom powder coat finish.
- Optional plated finish on metal cover, arm and fasteners.
- Optional SRI primer for installations in corrosive conditions is available with powder coat only.
- The 4020 Series is UL and cUL listed with regular or fusible link arms for self-closing doors.
- Tested and certified under ANSI Standard A156.4, grade one.



The 4020 Series includes the
LCN® "Green Dial"
Spring Force Indicator

MOUNTING					FINISH		COVER		CYLINDER				**ARM FUNCTION							
HINGE (PULL) SIDE	TOP JAMB (PULL)	TOP JAMB (PUSH)	PARALLEL ARM	STOP FACE	POWDER COAT	PLATED	PLASTIC	METAL	NON-HANDED	NON-SIZED	ACCESSIBILITY	DELAYED ACTION	AVB***	REGULAR (DOUBLE)	STANDARD (SINGLE)	HOLD-OPEN	FUSIBLE LINK	EDA/HEDA	CUSH/HCUSH	SCUSH/SHCUSH	DOUBLE EGRESS
○	○	●	○	○	●	●	●	●	○	●	♿	●	○	180°	○	140°	140°	○	○	○	○

● 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.*

PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

4020 SERIES

MOUNTING DETAILS

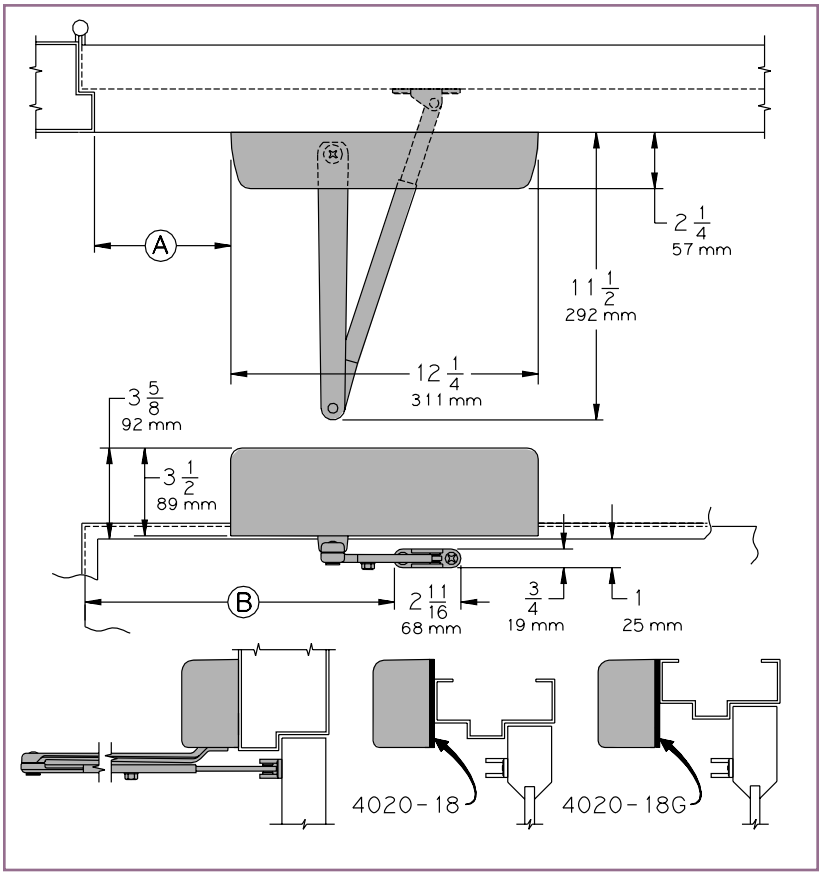
TOP JAMB (PUSH SIDE) MOUNTING

MAXIMUM OPENING

Can be templated for
100º,
Ⓐ = 6" (152 mm)
Ⓑ = 12 3/8" (314 mm)
140º,
Ⓐ = 4" (102 mm)
Ⓑ = 10 3/8" (264 mm)
or 180º.
Ⓐ = 2" (51 mm)
Ⓑ = 8 3/8" (213 mm)

Hold-open points up to maximum opening or 140º, whichever is less, for hold-open or fusible link arm.

For hold-open beyond 140º, use 4110 Series closer.



- **Butt Hinges** should not exceed 5″ (127 mm) in width.
- **Auxiliary Stop** is recommended at hold-open point or where the door cannot swing 180º.
- **Reveal** of 2-9/16″ (65 mm) allows 180º opening with regular arm.
  4-13/16″ (122 mm) allows up to 140º opening with regular arm.
  8″ (203 mm) allows up to 140º opening with LONG ARM where standard rod and shoe is replaced with optional long rod and shoe (4020-79LR).
- **Head Frame** less than 3-7/16″ (87 mm) requires PLATE, 4020-18
  Use PLATE, 4020-18G for flush ceiling condition.
  Either plate requires 1-3/4″ (44 mm) minimum.
- **Top Rai**l requires minimum 1-1/2″ (38 mm).
  Closer on 4020-18 plate requires 2″ (51 mm) minimum.
  Closer on 4020-18G plate requires 2-3/4″ (70 mm) minimum.
- **Delayed Action** Add suffix "DEL" to selected cylinder.
  Not available with 4026 cylinder.
  Delays closing from maximum opening to approximately 75º.
  Delay time adjustable up to approximately 1 minute.

Options

- Size 6 or non-sized cylinder.
- Delayed action cylinder.
- Hold-open, or fusible link arm.
- Metal cover.

Special Templates

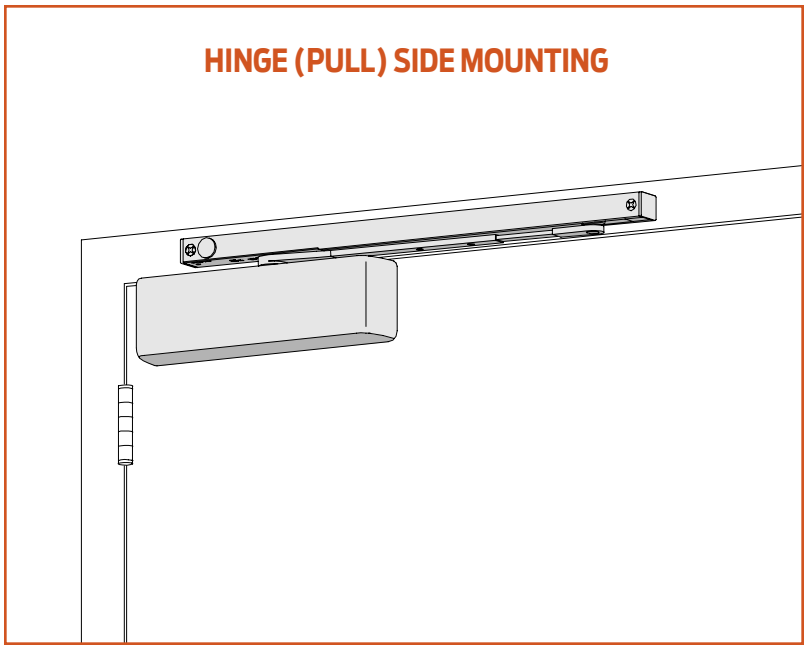
Customized installation templates or products may be available to solve unusual applications. Contact LCN Product Support for assistance.

PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

4040SE SERIES

FEATURES

HINGE (PULL) SIDE MOUNTING



The 4040SE SENTRONIC® is a heavy duty, non-handed, non-sized 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.

- Standard 4040SE Series closer shipped with a standard arm, 24V or 120V (please specify) SE track, standard plastic clip-on cover, and wood and machine screw pack. SEL tracks are optional, see 4040SE Series pages 20 & 21 for options.
- Non-sized cylinders for interior doors to 4´0˝.
- Hold-open force is adjustable.
- 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.
- Closer mounts on either push or pull side of the door.
- Non-handed for mounting on either right or left hand door.
- Concealed or surface wiring.
- Interfaces with alarm systems.
- Standard or optional custom powder coated finishes on cover and arm.
- Optional plated finishes.

The 4040SE and SEL Series is UL listed for smoke barrier or labeled fire doors. cUL listed for self-closing doors without hold-open. Tested and certified under ANSI Standard A156.15. Conforms to life safety code, NFPA 101.

MOUNTING					FINISH		COVER		CYLINDER					*ARM FUNCTION				
HINGE (PULL) SIDE	TOP JAMB (PUSH)	STOP FACE (PUSH)	CONCEALED (FRAME)	CONCEALED (DOOR)	POWDER COAT	PLATED	PLASTIC	METAL	HANDED	NON-SIZED	SIZED	SINGLEPOINTHOLD-OPEN	MULTI-POINTHOLD-OPEN	BYPASS 80/140	STANDARD (SINGLE)	REGULAR (DOUBLE)	SWING FREE	DOUBLE EGRESS
●	○	●	○	○	●	●	●	●	○	●	○	●	○	○	110°	○	○	95°

● AVAILABLE
○ NOT AVAILABLE

* *Maximum hold-open with standard template. See individual closer series for degrees of opening and hold-open per installation.*

PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

4040SE SERIES

MOUNTING DETAILS

HINGE (PULL) SIDE MOUNTING

Information applies to 4040 SE unless otherwise specified.

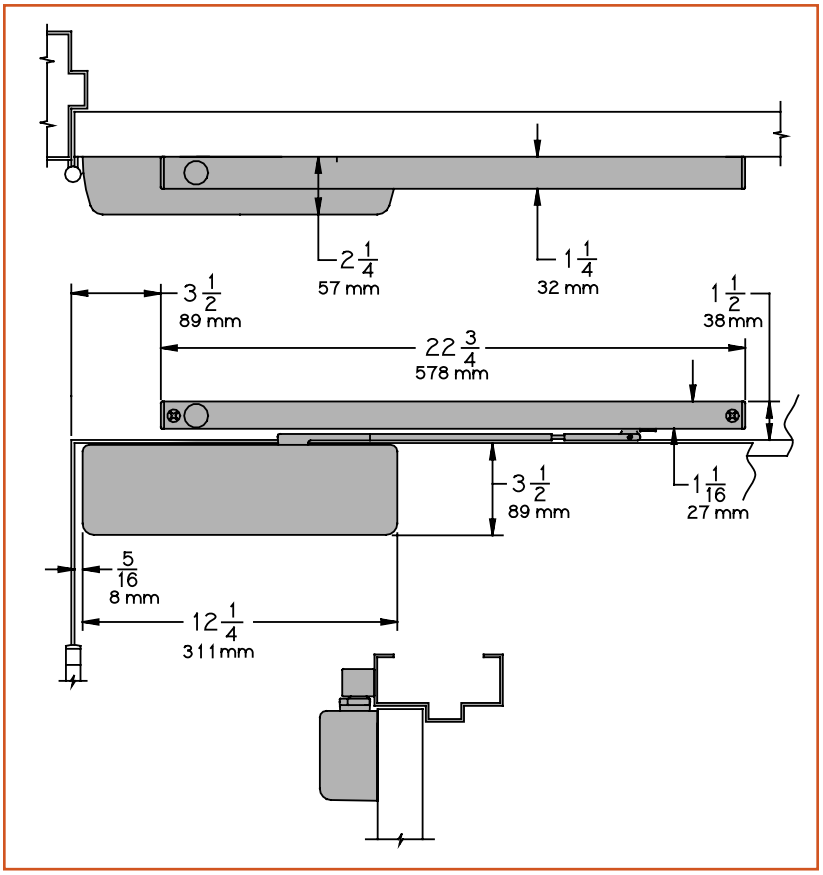
MAXIMUM OPENING

Templating allows 110º.
Hold-open points between 85º and 110º in approximately 3º increments.
Pull side mounting on a double egress frame requires a handed double egress arm.
Maximum hold-open to 95º.
2-11/16″ (67 mm) maximum reveal on pull side.
SEL track provides hold-open points between 90º and 120º, in approximately 3º 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 TRANSFORMER reduces 120V AC line voltage to 24V AC.
Circuitry accepts either AC or DC input.



- **Butt Hinges** should not exceed 5″ (127 mm) in width.
- **Swing Clear Hinges** consult factory.
- **Auxiliary Stop** is recommended at hold-open point.
- **Reveal** should not exceed 1/8″ (3 mm) for standard arm. Should not exceed 2-11/16″ (68 mm) for double egress arm.
- **Top Rail** minimum 3-1/2″ (89 mm).
  Installation with PLATE, 4040SE-18 requires SPECIAL TEMPLATE and 1-3/4″ (44 mm) minimum top rail.
- **Head Frame** requires 2″ (51 mm) minimum.
- **Flush Ceiling** with 2″ (51 mm) head frame does not require special templating.
- **Door Width** 2′4″ (711 mm) minimum for single door with SE.
  4′8″ (1422 mm) minimum for paired doors with SE.
- **Clearance** of 2-3/8″ (60 mm) behind door required for 90º installation.
- **Wiring Diagram** See “FIRE/LIFE SAFETY” section page 19 for typical wiring and electrical diagram.

Options

- Long (SEL) track.
- Handed double egress arm for reveal under 2-11/16″ (67 mm).
- Metal cover.
- 24V or 120V input for SE or SEL, please specify.

Special Templates

Customized installation templates or products may be available to solve unusual applications. Contact LCN Product Support for assistance.

PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

4040SE SERIES

STOP FACE (PUSH SIDE) MOUNTING

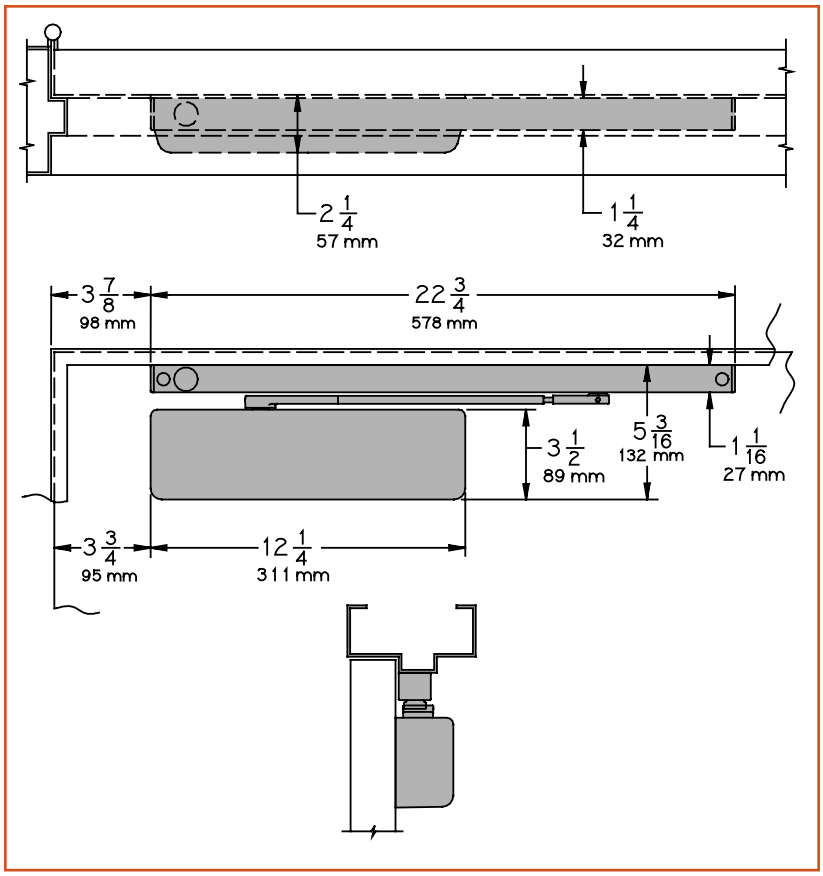
Information applies to 4040 SE closers unless otherwise specified.

MAXIMUM OPENING

Templating allows 110º.
Hold-open points between 85º and 110º in approximately 3º increments.
SEL track provides hold-open points between 90º and 120º, in approximately 3º 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 TRANSFORMER reduces 120V AC line voltage to 24V AC.
Circuitry accepts either AC or DC input.



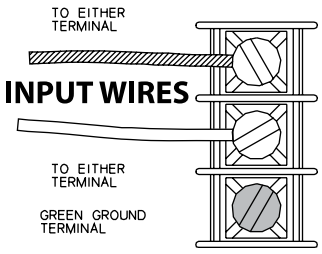
- **Butt Hinges** should not exceed 5″ (127 mm) in width.
- **Auxiliary Stop** is recommended at hold-open point.
- **Top Rail** minimum 5-3/4″ (146 mm).
  Installation with PLATE, 4040SE-18PA requires SPECIAL TEMPLATE and 2″ (51 mm) minimum top rail.
- **Stop Width** 1-1/4″ (32 mm) minimum.
- **Door Width** 2´4″ (711 mm) minimum for single door with SE.
  4´8″ (1422 mm) minimum for paired doors with SE.
- **Wiring Diagram**

Options

- Long (SEL) track.
- Metal cover.
- 24V or 120V input for SE or SEL, please specify.

Special Templates

Customized installation templates or products may be available to solve unusual applications. Contact LCN Product Support for assistance.



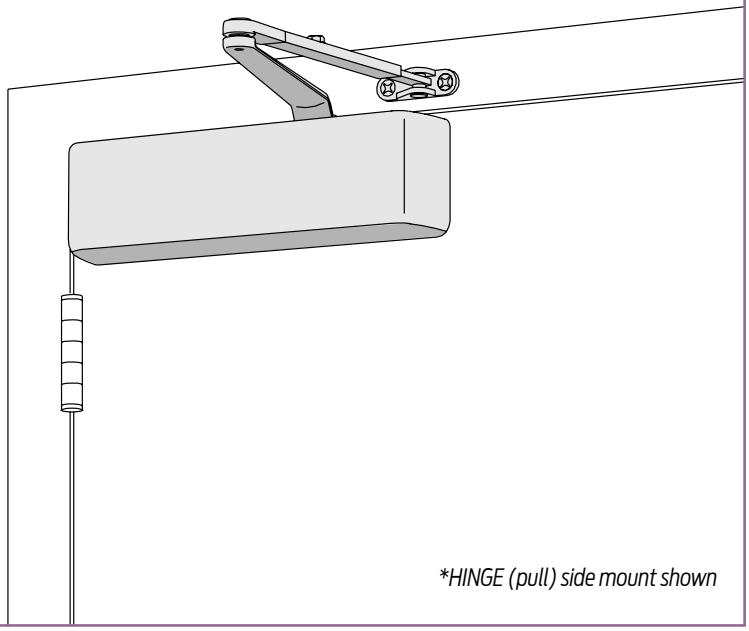
SE WIRING DIAGRAM

PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

4040XP SERIES

FEATURES

CLOSER MOUNTS
***HINGE (PULL) SIDE**
TOP JAMB (PUSH SIDE)
PARALLEL ARM (PUSH SIDE)



**HINGE (pull) side mount shown*

The 4040XP is LCN's most durable and flexible heavy duty closer designed for institutional and other demanding high traffic applications.

- Cast Iron
- Forged Steel Arm
- Double Heat Treated Steel Pinion
- All Weather Fluid
- Non-Handed
- LCN Patented Green Dial
- Peel-n-Stick Templates for Fast and Accurate Installation
- UL & cUL Listed
- 3/4″ Journal Diameter Pinion
- Full Compliment Bearing

- Standard 4040XP Series closer shipped with regular arm, standard plastic cover, and self reaming and tapping screws.
- Non-sized cylinder is adjustable for interior doors to 5'0" and exterior doors to 4'0".
- Closer mounts hinge side, top jamb, and parallel arm on either right or left swinging doors.
- Closers to meet ADA requirements.
- Standard or optional custom powder coat finish.
- Optional plated finish on cover, arm, and fasteners.
- Optional SRI primer for installations in corrosive conditions. (Available with powder coat finishes only.)
- UL and cUL listed for self-closing doors without hold-open.
- Tested and certified under ANSI Standard A156.4, grade one.



The 4040XP Series includes the **LCN® "Green Dial" Spring Force Indicator**

MOUNTING					FINISH		COVER		CYLINDER				**ARM FUNCTION							
HINGE (PULL) SIDE	TOP JAMB (PULL)	TOP JAMB (PUSH)	PARALLEL ARM	STOP FACE	POWDER COAT	PLATED	PLASTIC	METAL	NON-HANDED	NON-SIZED	ACCESSIBILITY	DELAYED ACTION****	AVB***	REGULAR (DOUBLE)	STANDARD (SINGLE)	HOLD-OPEN	FUSIBLE LINK	EDA/HEDA	CUSH/HCUSH	SCUSH/SHCUSH	DOUBLE EGRESS
●	○	●	●	○	●	●	●	●	●	●	♿	●	○	120°	○	120°	○	180°	110°	110°	○

● 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.*
**** *Delayed Action Closer incorporates standard 4041 Delay Cylinder.*

PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

4040XP SERIES

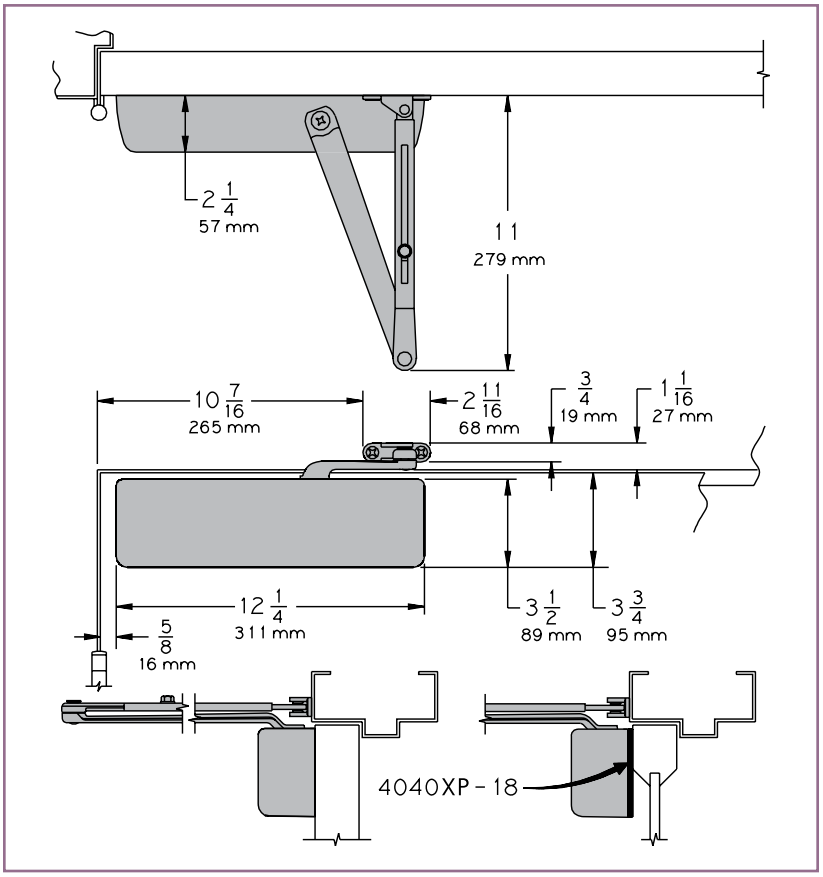
MOUNTING DETAILS

HINGE (PULL) SIDE MOUNTING

MAXIMUM OPENING

Templating allows up to 120º.

Hold-open points 90º up to 120º with hold-open arm.



- **Butt Hinges** should not exceed 5" (127 mm) in width.
- **Auxiliary Stop** is recommended at hold-open point or where a door cannot swing beyond 120º.
- **Reveal** should not exceed 3/4" (19 mm) for regular arm or hold-open arm.
- **Top Rail** less than 3-3/4" (95 mm) requires PLATE, 4040XP-18. Plate requires 2" (51 mm) minimum.
- **Clearance** of 2-3/8" (60 mm) behind door required for 90º installation.
- ***Delayed Action** Incorporates standard 4041 cylinder, without XP cylinder. Delays closing from 120º to 70º. Delay time adjustable up to approximately 1 minute.

Options

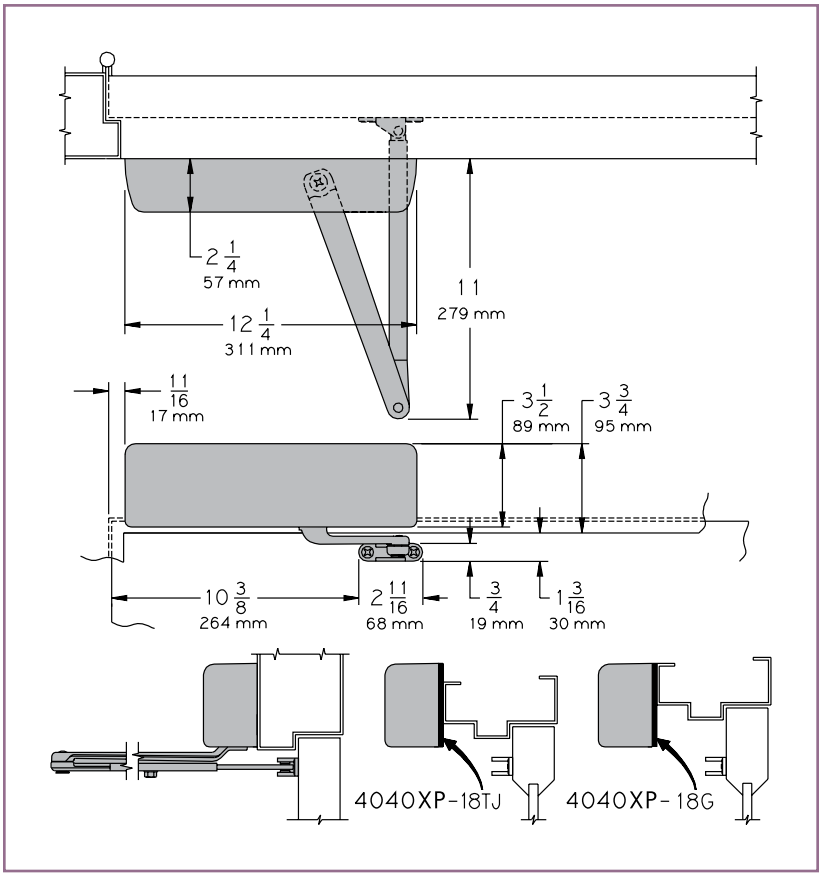
- 4041 Delayed action cylinder*.
- Hold-open arm.
- Metal cover.

Special Templates

Customized installation templates or products may be available to solve unusual applications. Contact LCN Product Support for assistance.

PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

4040XP SERIES



TOP JAMB (PUSH SIDE) MOUNTING

MAXIMUM OPENING

Templating allows up to 120º.

Hold-open points 85º up to 120º with hold-open arm.

- **Butt Hinges** should not exceed 5″ (127 mm) in width.
- **Auxiliary Stop** is recommended at hold-open point or where a door cannot swing beyond 120º.
- **Reveal** of 2-9/16" (65 mm) allows 120º opening for REGULAR ARM or standard Hold-open ARM. 4-13/16" (122 mm) allows up to 120º opening with LONG ARM where standard rod and shoe is replaced with optional LONG ROD AND SHOE 4040XP-79LR. Use H-LONG ARM with LONG HEAD AND TUBE, 4040XP-78HL for hold-open. 8" (203 mm) allows up to 120º opening with EXTRA LONG ARM where standard rod and shoe is replaced with optional EXTRA LONG ROD AND SHOE, 4040XP-79ELR.
- **Top Rail** requires 1-1/4″ (32 mm) minimum.
  2-1/4″ (57 mm) minimum with closer on PLATE, 4040XP-18TJ.
  3″ (76 mm) minimum with closer on PLATE, 4040XP-18G.
- **Head Frame** less than 3-1/2" (89 mm) requires PLATE, 4040XP-18TJ. With flush ceiling, use PLATE, 4040XP-18G. Either plate requires 1-3/4" (44 mm) minimum.
- ***Delayed Action** Incorporates standard 4041 cylinder, without XP cylinder. Delays closing from 120º to 70º. Delay time adjustable up to approximately 1 minute.

Options

- 4041 Delayed action cylinder*.
- Hold-open arm.
- Metal cover.

Customized installation templates or products may be available to solve unusual applications. Contact LCN Product Support for assistance.

PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

4040XP SERIES

MOUNTING DETAILS

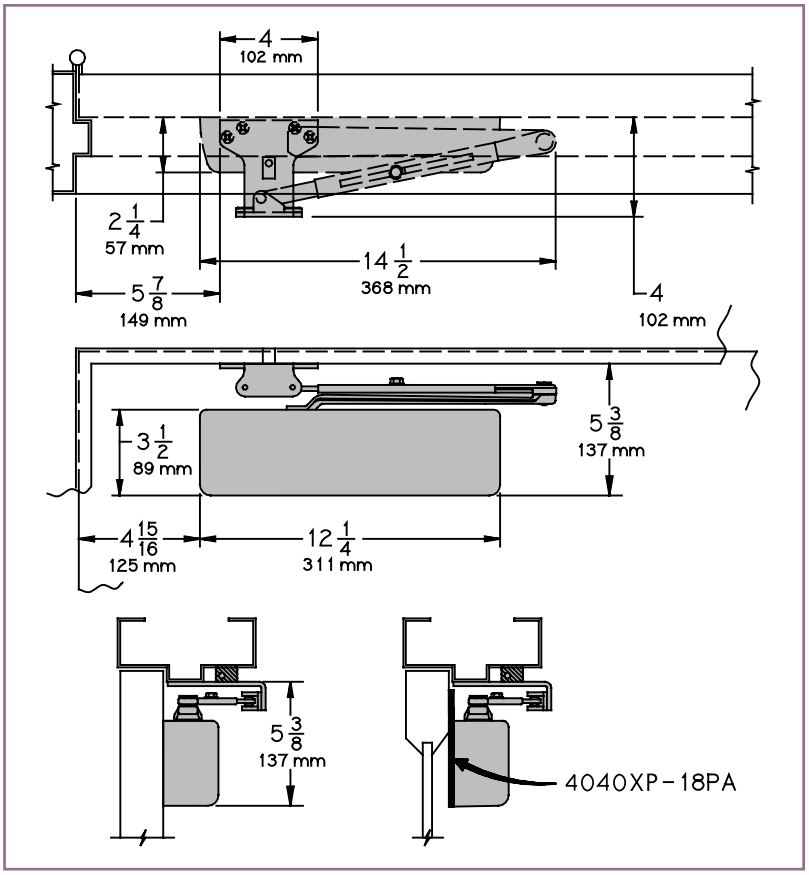
PARALLEL ARM (PUSH SIDE) MOUNTING

Optional mounting requires PA SHOE, 4040XP-62PA for regular or HOLD-OPEN arms. Add prefix "P" to closer description (eg. P4040XP). P4040XP closer includes 4040XP-201 FIFTH HOLE SPACER to support PA SHOE.

MAXIMUM OPENING

180º opening/hold-open points with all except CUSH arms.

110º opening/hold-open with CUSH arms.



- **Butt Hinges** should not exceed 5" (127 mm) in width.
- **Auxiliary Stop** is recommended at hold-open point, where the door cannot swing 180º, or where CUSH-N-STOP arm is not used.
- **Clearance** for 4040XP-62PA shoe is 4" (102 mm) from door face.
  EDA shoe projects 5-1/2" (140 mm) from door face.
  CUSH shoe projects 6" (152 mm) from door face.
- **Top Rail** less than 5-3/8" (137 mm) measured from the stop requires PLATE, 4040XP-18PA. Plate requires 2" (51 mm) minimum from the stop.
- **Head Frame** flush or rabetted requires PA SHOE ADAPTER, 4040XP-419.
- **Stop Width** minimum 1" (25 mm). CUSH arm requires minimum 1-1/2" (38 mm).
- **Blade Stop** clearance requires 1/2˝ (13mm) BLADE STOP SPACER, 4040XP-61.
- ***Delayed Action** Incorporates standard 4041 cylinder, without XP cylinder. Delays closing from 120º to 70º. Delay time adjustable up to approximately 1 minute.

Options

- 4041 Delayed action cylinder*.
- Hold-open, EDA, HEDA, CUSH, HCUSH, SPRING CUSH or SPRING HCUSH arm.
- Metal cover.

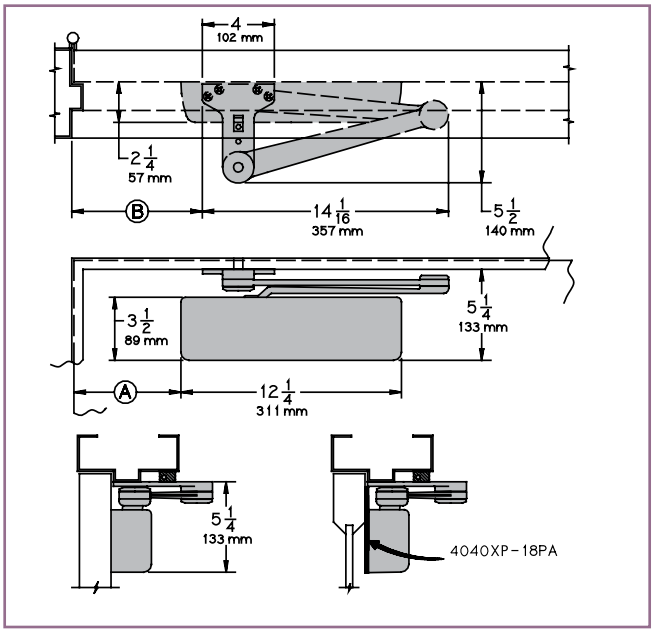
Special Templates

Customized installation templates or products may be available to solve unusual applications. Contact LCN Product Support for assistance.

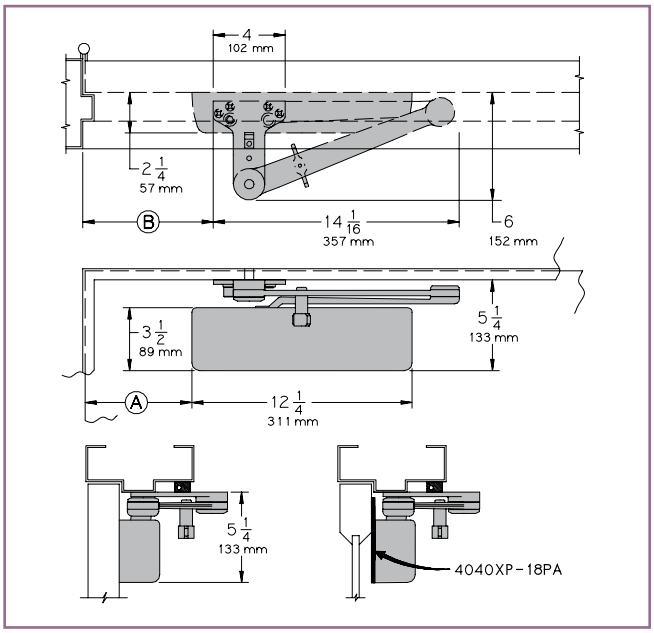
PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

4040XP SERIES

4040XP SERIES EDA MOUNT



4040XP SERIES CUSH MOUNT



- **Clearance** for 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.

Mounting details are the same as 4040XP Series REGULAR or HOLD-OPEN except as listed below. 4040XP Series closers ordered with EDA or CUSH arms include 4040XP-201 FIFTH HOLE SPACER to support the shoe.

MAXIMUM OPENING

EDA arm can be templated for points at: 110º,
- Ⓐ = 6-3/8" (162 mm)
- Ⓑ = 7-3/4" (197 mm)

or 180º.
- Ⓐ = 2-7/8" (73 mm)
- Ⓑ = 4-1/4" (108 mm)

Hold-open points up to maximum opening with HEDA arm.

CUSH arms can be templated for opening/hold-open point at:
85º,
- Ⓐ = 7-15/16" (202 mm)
- Ⓑ = 9-1/8" (232 mm)

90º,
- Ⓐ = 7-3/16" (183 mm)
- Ⓑ = 8-1/2" (216 mm)

100º,
- Ⓐ = 6-1/16" (154 mm)
- Ⓑ = 7-1/4" (184 mm)

or 110º.
- Ⓐ = 5-1/16" (129 mm)
- Ⓑ = 6-3/8" (162 mm)

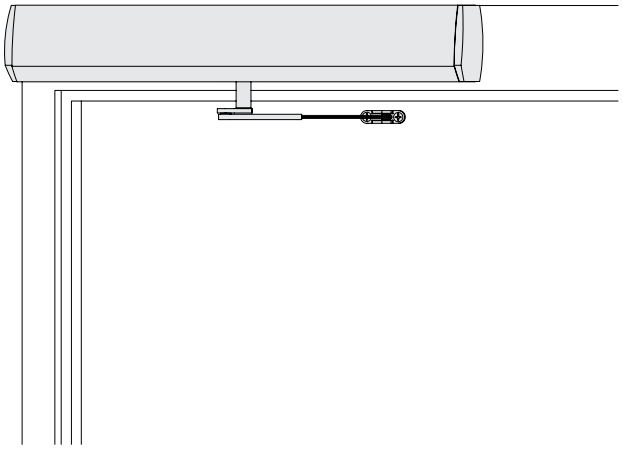
Spring Cush dead stop points are approximately 5˚ more than templated stop point. Hold open at templated stop points.

PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

9140 SERIES

FEATURES

SINGLE DOOR, SURFACE MOUNT (PUSH) OFFSET PIVOT/BUTT HINGE

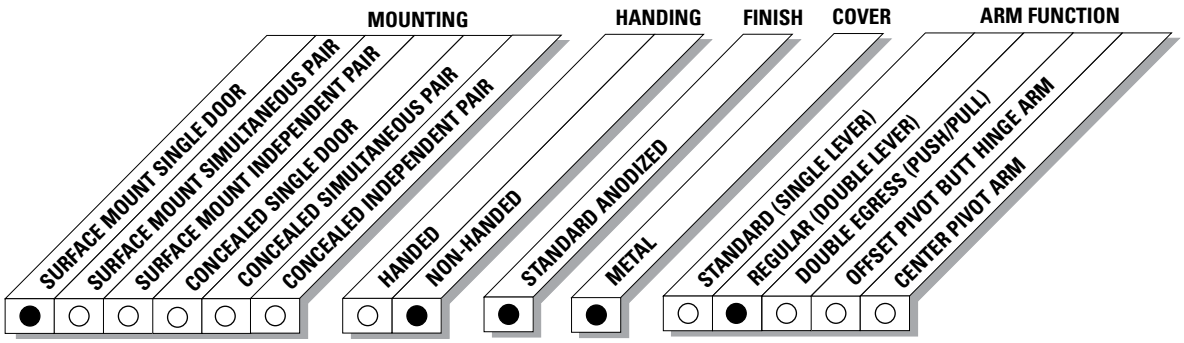


The 9140 BENCHMARK by LCN is an electrically powered low-energy operator. It provides easy access for people with disabilities, or the elderly. Designed primarily for automatic opening applications that occasionally require manual opening. The BENCHMARK is a cost-effective solution for retrofitting an activated or manual door.

- Push 'N Go permits non-switch activation.
- Microprocessor control box ensures reliability and maintains customer settings.
- Power Boost allows for increased closing force near latch.

- 9140 Series operator is shipped with motor gearbox, control box, mounting plate, regular arm, metal cover, standard track, wood and machine screw pack. Actuators available separately, see pages 122-137.
- Single interior door, surface mounted.
- ADA compliant.
- On/Off switch included as standard.
- Non-handed for either right or left swinging door.
- 27″ cover is standard. 36″ optional.
- All potentiometers clearly labeled with their functions.
- LED lights indicate power to control box and motor gearbox.

9140 Series is fully compliant with UL 325 and meets the provisions of ANSI A156.19. The 9140 Series is UL listed for fire-rated applications. The 9140 Series also meets the provisions of the Americans with Disabilities Act.

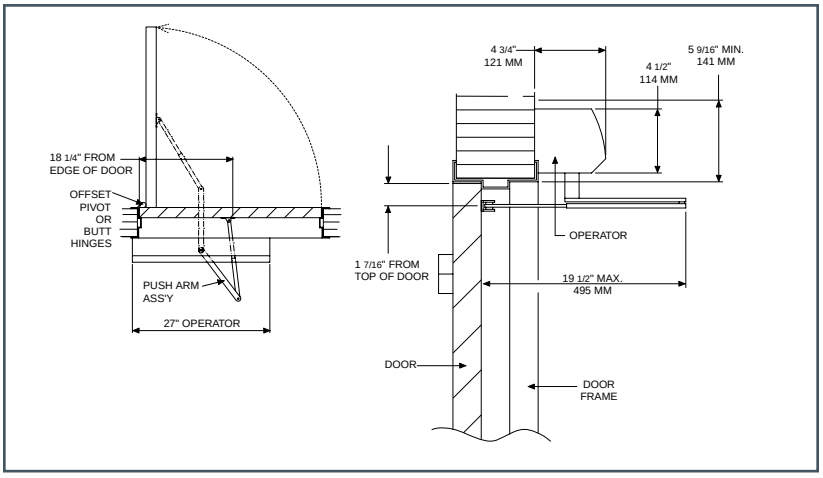


● AVAILABLE
○ NOT AVAILABLE

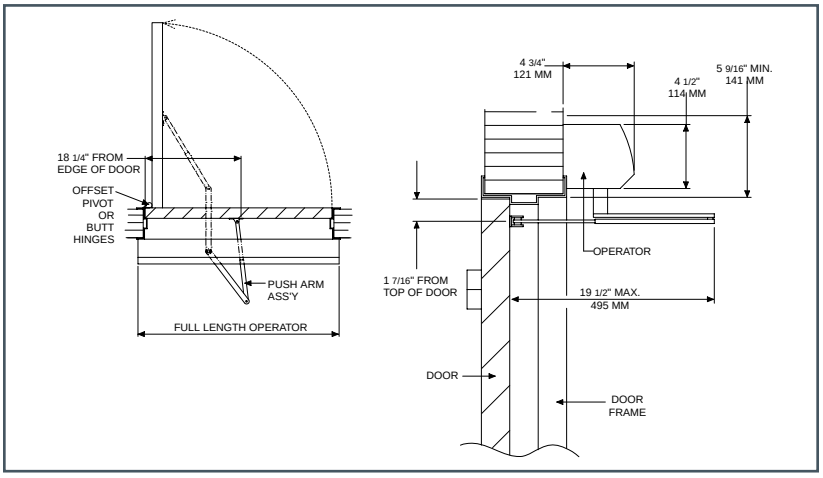
PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

9140 SERIES

TOP JAMB SINGLE DOOR (OFFSET/BUTT HINGE, CENTER PIVOT, PUSH, STANDARD COVER) MOUNTING



TOP JAMB SINGLE DOOR (OFFSET/BUTT HINGE, CENTER PIVOT, PUSH, FULL COVER) MOUNTING



MAXIMUM OPENING

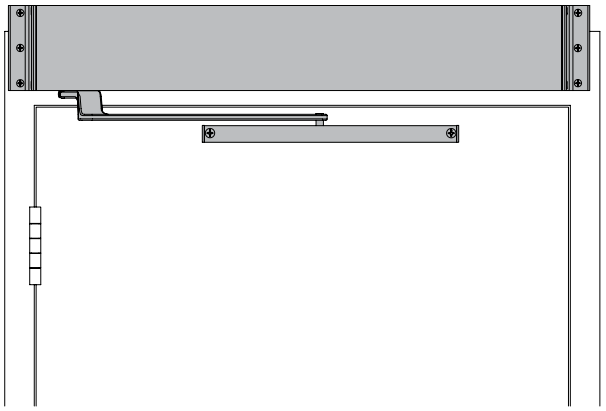
Template allows 90 degree power opening and 90 degree manual opening.

- **Butt Hinges** should not exceed 5″ (127 mm) in width.
- **Reveal** for push installations should not exceed 6″ (152 mm) for REGULAR ARM and 9-3/4″ (248 mm) for LONG ARM.
- **Head Frame** minimum 2″ (51 mm).
- **Top Rail** minimum 2″ (51 mm). Flush ceiling installation requires 5-1/4″ (133 mm) minimum.
- **Opening and Closing Time** are variable by adjustments to the electronic control module located on the operator assembly. Maximum hold open time adjustable up to approximately 30 seconds.
- **System Diagram** see “AUTOMATIC OPERATORS” section pages 53 for typical system wiring and page 56 for electrical data.

Contact LCN Product Support for installation assistance.

9530 SERIES

SINGLE DOOR, SURFACE MOUNT (PULL) OFFSET PIVOT/BUTT HINGE



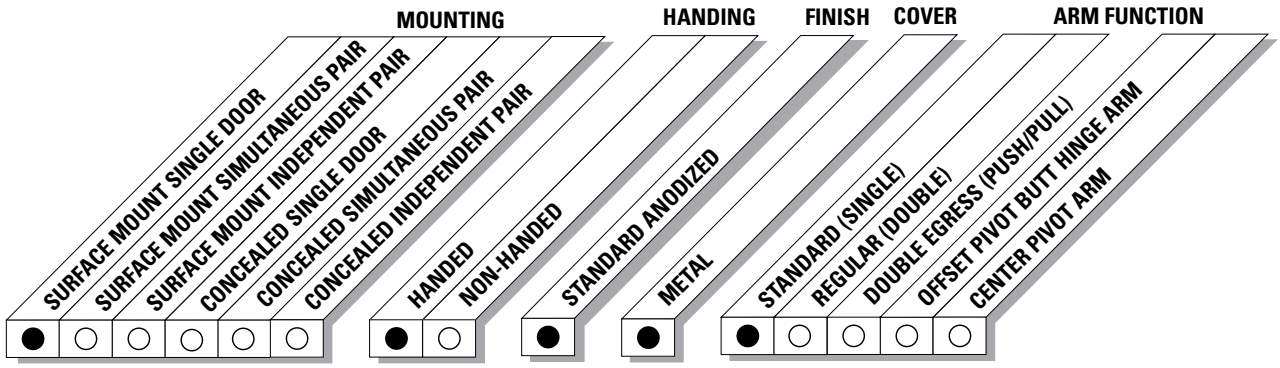
- 9530 Series operator is shipped with motor gearbox, control box, standard arm, header, and mounting hardware. Actuators available separately, see pages 122-137.
- Single door, surface mounted.
- Meets ADA requirements (power mode only).
- Handed product.
- 36″ header length is standard. Specify length 33″ to 48″ max.
- Double door header available up to 98″, specify other length 49″ to 98″ max. Consult factory regarding this option.
- Adjustable hold open period of 2 to 32 seconds in automatic or manual mode.

FEATURES

The 9530 SENIOR SWING by LCN is an ADA door operator that is a two-in-one swing door operator. SENIOR SWING operators when activated, opens doors automatically for wheelchair access, yet allows for manual operation for regular pedestrian traffic.

- Push 'N Go permits non-switch activation.
- Power Boost provides additional latching force.
- Electromechanical unit with microprocessor control.
- Digital keypad for easy setup.
- Meets International Building Code requirements and ANSI A156.19.
- UL approved for fire doors.

9530 Series is fully compliant with UL 325 & UL 1998 and meets the provisions of ANSI A156.19. The 9530 Series is UL listed for fire-rated applications. The 9530 Series also meets the provisions of the Americans with Disabilities Act.



● AVAILABLE
○ NOT AVAILABLE

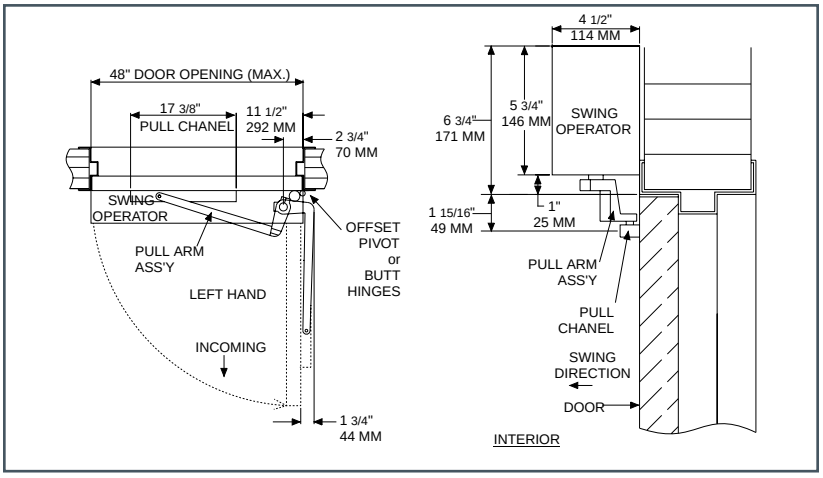
PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

9530 SERIES

MOUNTING DETAILS

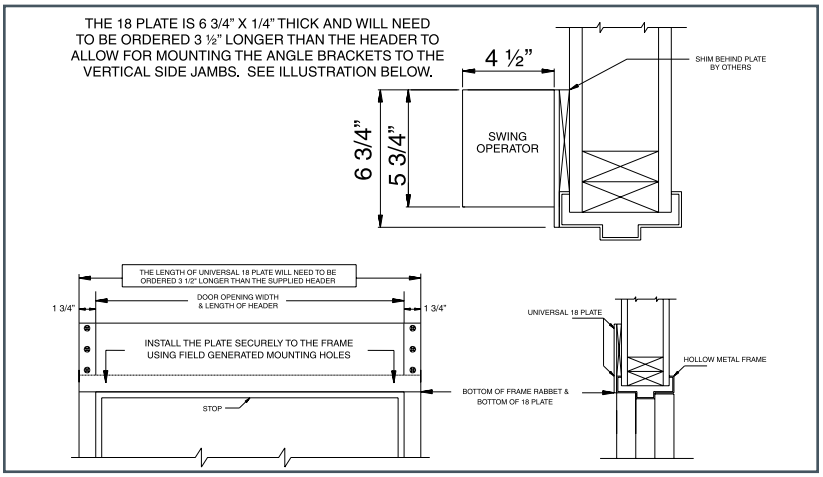
TOP JAMB SINGLE DOOR (OFFSET PIVOT/BUTT HINGE, CENTER PIVOT, PULL) MOUNTING

NOTE: Cannot be used with swing clear hinges, pocket pivots or balanced doors.



HOLLOW METAL FRAME

Suggested Installation.



MAXIMUM OPENING

Template allows 90 degree power opening and 90 degree manual opening.

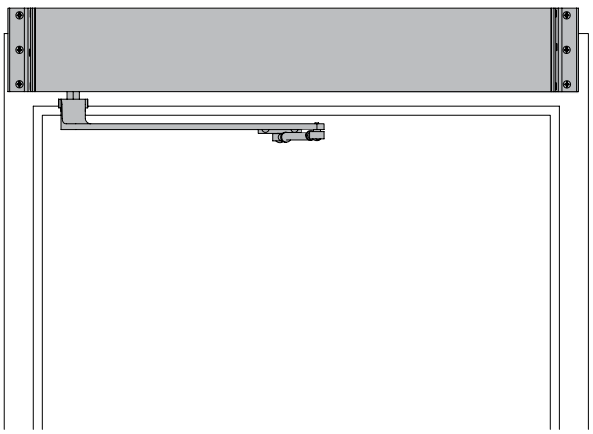
- **Butt Hinges** should not exceed 5″ (127 mm) in width.
- **Reveal** should not exceed 4″ (102 mm).
- **Head Frame** minimum 1-3/4″ (44 mm). Face frame 6-3/4″ (171 mm) total operator clearance.
- **Top Rail** minimum 2-3/4″ (70 mm).
- **Opening & Closing Time** are variable by adjustments to the electronic control box. Maximum hold open time adjustable up to approximately 32 seconds.
- **System Diagram** see "AUTOMATIC OPERATORS" section pages 53 for typical system wiring and page 56 for electrical data.

Contact LCN Product Support for installation assistance.

PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

9540 SERIES

SINGLE DOOR, SURFACE MOUNT (PUSH) OFFSET PIVOT/BUTT HINGE



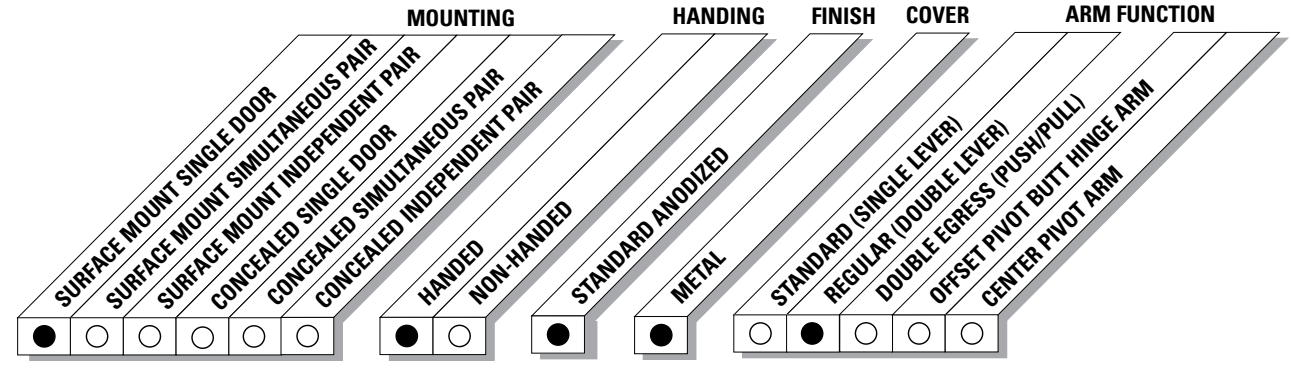
- 9540 Series operator is shipped with motor gearbox, control box, regular arm, header, and mounting hardware. Actuators available separately, see pages 122-137.
- Single door, surface mounted.
- Meets ADA requirements (power mode only).
- Handed product.
- 36″ header length is standard. Specify length 33″ to 48″ max.
- Double door header available up to 98″, specify other length 49″ to 98″ max. Consult factory regarding this option.
- Adjustable hold open period of 2 to 32 seconds in automatic or manual mode.

FEATURES

The 9540 SENIOR SWING by LCN is an ADA door operator that is a two-in-one swing door operator. SENIOR SWING operators when activated, opens doors automatically for wheelchair access, yet allows for manual operation for regular pedestrian traffic.

- Push 'N Go permits non-switch activation.
- Power Boost provides additional latching force.
- Electromechanical unit with microprocessor control.
- Digital keypad for easy setup.
- Meets International Building Code requirements and ANSI A156.19.
- UL approved for fire doors.

9540 Series is fully compliant with UL 325 & UL 1998 and meets the provisions of ANSI A156.19. The 9540 Series is UL listed for fire-rated applications. The 9540 Series also meets the provisions of the Americans with Disabilities Act.



● AVAILABLE
○ NOT AVAILABLE

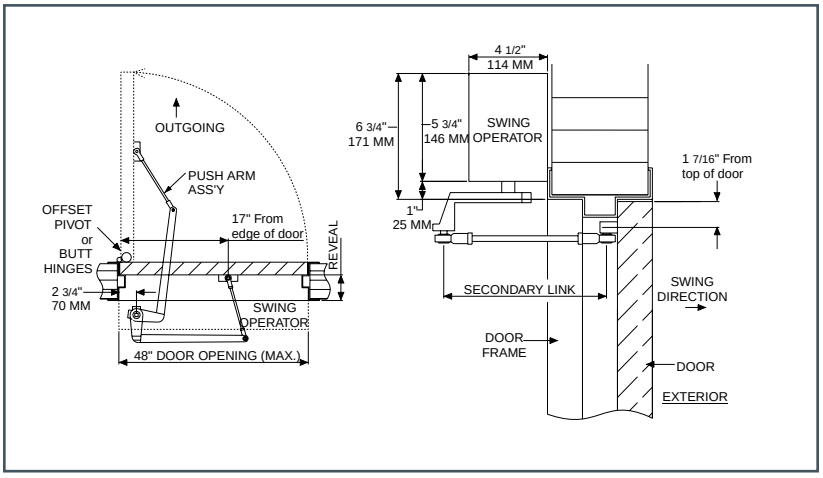
PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

9540 SERIES

MOUNTING DETAILS

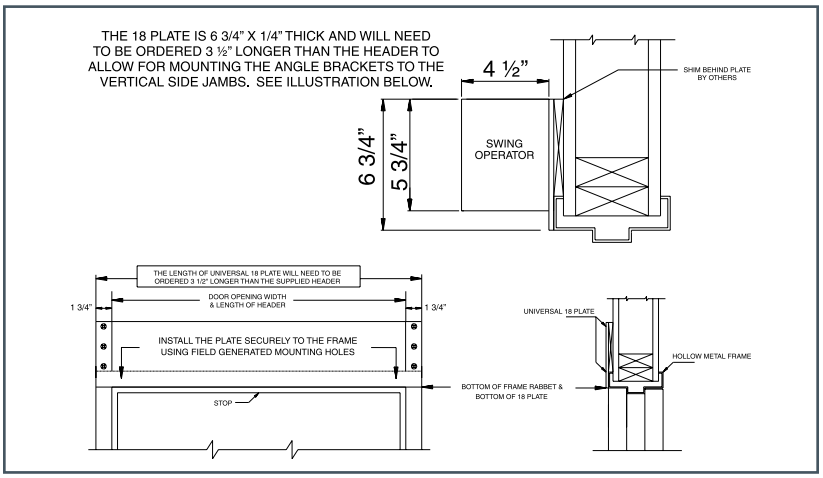
TOP JAMB SINGLE DOOR (OFFSET PIVOT/BUTT HINGE, CENTER PIVOT, PUSH) MOUNTING

Consult factory for all balance door installations.



HOLLOW METAL FRAME

Suggested Installation.



MAXIMUM OPENING

Template allows 90 degree power opening and 90 degree manual opening.

- **Butt Hinges** should not exceed 5″ (127 mm) in width.
- **Reveal** for push installations should not exceed 10″ (254 mm) for REGULAR ARM and 20″ (508 mm) for LONG ARM.
- **Head Frame** minimum 1-3/4″ (44 mm). Face frame 6-3/4″ (171 mm) total operator clearance.
- **Top Rail** minimum 2-3/4″ (70 mm).
- **Opening & Closing Time** are variable by adjustments to the electronic control box. Maximum hold open time adjustable up to approximately 32 seconds.
- **System Diagram** see "AUTOMATIC OPERATORS" section pages 53 for typical system wiring and page 56 for electrical data.

Contact LCN Product Support for installation assistance.

AUTOMATIC OPERATOR SENSORS & ACCESSORIES

8310 Series

SWITCH, KEY, 8310-806K
Type, 3 Position (On/Off/Hold-Open)
Optional switch used w/ Senior Swing, Benchmark, or 4630/4640 Operators with (CS) option.

SWITCH, ROCKER, 8310-806R
Type, 3 Position (On/Off/Hold-Open)
Optional switch w/ Senior Swing, Benchmark, or 4630/4640 Operators with (CS) option.

LINE FILTER, 8310-807
AC, 120v, Optional filter used w/ Senior Operators to reduce 'line noise'.

PROGRAMMABLE RELAY MODULE, 8310-845
Used to sequence door operation in Senior Swing and Benchmark for hard wired applications.

RETROFIT CABLE – 8310-887
Allows newer style Senior Swing digital control to be activated by existing switches when replacing older control purchased prior to September, 2006.

RETROFIT CABLE KIT – 8310-3134
Allows newer style Senior Swing Digital Control to be activated by existing switches when replacing older control purchased prior to September, 2006. Also includes cables to allow Safety Sensors to activate. Includes 8310-887 plus Safety Sensor Cables.

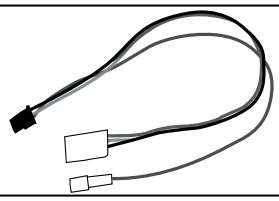
806K



845



887



8310-3134



PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

AUTOMATIC OPERATOR ACTUATORS & ACCESSORIES

8310 Series 6″ Surface and Flush mounts

WALL MOUNTED ACTUATOR, 8310-852
Hardwired low voltage actuator with round, stainless steel touch plate in 6″ (152mm) diameter. Engraved blue filled handicap symbol conforms to most accessibility codes. Designed to mount in a flush or surface mount box (sold separately) in/on a vertical surface near the controlled door. Optional mounting in single gang electrical box (by others) or double gang box (4″ x 4″ by others). Heavy industrial grade components provide vandal resistant mounting and weather resistant switch standard.

WALL MOUNTED ACTUATOR, 8310-852T
Same as the 8310-852, with the added engraving of "Push to Open".

WALL MOUNTED ACTUATOR, 8310-852WP
Wireless, low profile, low voltage actuator with round, stainless steel touch plate in 6″ (152mm) diameter. Engraved blue filled handicap symbol conforms to most accessibility codes. Surface mount box includes integral transmitter w/ battery and actuator switch. Heavy industrial grade components provide vandal resistant mounting and weather resistant switch standard. Requires 8310-865 Receiver.

WALL MOUNTED ACTUATOR, 8310-852TWP
Same as the 8310-852WP, with the added engraving of "Push to Open".

FLUSH MOUNT BOX, 8310-869F
Rugged Plastic Box, 6″ Round. Optional accessory - Can be used w/ any 6″ round actuator.

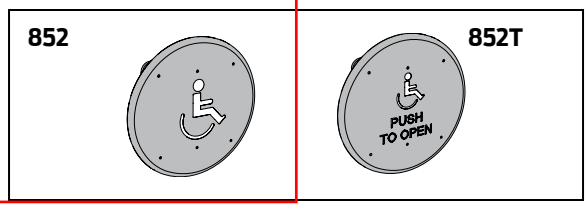
SURFACE MOUNT BOX, 8310-869S
Rugged Plastic Box, 6″ Round. Optional accessory - Can be used w/ any 6″ round actuator.

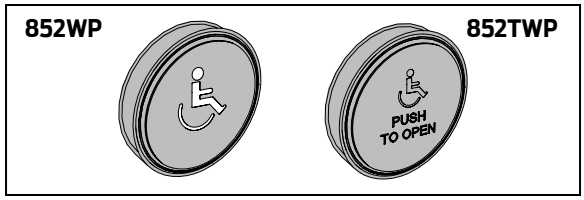
WEATHER/TRIM RING, 8310-802
Plastic Weather/Trim Ring, 6″ Round. Optional accessory - Can be used w/ any 6″ round plastic mounting box.

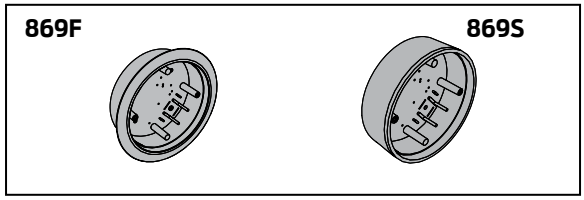
TRANSMITTER, 8310-844
Transmitter, Wireless, 1 Channel, 9v battery included. Use to convert standard wall mount actuator to wireless. Requires 8310-865 Receiver.

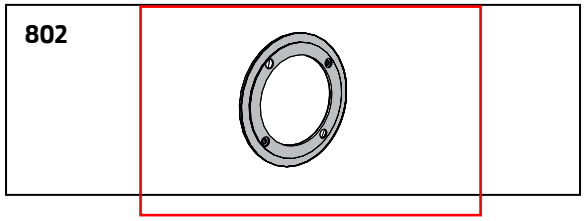
RECEIVER, 8310-865
Receiver, Wireless, 1 Channel, w/ Sequencing Feature Used in conjunction w/ Wireless Actuators & Transmitter(s).

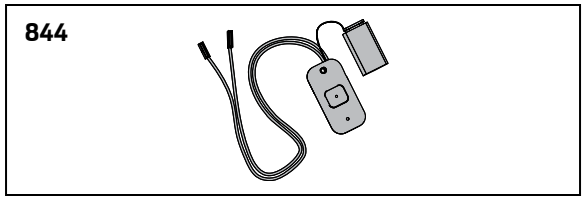
ESCUTCHEON, 8310-876
Tapered stainless steel escutcheon covers the gap between the wall and the back of the wall plate actuators when mounted in electrical boxes (by others) to minimize cart damage or vandalism. Optional accessory - Can be used w/ any 6″ round actuator.

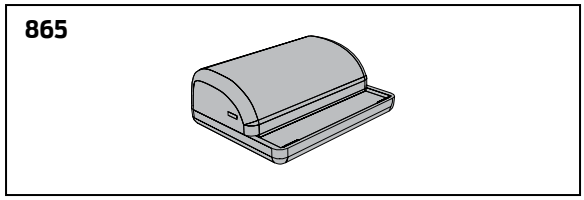


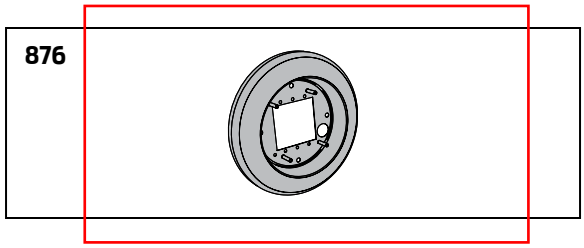












PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

CM-400/500

MUSHROOM PUSH SWITCHES



CM-420PTE



CM-500/2

FEATURES

- LARGE, EASY TO OPERATE RED, BLUE OR GREEN BUTTONS
- 1 5/8" (40 MM) DIAMETER
- FREE-SPINNING, HEAVY-DUTY BUTTON CANNOT BE UNSCREWED
- STAINLESS STEEL, ONE GANG OR TWO GANG FACEPLATE
- UL294 MODELS
- WITH OR WITHOUT LOGOS SCREENED ON FACEPLATE
- UL/CSA APPROVED SWITCH, RATED 10 AMPS @ 30V DC
- COLOR CODED 18 AWG SPADE CONNECTIONS
- FAST AND EASY TO INSTALL

DESCRIPTION

Camden Door Controls CM-400/500 Series mushroom push switches are medium-duty push-button controls. Buttons are available in red, blue, or green (other colors on request), with a 1 5/8" (40 mm) diameter. The buttons are free-spinning, for protection against vandalism. They are supplied with an industrial grade stainless steel faceplate, in one gang or two gang widths.

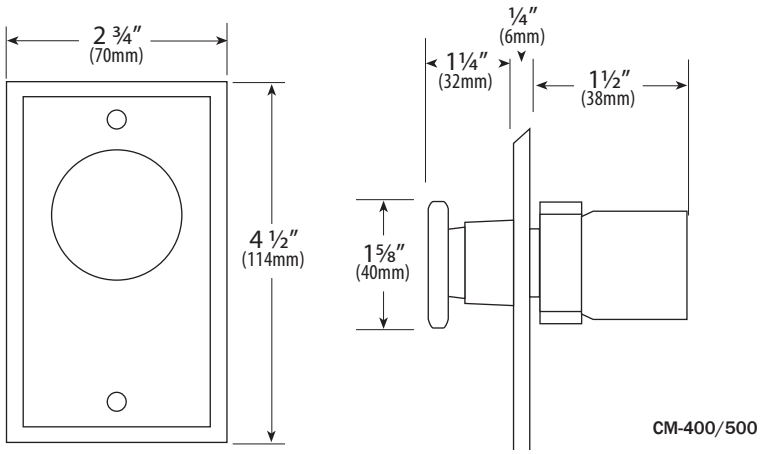
The switches are UL/CSA approved, rated 10 AMPS @ 30V DC. Select models are UL294.

APPLICATION

Camden push switches are designed to control overhead doors, electric locks, electromagnetic locks, electric strikes, automatic doors, and handicap operators. They may also be used for shunting, bypassing alarms, request to exit, timed functions, and many other applications.

The switches are made for high frequency usage, in an indoor or outdoor environment. Easily visible, they are available with one gang or two gang stainless steel mounting plates.

Camden push switches are versatile, and are supplied in numerous configurations to suit varied commercial and industrial applications.



CM-400/500

Camden DOOR CONTROLS

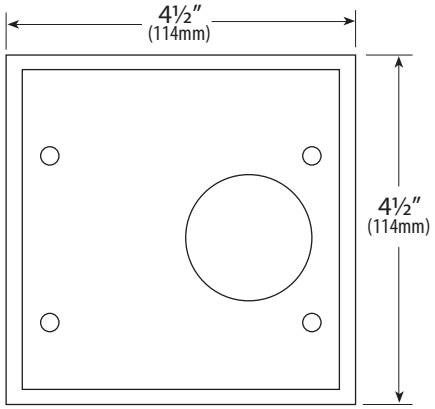
5502 Timberlea Blvd. Mississauga, ON Canada L4W 2T7 • Toll Free: 1 877 226-3369 (CAMDEN9)
Tel: (905) 366-3377 • Fax: (905) 366-3378 • E-mail: info@camdencontrols.com • www.camdencontrols.com

ARCHITECTS/ENGINEERS SPECIFICATIONS

The push switches to be used throughout the site/complex shall be Camden Door Controls CM-400/500 series push switches.

The button shall be easy to activate, 1 5/8" (40 mm) in diameter. The faceplate shall be constructed of industrial grade stainless steel, and shall be supplied with stainless steel security screws. The push button shall be free-spinning for additional protection against vandalism.

Rating for all electrical contacts, shall be a minimum of 10 amps @ 30 VDC.
The switch used shall be a UL/CSA approved type, supplied with color coded spade leads. The switch assembly shall be modular, allowing for up to six distinct functions upon activation of the push-button. The mounting shall employ a bayonet assembly, so that no set screws are required to secure the free spinning button.

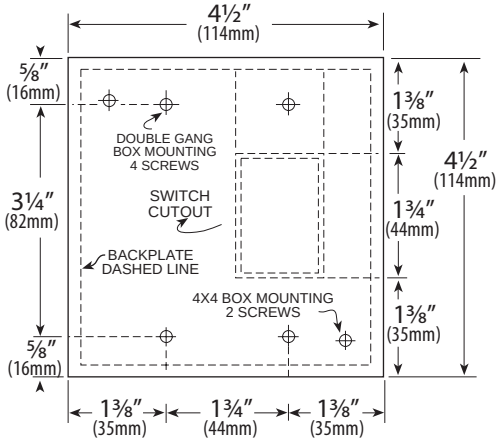


CM-500 FACEPLATE

ORDERING INFORMATION

All CM-400/500 series Exit switches come with a 1 5/8" mushroom button (red, blue, or green), stainless steel faceplate, modular contact block, 2 socket/slotted screws, and 2 tamperproof screws.

MODELS	MODELS	MODELS	DESCRIPTION
SINGLE GANG FACEPLATE	**NARROW FACEPLATE**	**DOUBLE GANG FACEPLATE**	
CM-400	CM-400N	CM-500	N/O CONTACT
CM-410	CM-410N	CM-510	N/C CONTACT
CM-420	CM-420N	CM-520	N/O & N/C CONTACTS
CM-420PTE*			N/O & N/C PLAIN FACEPLATE, WITH 'PUSH TO EXIT' ENGRAVED ON BUTTON
CM-450/12			'PRESS FOR EMERGENCY ASSISTANCE'
CM-400/1	CM-400N/1	CM-500/1	PLAIN FACEPLATE, SPST, N/O
		CM-500/2	WHEELCHAIR LOGO
CM-400/3	CM-400N/3	CM-500/3	'PUSH TO OPEN', N/O
CM-400/3F	CM-400N/3F	CM-500/3F	'POUSSEZ POUR OUVRIR'
CM-400/3S	CM-400N/3S	CM-500/3S	'EMPUJE PARA ABRIR'
CM-400/7	CM-400N/7	CM-500/7	'PUSH TO EXIT', N/O
CM-400/7F	CM-400N/7F	CM-500/7F	'POUSSEZ POUR SORTIR'
CM-400/8	CM-400N/8	CM-500/8	'PUSH TO LOCK', N/O



CM-500 BACKPLATE

* *UL294 & UL61058-1 Compliant*

FOR BUTTON GRAPHICS, ADD:

(ADD SUFFIX TO ANY 'BLANK' MODEL ABOVE)

'E' 'EXIT' ENGRAVED, PAINT FILLED
'ES' 'EXIT/ SORTIE' ENGRAVED, PAINT FILLED
'S' 'SORTIE' ENGRAVED, PAINT FILLED
ESA 'EXIT/SALIDA' ENGRAVED, PAINT FILLED
'SA' 'SALIDA' ENGRAVED, PAINT FILLED
'H' WHEELCHAIR LOGO, PAINT FILLED

FOR BUTTON COLOR, ADD:

(ADD SUFFIX TO ANY MODEL ABOVE.
IF NOT SELECTED, RED WILL BE SUPPLIED)

'R' RED BUTTON
'G' GREEN BUTTON
'B' BLUE BUTTON

Camden DOOR CONTROLS
5502 Timberlea Blvd. Mississauga, ON Canada L4W 2T7 • Toll Free: 1 877 226-3369 (CAMDEN9)
Tel: (905) 366-3377 • Fax: (905) 366-3378 • E-mail: info@camdencontrols.com • www.camdencontrols.com
LIT-SP-400&500R2
Certified ISO 9001: 2008
FS 541752

CM-AF500 SERIES

SINGLE GANG ILLUMINATED ANNUNCIATOR



CM-AF500

CM-AF500 INSERTS

Red



Green



FEATURES

- DESIGNED FOR USE WITH AUTOMATIC DOORS IN RESTROOMS
- (6) MESSAGE INSERT LABELS INCLUDED, ENGLISH, FRENCH AND BILINGUAL
- CUSTOM MESSAGES (TEXT, GRAPHICS AND COLORS) AVAILABLE UPON REQUEST
- 'SUPER BRIGHT' LEDS FOR HIGH VISABILITY, EVEN IN DAYLIGHT
- TEXT INVISIBLE WHEN NOT ILLUMINATED
- VANDAL AND WEATHER RESISTANT CONSTRUCTION
- HEAVY GAUGE STAINLESS STEEL FACEPLATE
- FITS STANDARD SINGLE GANG ELECTRICAL BOX
- VOLTAGE, 10 - 36 VDC CAN BE POWERED BY DOOR OPERATOR OUTPUT
- LOW CURRENT DRAW 25MA - 40MA

DESCRIPTION

Camden Door Controls CM-AF500 Series single gang illuminated signs are designed to provide critical messages, as needed, to building occupants. When not illuminated, the sign (text and/or graphics) is invisible. When illuminated, the text/graphics are highly visible, even in daylight. The CM-AF500 sign comes with 6 labels that can be easily switched during installation. Custom signs (text, graphics and colors) are available upon request.

CM-AF500 series signs offer heavy duty stainless steel construction, for resistance to vandalism, and are supplied with a rubber gasket for use in weather/water resistant applications.

APPLICATIONS

CM-AF500 series single gang illuminated signs are vandal and weather resistant and have been specifically designed to communicate messages to building occupants under changing conditions (i.e. when a restroom door is electrically locked or there is a system alarm/trouble). Field selectable 12V or 24V DC operation allows the sign to be used in a variety of low voltage applications, including automatic door, access control and other low voltage systems.

5502 Timberlea Blvd. Mississauga, ON Canada L4W 2T7 • Toll Free: 1 877 226-3369 (CAMDEN9)
Tel: (905) 366-3377 • Fax: (905) 366-3378 • E-mail: info@camdencontrols.com • www.camdencontrols.com

ARCHITECTS / ENGINEERS SPECIFICATIONS

The single gang, LED illuminated annunciators to be used throughout the site/ complex shall be Camden Door Controls model CM-AF500.

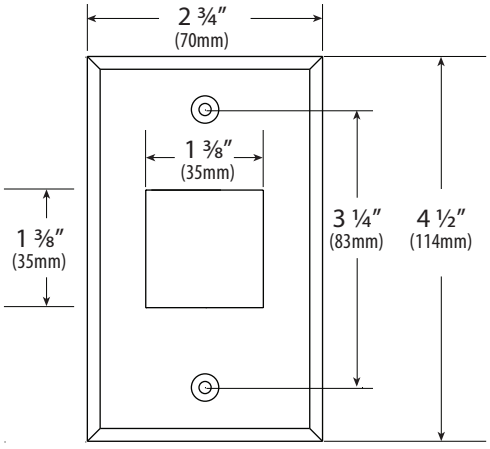
The faceplate shall be constructed of heavy gauge stainless steel and shall have a 1 3/8" square LED illuminated message, visible only when lit. When not lit, the message shall not be readily legible. The LED illuminated annunciators shall be constructed so that the message cannot be scratched or removed by vandalism. For installation outdoors, the face of the units shall be sealed and mounted to the electrical box utilizing a weatherproof rubber gasket. The unit shall be supplied with stainless steel Torx or snake eye security screws.

The LED illuminated annunciators shall be 12V or 24V DC.

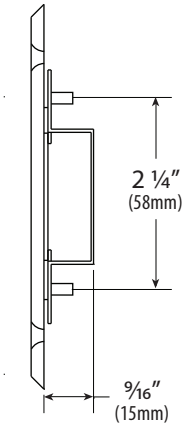
ORDERING INFORMATION

CM-AF500 illuminated annunciator comes complete with faceplate, LED, message labels, rubber gasket and fastener kit.

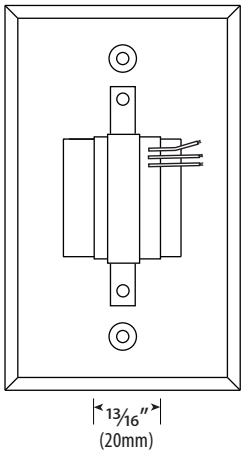
MODEL	DESCRIPTION
CM-AF500	SINGLE GANG ILLUMINATED ANNUNCIATOR FOR AUTOMATIC DOOR CONTROL OF RESTROOMS, 12/24V.
	CUSTOM MESSAGE LABELS (COLOR, TEXT, GRAPHICS) AVAILABLE UPON REQUEST.



FRONT VIEW



SIDE VIEW



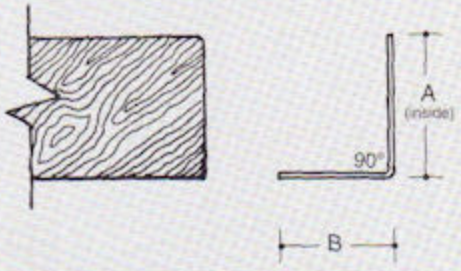
BACK VIEW

Camden DOOR CONTROLS
5502 Timberlea Blvd. Mississauga, ON Canada L4W 2T7 • Toll Free: 1 877 226-3369 (CAMDEN9)
Tel: (905) 366-3377 • Fax: (905) 366-3378 • E-mail: info@camdencontrols.com • www.camdencontrols.com

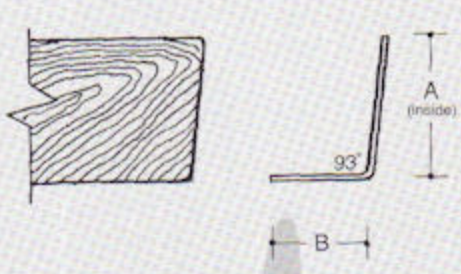
BSI FS 541752
Certified ISO 9001: 2008

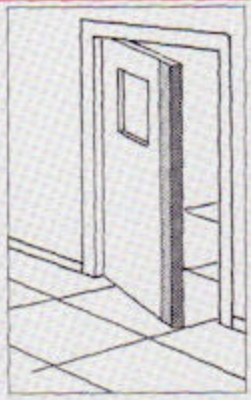
Kick Plates
Edge Guards/Corner Guards
Astragals

CBH 410 DOOR EDGE

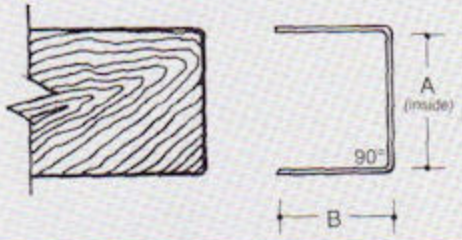


CBH 420 DOOR EDGE (WITH BEVEL)

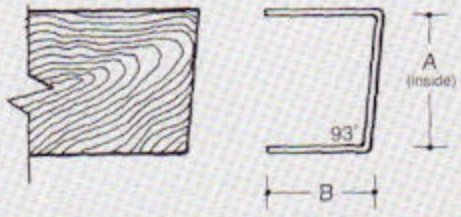




CBH 430 DOOR CHANNEL



CBH 440 DOOR CHANNEL (WITH BEVEL)
LH SHOWN



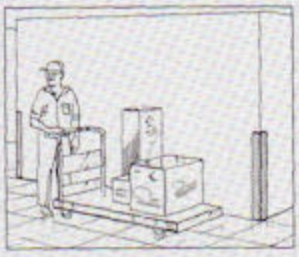
MATERIAL: BRASS, BRONZE AND STAINLESS STEEL
FINISHES: ALL STANDARD

When ordering please specify A & B dimensions and location of screw holes

Note: A dimension equals door thickness

CBH 450 CORNER GUARD



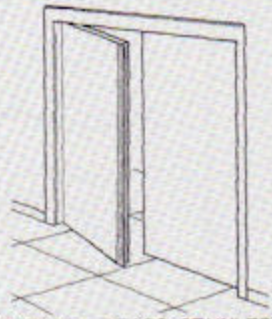


MATERIAL: BRASS, BRONZE AND STAINLESS STEEL
FINISHES: ALL STANDARD
When ordering please specify all dimensions and fastening.
Example: CBH 450 2" X 2" X48" X C32D

CBH 498
CBH 499

⅛" x 1½" x LENGTH ASTRAGAL
⅛" x 2" x LENGTH ASTRAGAL



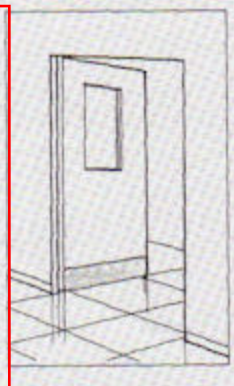


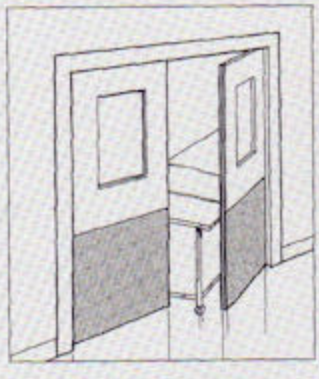
MATERIAL: BRASS, STAINLESS STEEL & STEEL PRIME COATED
OTHER FINISHES: P.O.A.

CBH 900 ALUMINUM KICKPLATE
CBH 901 BRASS KICKPLATE
CBH 902 BRONZE KICKPLATE
CBH 903 STAINLESS STEEL KICKPLATE



All kickplates are drilled, countersunk and supplied standard with #6 x 5/8 oval head socket wood screws. Machine screws or tape fastening is available upon request.





.050 GAUGE PLATES WILL BE SUPPLIED STANDARD. FOR THICKER GAUGE PLATES USE SUFFIX **A. 062 B .125**



WS406CVX & WS407CVX
Meets ANSI/BHMA 156.16 L22201 for brass, and L52101 for stainless steel.

WS406CCV & WS407CCV
Meets ANSI/BHMA 156.16 L22251 for brass and and L52251 for stainless steel.

WS406CVX Wall Bumpers
WS406CCV
WS407CVX
WS407CCV

- Constructed in sturdy yet economical wrought base of brass or stainless steel construction.
- Feature concealed tamper-proof mounting.
- Shipped factory preassembled backplate to reduce installation cost.
- Easy installation by inserting screwdriver through small hole in rubber.

WS406CVX (406) – convex rubber bumper, packed with wood screw and plastic anchor.
WS406CCV (406-1/2) – concave rubber bumper, which avoids damage to locks with projecting buttons, packed with wood screw and plastic anchor.
WS407CVX (407) – convex rubber bumper packed with screw and drywall anchor.
WS407CCV (407-1/2) – concave rubber bumper which avoids damage to locks with projecting buttons and is packed with screw and drywall anchor.

Dimensions

Base Diameter: 2-1/2”
Base Thickness: 3/8”
Overall Projection: 1”

Finishes *brass*

Ives Number	US3	US4	US5*	US10	US10B	US15	US15A**	US26	US26D	B716**
BHMA	605	606	609*	612	613	619	620	625	626	

Finishes *stainless steel*

Ives Number	US32D
BHMA	630

** only available on WS407CVX Slim-Pak of 15*

*** available on WS407CCV or WS407CVX Slim-Pak of 15*



FS439 Universal Dome Floor Stop

- High or Low-Rise Mount
- Zinc or Stainless Steel
- Spring-loaded Rubber Contact
- Replaceable Rubber Bumper

Dimensions

Overall Height: 1-1/2"
Pad Height: 1-1/8"
Base Height: 1/4"
Base Diameter: 1-7/8"

Finishes

Ives Number	US3	US4	US10B	US26D	US32D
BHMA	677	678	704	682	630



FS410 Decorative Floor Stop

- Non-directional
- Cast Brass Construction
- Replaceable Rubber Bumper

Dimensions

Overall Height: 1-1/2"
Bumper Thickness: 1/4"
Diameter: 1-1/4"

Finishes

Ives Number	US3	US26D
BHMA	605	626

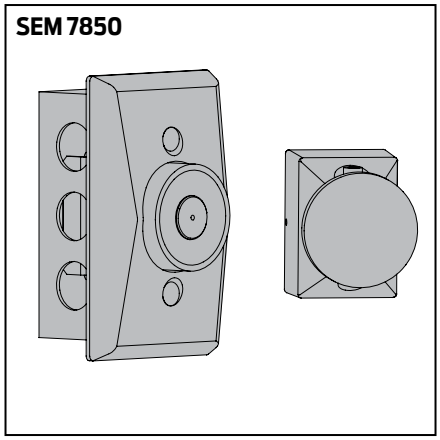
SEM SERIES

FEATURES

SEM 7850 MAGNET

Die cast housing, standard profile recessed wall mount.
2″ (51 mm) x 4″ (102 mm) x 1-1/2″ (38 mm)
NOTE: Outlet box not included.

SEM 7850

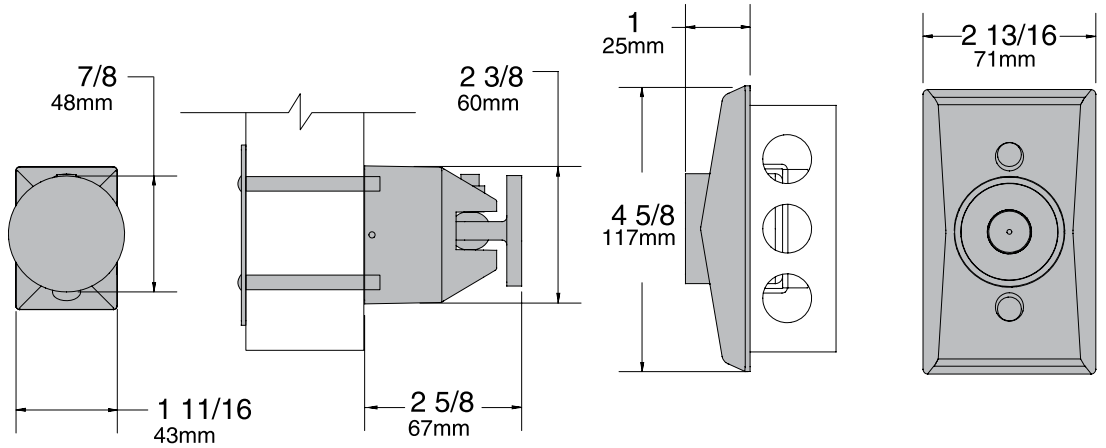


SEM FEATURES

- Tri-voltage design with 35 lbs. of holding force.
- Now available armature extensions from LCN (see page 11).
- SEM 7850 available in standard powder coat finishes.
- SEM 7850 available in Aluminum and Dark Bronze finishes only.
- Suitable for use in pocket door installations.
- UL listed for smoke barrier or labeled fire doors.

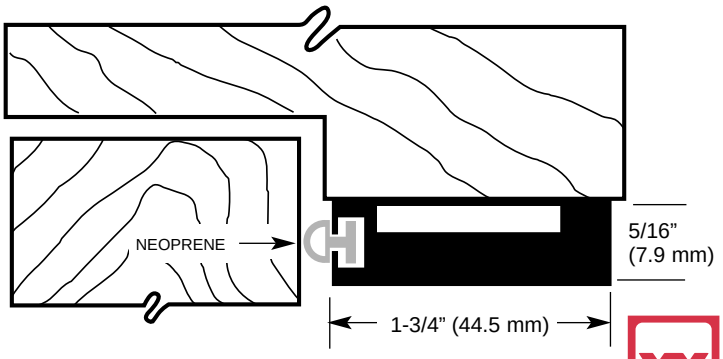
Total Projection = 3-5/8″ (92 mm)

Dimensions apply for both SEM 7850

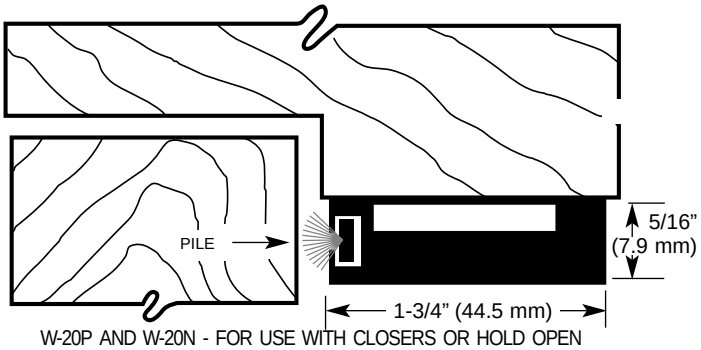


PHONE 877-671-7011
FAX 800-248-1460
www.allegion.com/us
2/14

WEATHERSTRIP

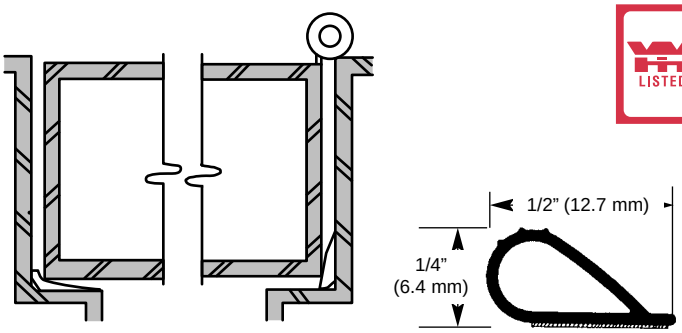


W-20N CLEAR ANODIZED EXTRUDED ALUMINIUM AND NEOPRENE



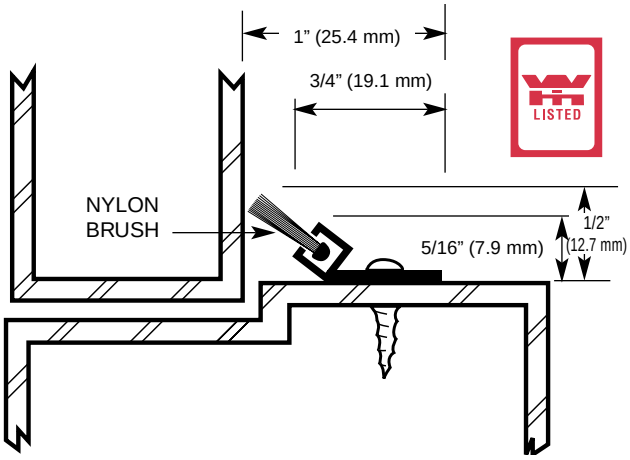
W-20P AND W-20N - FOR USE WITH CLOSERS OR HOLD OPEN DEVICES IN ORDER TO PROVIDE A CONTINUOUS SEAL

W-20P CLEAR ANODIZED EXTRUDED ALUMINIUM AND PILE

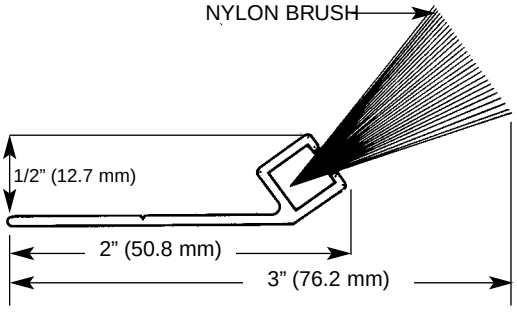


W-21

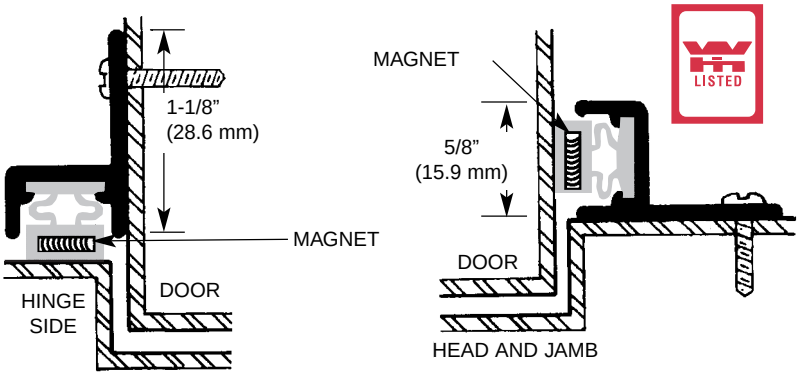
- BLACK "SANTOPRENE"
- SELF ADHESIVE
- CONTROLS SMOKE, LIGHT AND SOUND
- FIRE LABELED 1-1/2 HRS
- RESISTS FUNGUS AND MILDEW
- TEMPERATURE RANGE -50˚F TO +250˚F
- FAR EXCEEDS REQUIRMENTS OF ASTME 283



W-23 CLEAR ANODIZED EXTRUDED ALUMINUM

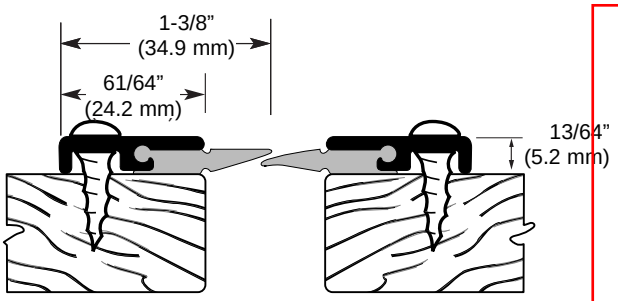


W-26 MILL FINISH EXTRUDED ALUMINUM

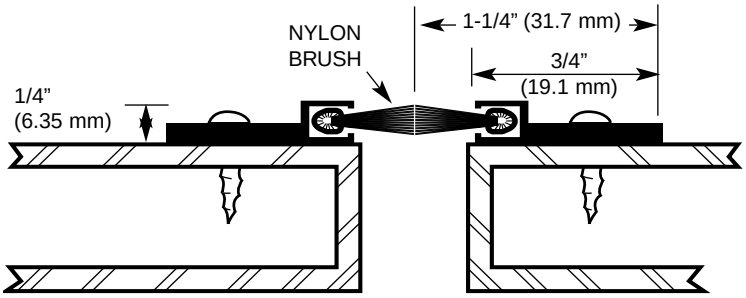


W-27 MAGNETIC WEATHERSTRIP CLEAR ANODIZED EXTRUDED ALUMINIUM

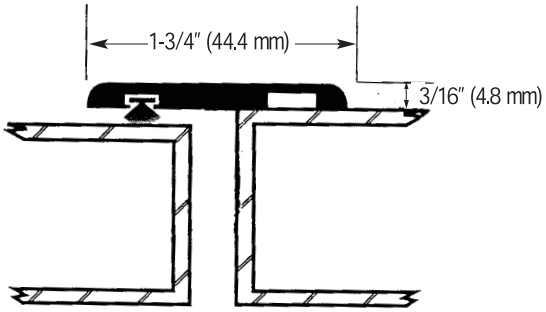
ASTRAGALS



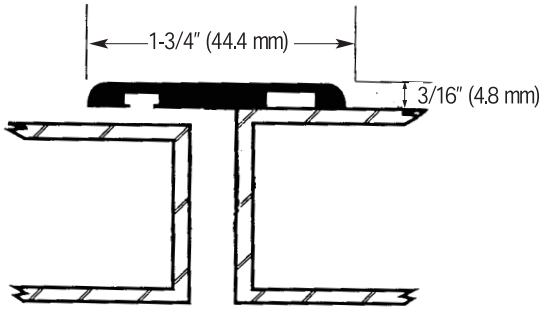
W-5 EXTRUDED ALUMINUM & VINYL



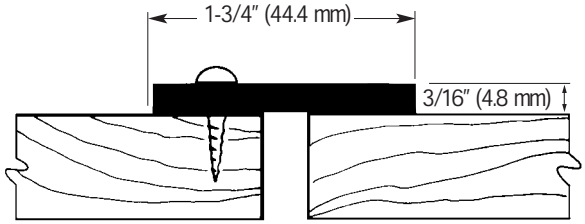
W-25 CLEAR ANODIZED EXTRUDED ALUMINUM



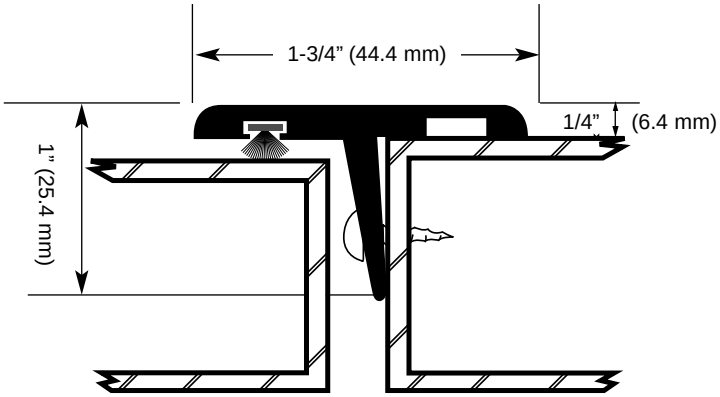
W-8P EXTRUDED ALUMINUM - WITH PILE INSERT



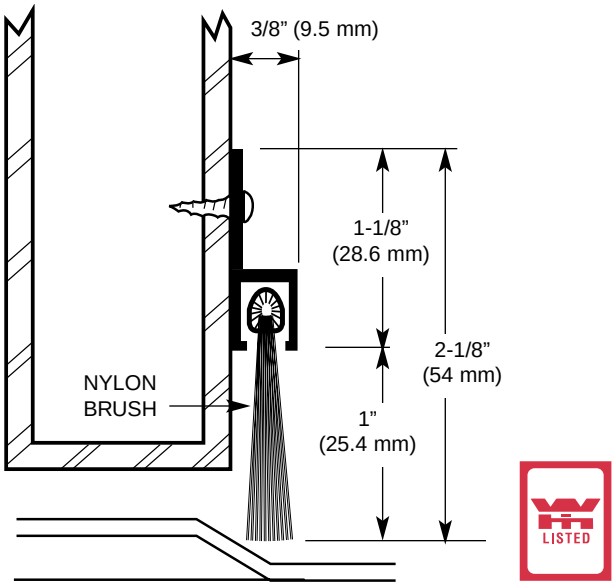
W-8 EXTRUDED ALUMINUM



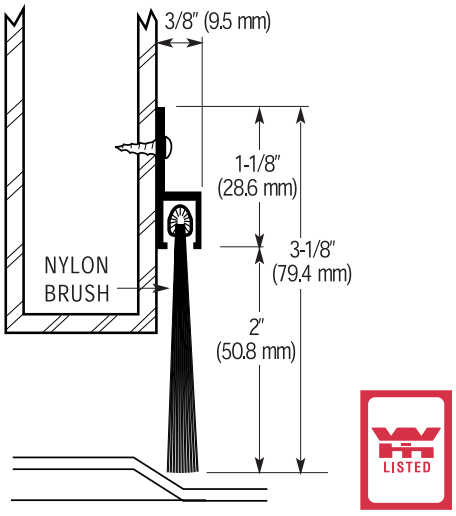
W-8S COLD ROLLED STEEL WITH SQUARE EDGES



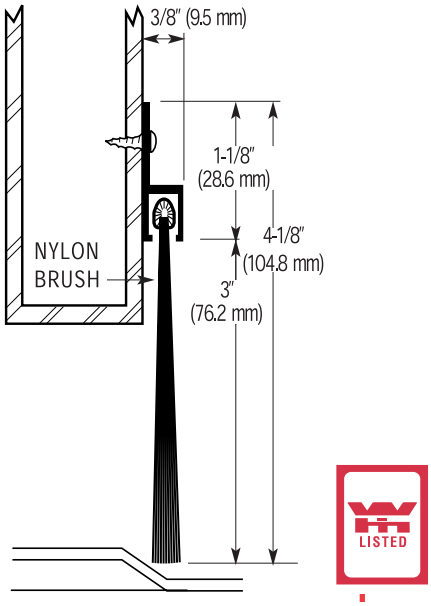
W-9 EXTRUDED ALUMINUM AND PILE



W-24S CLEAR ANODIZED EXTRUDED ALUMINUM



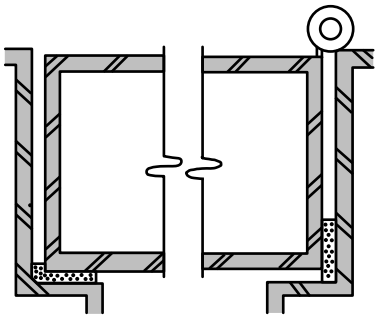
W-33S CLEAR ANODIZED EXTRUDED ALUMINUM



W-34S CLEAR ANODIZED EXTRUDED ALUMINUM

Ideal for use in residential commercial & industrial applications for weatherstripping, sealing, cushioning, automotive, etc.

SEE PRICE LIST FOR STOCK SIZES

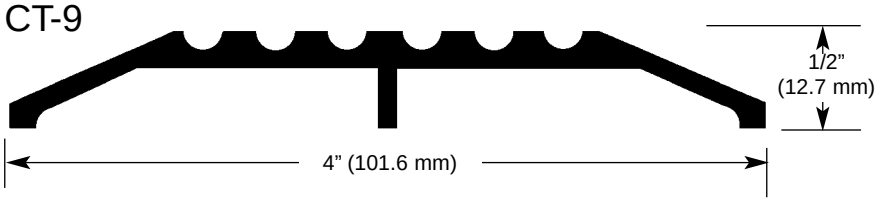


ADHESIVE BACKED WEATHERSTRIPPING MATERIAL

No. 6216 Black

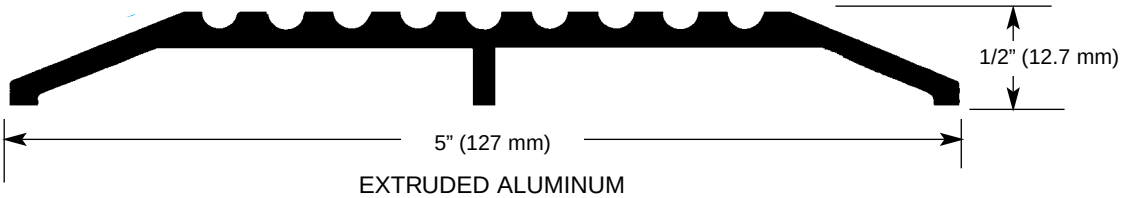
Closed cell sponge
neoprene oil resistant
low water absorbtion
Temperture Range
-70˚to +250˚F

CT-9



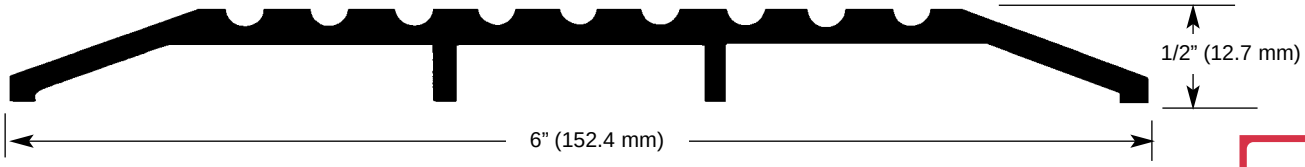
EXTRUDED ALUMINUM
ALSO AVAILABLE IN ARCHITECTURAL BRONZE
(CT-9B)

CT-10



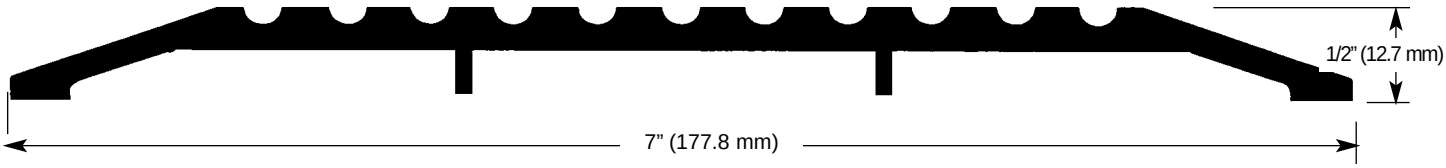
EXTRUDED ALUMINUM
ALSO AVAILABLE IN ARCHITECTURAL BRONZE
(CT-10B)

CT-11



EXTRUDED ALUMINUM
ALSO AVAILABLE IN ARCHITECTURAL BRONZE
(CT-11B)

CT-12



EXTRUDED ALUMINUM

CT-32



EXTRUDED ALUMINUM

CX-33 ADVANCED LOGIC RELAY



CX-33

FEATURES

- 13 DIFFERENT OPERATING MODES, WITH SUB-MODES AND ADJUSTABLE TIMERS ON EACH RELAY, PROVIDE NEAR LIMITLESS APPLICATIONS.
- 5 INPUTS, INCLUDING A 'WET' INPUT, FOR MORE FLEXIBILITY. YOU CAN EASILY SEQUENCE FROM MULTIPLE POINTS, AND MAINTAIN & HOLD DIFFERENT OUTPUTS.
- LARGE 3 SEGMENT DISPLAY IS EASIER TO VIEW AND UNDERSTAND, THAN COMPETITIVE MODELS.
- 3 BUTTONS FOR MODE SELECTION, OFFER FASTER & EASIER PROGRAMMING.
- 'TRIED AND TRUE' POWER CIRCUITRY ENSURES OUTSTANDING FILTERING AND SURGE PROTECTION, COMBINED WITH SIMPLE 2 TERMINAL DESIGN.
- 3 HEAVY DUTY 3 AMP. FORM C OUTPUTS
- LARGER TERMINAL STRIPS ALLOW LARGER WIRE GUAGE, OR MORE CONDUCTORS TO BE CONNECTED.
- A CLEAR PLASTIC CASE PROVIDES BETTER PROTECTION OF THE CIRCUIT BOARD AND EASIER MOUNTING.
- LED'S FOR VISUAL RELAY CONFIRMATION

DESCRIPTION

Camden Door Controls CX-33 Advanced Logic Relay 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. CX-33 is pre-programmed for interconnection with access control, fire alarm and telephone entry systems. CX-33 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.

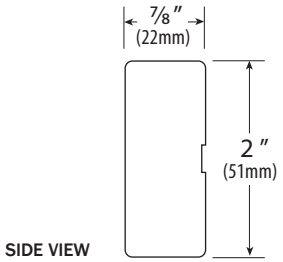
APPLICATION

The flexibility of the CX-33 lends itself to an incredible variety of locking and and/or automatic door applications, such as sequencing applications using 2 or 3 doors. Also included are modes required for safety sensor installations. What is unique in the CX-33 is being able to combine these functions simultaneously with a switching network (make/break relay).

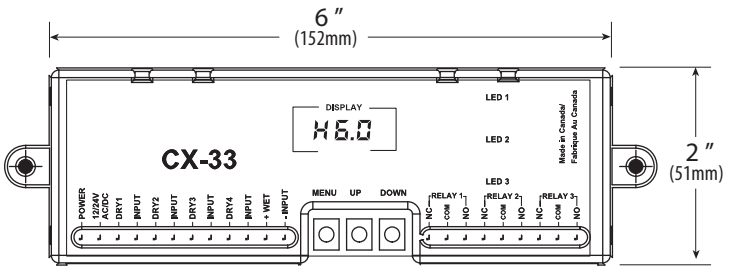
Another application for the CX-33 is single occupant restrooms equipped with low energy operators. Our 3 relay design now includes a dedicated output for illuminated signage.

Other uses include smoke evac (fire door), 2-door timed or latching airlocks, and certain access control situations where an extended trigger input results in the lock retracting while enabling an exterior wall switch.

For apartment entry applications, a direct connection to the phone entry panel simplifies wiring, and eliminates the need for an isolating relay. This input unlocks the door, and energizes a vestibule convenience switch (if one is provided).



SIDE VIEW



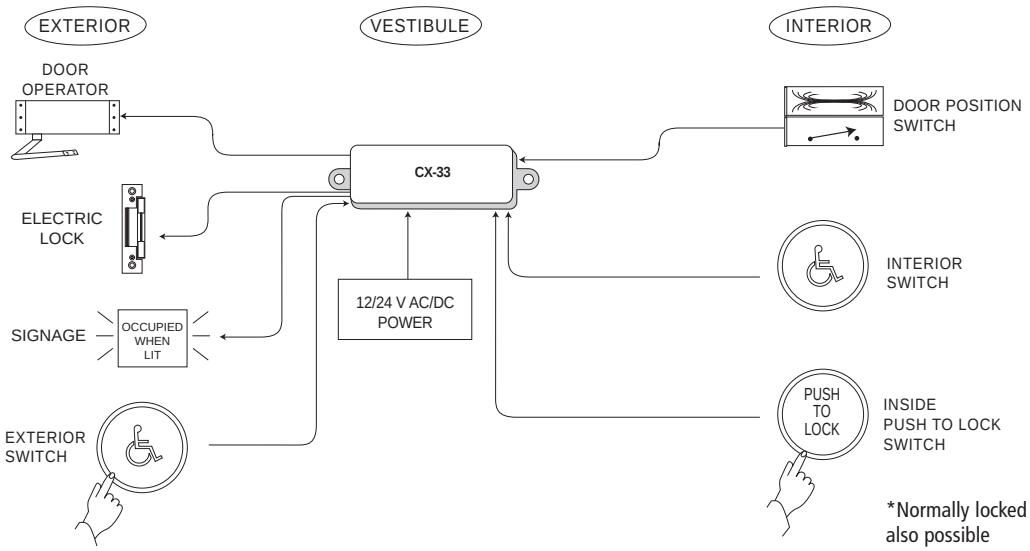
FRONT VIEW

Camden DOOR CONTROLS

5502 Timberlea Blvd. Mississauga, ON Canada L4W 2T7 • Toll Free: 1 877 226-3369 (CAMDEN9)
Tel: (905) 366-3377 • Fax: (905) 366-3378 • E-mail: info@camdencontrols.com • www.camdencontrols.com

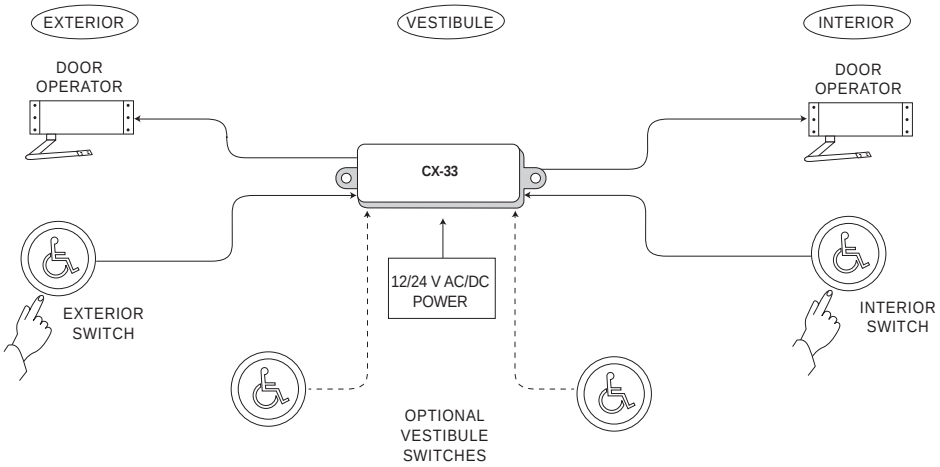
TYPICAL APPLICATION

NORMALLY UNLOCKED* SINGLE USE RESTROOM

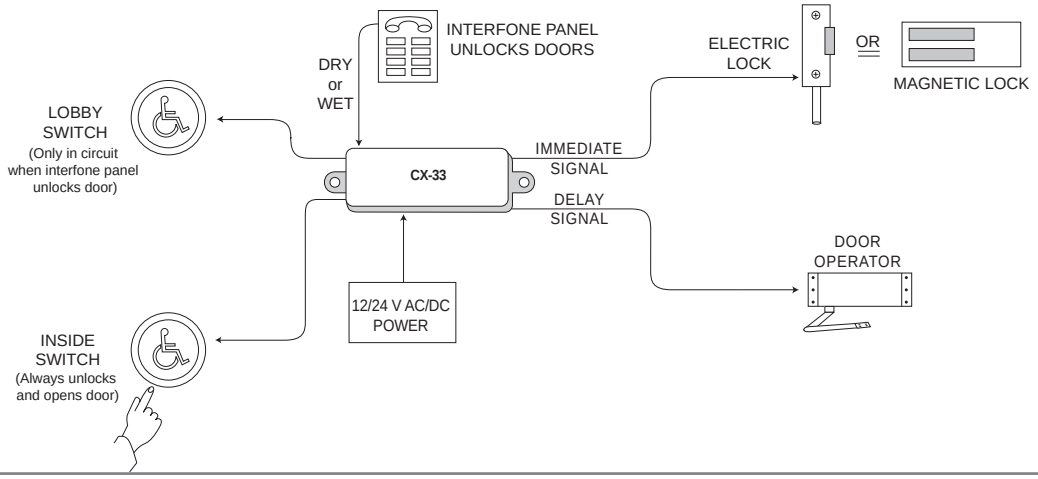


*Normally locked washroom also possible

BI-DIRECTIONAL DOOR SEQUENCER



APARTMENT/CONDO APPLICATION



CX-WEC SERIES

EMERGENCY CALL SYSTEM FOR UNIVERSAL & BARRIER FREE RESTROOMS



CX-WEC10 KIT

FEATURES

- A COMPLETE EQUIPMENT PACKAGE SPECIFICALLY DESIGNED TO MEET THE REQUIREMENTS OF ONTARIO REG. 368/13 AMENDMENT TO 2012 OBC FOR BARRIER FREE & UNIVERSAL RESTROOMS.
- DESIGNED FOR UNIVERSAL RESTROOMS WITH OR WITHOUT LOW ENERGY DOOR OPERATORS.
- FOR USE WITH CAMDEN CX-WC SERIES BARRIER FREE RESTROOM CONTROL KITS.
- AUDIBLE AND VISUAL ANNUNCIATION WITHIN RESTROOM DESIGNED TO CONFIRM A REQUEST FOR ASSISTANCE WITHOUT DISTURBING OCCUPANT. ANNUNCIATION IS ACTIVATED UNTIL MUSHROOM BUTTON IS PULLED 'OFF'.
- AUDIBLE AND VISUAL ANNUNCIATION OUTSIDE RESTROOM OF AN EMERGENCY CONDITION
- 3 YEAR WARRANTY

DESCRIPTION

Camden Door Control CX-WEC Series is an equipment package designed to meet the latest building code requirements for universal restrooms. The kit includes a CM-450R/12 maintained push/pull mushroom button, that activates/ deactivates a call for emergency assistance. Audible and visual annunciation of the request is provided inside the restroom by the CM-AF501SO single gang LED annunciator with sounder, and outside the restroom by the CM-AF140SO single gang dome light with sounder. The equipment package also includes a CM-SE21A 'IN THE EVENT OF AN EMERGENCY' sign, with 1" (25mm) lettering, as required by code.

APPLICATION

Camden Door Controls CX-WEC Series emergency call systems provide a complete equipment package for compliance with building code requirements. They are designed for universal restrooms with or without low energy door operators. The kit includes activation switch, audible and visual annunciation and signage.

5502 Timberlea Blvd. Mississauga, ON Canada L4W 2T7 • Toll Free: 1 877 226-3369 (CAMDEN9)
Tel: (905) 366-3377 • Fax: (905) 366-3378 • E-mail: info@camdencontrols.com • www.camdencontrols.com

ARCHITECTS/ENGINEERS SPECIFICATION

Universal restroom 'EMERGENCY ASSISTANCE' signal activation, annunciation and supporting signage shall be Camden Door Controls model CX-WEC10/CX-WEC11 universal restroom control kit.

The kit shall include:
CM-450R/12 single gang mushroom push button, brushed steinless steel faceplate and red button, maintained push/pull operation with 'PRESS FOR EMERGENCY ASSISTANCE' permanently laser etched on the faceplate.

CM-AF501SO single gang LED annunciator with sounder, rated 85dB at 10cm, weather and vandal resistant construction, brushed stainless steel faceplate, with 'ASSISTANCE REQUESTED' message text, that is not legible unless the annunciator is energized.

CM-AF140SO single gang dome light with piezo sounder, rated 93dB at 1 meter, brushed stainless steel faceplate and 24V incandescent bulb. Text shall be; 'ASSISTANCE REQUIRED'.

CM-SE21A sign, to be located above the activation switch, 1/16" (1.6mm), 6"H x 10 5/8"W, (152mm x 270mm), fire rated expanded PVC white with, 25mm red lettering. Text shall be; 'IN THE EVENT OF AN EMERGENCY PUSH EMERGENCY BUTTON AND AUDIBLE AND VISUAL SIGNAL WILL ACTIVATE'.

CM-450R/12

1 5/8" MUSHROOM PUSH BUTTON, PUSH/PULL, 'PRESS FOR EMERGENCY ASSISTANCE'

- PUSH/PULL MAINTAINED OPERATION
- SINGLE GANG STAINLESS STEEL FACEPLATE
- IMPACT RESISTANT BUTTON AND METAL COLLAR
- TEXT IS PERMANENTLY LASER ETCHED ON FACEPLATE
- HEAVY DUTY 10 AMP CONTACTS, N/O & N/C



CM-450R/12

CM-AF140SO

SINGLE GANG DOME LIGHT, WITH SOUNDER, 'ASSISTANCE REQUIRED'

- 180° VISIBILITY WHEN ILLUMINATED
- LOUD 93 DB PIEZO SOUND ALERT
- NO TOOLS REQUIRED TO CHANGE INCANDESCENT BULB
- SINGLE GANG HEAVY DUTY BRUSHED STAINLESS STEEL FACEPLATE


CM-AF140SO

CM-AF501SO

SINGLE GANG ANNUNCIATOR, WITH SOUNDER, 'ASSISTANCE REQUESTED'

- 'ASSISTANCE REQUESTED' MESSAGE ONLY LEGIBLE UPON ACTIVATION
- SUPER BRIGHT LED ILLUMINATION
- SINGLE GANG HEAVY DUTY BRUSHED STAINLESS STEEL FACEPLATE
- 85 DB PIEZO SOUND ALERT IS DESIGNED TO CONFIRM REQUEST WITHOUT DISTURBING OCCUPANT IN SMALL ENCLOSED SPACE



CM-AF501SO

CM-SE21A

SIGNAGE FOR UNIVERSAL RESTROOMS

- COMPLIES WITH ONTARIO BUILDING CODE REQUIREMENTS
- WHITE, 1/16" (1.6mm) THICK PANEL, 6"H X 10 5/8"W, (152mm x 270mm)
- FIRE RATED EXPANDED PVC
- RED 1" (25mm) LETTERING
- EASILY MOUNTED TO WALL (GLUE OR SCREWS)



CM-SE21A

SPECIFICATION

CM-450R/12

MUSHROOM PUSH BUTTON, PUSH/PULL, 'PRESS FOR EMERGENCY ASSISTANCE'

VOLTAGE:	12/24V AC/DC
CONTACT TYPE:	DPST
CONTACT RATING:	10 AMPS
TEMP RANGE:	-13ºF TO 158ºF (-25ºC TO 75ºC)
SWITCH LIFE:	100,000 CYCLES
DIMENSIONS:	4 1/2"H x 2 3/4"W x 1 3/4"D (114mm x 70mm x 44mm)
STD. FINISH:	STAINLESS STEEL

CM-AF140SO

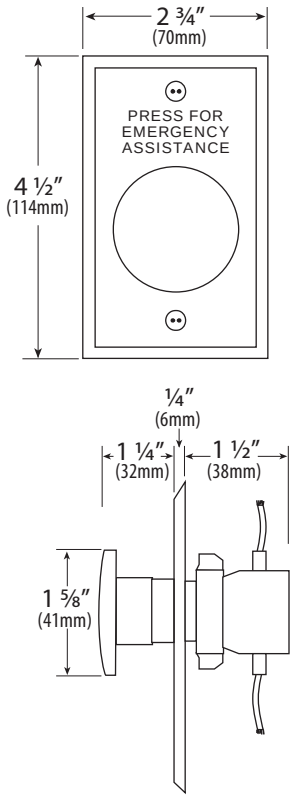
SINGLE GANG DOME LIGHT, WITH SOUNDER, 'ASSISTANCE REQUIRED'

VOLTAGE:	24 VDC
ILLUMINATION:	INCANDESCENT BULB
SOUNDER:	PIEZO, 93 DB MAX. AT 39.4" (1,000mm)
CURRENT RATING:	PIEZO, 20mA MAX.
TEMP RANG:	32ºF - 176ºF (0ºC - 80ºC)
DIMENSIONS:	4 1/2"H X 2 3/4"W X 1"D (114mm x 70mm x 25mm)
STD. FINISH:	STAINLESS STEEL

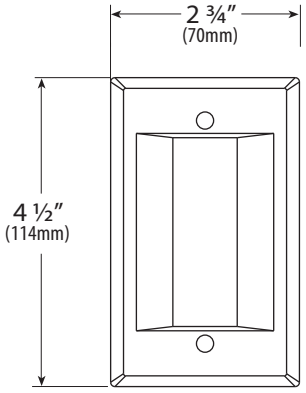
CM-AF501SO

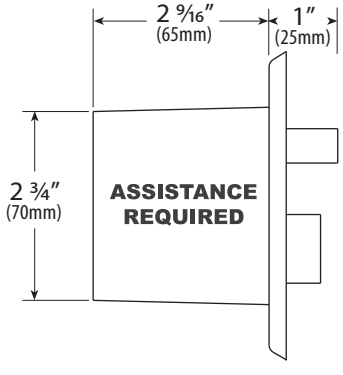
SINGLE GANG ANNUNCIATOR, WITH SOUNDER, 'ASSISTANCE REQUESTED'
(MESSAGE ONLY APPEARS UPON ACTIVATION)

VOLTAGE:	24 VDC
ILLUMINATION:	SUPER BRIGHT LEDS
SOUNDER:	PIEZO, 85 DB AT 4" (101mm)
CURRENT DRAW:	75mA, MAX.
TEMP RANG:	32ºF - 176ºF (0ºC - 80ºC)
DIMENSIONS:	4 1/2"H X 2 3/4"W X 9/16"D (114mm x 70mm x 15mm)
STD. FINISH:	STAINLESS STEEL

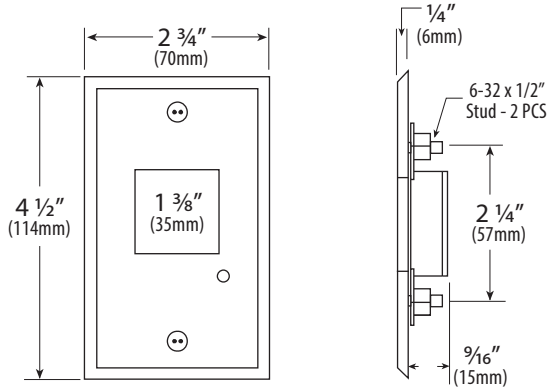


CM-450R/12





CM-AF140SO



CM-AF501SO

ALLEGION

SCHLAGE

Door position switches



674-OH

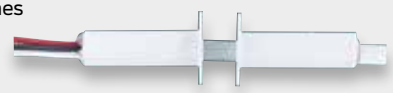
Overhead door, floor mount magnetic switch

Overview

Door position switches are used to detect the open or closed status of an opening and then send this status to a control panel. They come in a variety of shapes and sizes and are designed for monitoring door positions, roof hatches, gates etc.

Concealed SPDT magnetic switches

For wood doors and frames
0.3 Amps @ 30 VDC



679-05

For hollow metal doors and frames
0.3 Amps @ 30 VDC



679-05 HM

For wood doors and metal frames
0.3 Amps @ 30 VDC



679-05 WD

Concealed/flush mount magnetic switches

For aluminum, wood and hollow metal doors 0.25 Amps @ 30 VDC
UL Listed



7764

Surface mount magnetic switches

For aluminum, wood and hollow metal doors 0.25 Amps @ 30 VDC
UL Listed



7766



DRAWING LIST

A0.0 Cover

Architectural

A0.1 General Notes, OBC Data & Legends
A0.2 Schedules
A0.3 Assembly Schedule
A1.1 Site Plan
A2.1 Life Safety Plans
A3.1 Demolition Plans
A4.1 Foundation Plan
A4.2 Ground Floor Plan - Renovation
A4.3 Ground Floor Plan - Addition
A4.4 Second Floor Plan - Renovation
A4.5 Second Floor RCP - Addition
A4.6 Roof Plan
A5.1 Ground Floor RCP - Renovation
A5.2 Ground Floor RCP - Addition
A5.3 Second Floor RCP - Renovation
A5.4 Second Floor RCP - Addition
A5.1 Reflected Ceiling Plan
A6.1 Sections
A6.2 Sections
A7.1 Elevations
A7.2 Elevations
A8.1 Interior Elevations
A8.2 Interior Elevations
A8.3 Interior Elevations
A9.1 Details
A9.2 Details
A9.3 Details
A10.1 Interior Details
A11.1 Millwork

Civil

SW-ND Notes & Details Plan
SW-SG Service and Grading Plan

Structural

S1.1 General Notes
S1.2 Typical Details
S1.3 Typical Details
S1.4 Typical Details
S1.5 Typical Details
S1.6 Typical Details
S2.1 Foundation Plan
S2.2 Second Floor Framing Plan
S2.3 Roof Framing plan
S2.4 Roof Diaphragm & Second Floor Diaphragm Connection Plan
S3.1 Concrete Beam Schedule
S4.1 Sections and Details
S4.2 Sections and Details
S4.2B Sections and Details
S4.3 Sections and Details
S5.1 Elevations and Details
S5.2 Sections and Details

Mechanical

ME1.1 Site Plan Mechanical/Electrical
M0.1 Mechanical Notes, Legends & Specifications
M0.2 Mechanical Notes, Legengs & Points Lists
M1.1 Ground Floor Plan Reno - Plumbing Layout
M1.2 Second Floor Plan Reno - Plumbing Layout
M1.3 Roof Plan Plumbing Layout
M2.1 Ground Floor Plan Reno - HVAC Layout
M2.2 Second Floor Plan Reno - HVAC Layout
M2.3 Ground Floor Plan Reno - Heating Piping layout
M2.4 Second Floor plan Reno - Heating Piping layout
M2.5 Roof Plan - HVAC Layout

Electrical

E0.1 Electrical Notes, Legends & Specifications
E1.0 Electrical Demolition Plan
E1.1 Ground Floor plan Reno - Power, Data & Fire Alarm
E1.2 Second Floor Plan Reno - Power, Data & File Alarm Layout
E1.3 Roof Plan - Power & Data Layout
E2.1 Ground Floor Lighting Layout
E2.2 Second Floor Lighting Layout

Name of Practice:
Bortolotto Design Architect Inc.
533 College Street, Suite 401
Toronto, Ontario, M6G 1A8

Name of Project:
Pope Francis Elementary School Addition

Location:
387 Balsam Street North
Timmins, Ontario

ONTARIO ASSOCIATION OF ARCHITECTS — TABLE OF CONTENTS — LICENCE 6574

Ontario Building Code Data Matrix Parts 3 or 9

Item		Building Code Reference (References are to Division B unless noted [A] for Division A or [C] for Division C)	
1	Project Description: ☐ New ☐ Part 11 / X Addition 11.1 to 11.4 / ☐ Change of Use ☐ Alteration	X Part 3	☐ Part 9 / 1.1.2. [A] / 1.1.2. [A] & 9.10.1.3.
2	Major Occupancy(ies)	3.1.2.1 (1)	9.10.2.
3	Building Area (m²) Existing: 1340 New: 728 Total: 2068	1.4.1.2. [A]	1.4.1.2. [A]
4	Gross Area Existing: 2216 New: 1330 Total: 3546	1.4.1.2. [A]	1.4.1.2. [A]
5	Number of Storeys Above grade: 2 Below grade: 0	1.4.1.2. [A]&3.2.1.1.	1.4.1.2.[A] & 9.10.4
6	Number of Streets/Fire Fighter Access: 1 – BALSAM STREET NORTH	3.2.2.10. & 3.2.5.	9.10.20.
7	Building Classification: Group A, Division 2, Two Storey	3.2.2.26.-.83	9.10.2.
8	Sprinkler System Proposed ☐ entire building ☐ selected compartments X selected floor areas ☐ basement ☐ in lieu of roof rating ☐ not required	3.2.2.26.-.83 / 3.2.1.5. / 3.2.2.17. INDEX	9.10.8.2. / INDEX
9	Standpipe required ☐ Yes X No	3.2.9.	N/A
10	Fire Alarm required X Yes ☐ No	3.2.4.	9.10.18.
11	Water Service/Supply is Adequate X Yes ☐ No	3.2.5.7.	N/A
12	High Building ☐ Yes X No	3.2.6.	N/A
13	Construction Restrictions: ☐ Combustible permitted ☐ Non-combustible required X Both / Actual Construction ☐ Combustible ☐ Non-combustible ☐ Both	3.2.2.26.-.83	9.10.6.
14	Mezzanine(s) Area m²	3.2.1.1 (3)-(8)	9.10.4.1.
15	Occupant load based on ☐ m²/person X design of building: 1st Floor Existing: Occupancy: Assembly Load: 240 persons; 2nd Floor Existing: Occupancy: Assembly Load: 240 persons; 1st Floor Addition: Occupancy: Assembly Load: 120 persons; 2nd Floor Existing: Occupancy: Assembly Load: 120 persons	3.1.17.	9.9.1.3.
	(Additional floor areas continued on last page)		
16	Barrier-free Design X Yes ☐ No (Explain)	3.8.	9.5.2.
17	Hazardous Substances ☐ Yes X No	3.3.1.2. & 3.3.1.19.	9.10.1.3.(4)

Building Code Data Matrix, Parts 3 or 9 — December, 2013
© Ontario Association of Architects

18	Required Fire Resistance Rating (FRR)	Horizontal Assemblies FRR (Hours): Floors: 1 Hours; Roof: 0 Hours; Mezzanine: N/A Hours		Listed Design No. or Description (SG-2)		3.2.2.28.-.83 & 3.2.1.4.		9.10.8. 9.10.9.			
		FRR of Supporting Members: Floors_____ Hours; Roof_____ Hours; Mezzanine_____ Hours		Listed Design No. Or Description (SG-2)							
19	Spatial Separation – Construction of Exterior Walls							3.2.3.		9.10.14.	
	Wall	Area of EBF (m²)	L.D. (m)	L/H or H/L	Permitted Max. % of Openings	Proposed % of Openings	FRR (Hours)	Listed Design or Description	Combustible Const	Combustible Const. Noncombustible Cladding	Noncombustible Const.
	North	215	83	L/H	100%	46%	n	n/a	n/a	n/a	n/a
	South	190	66	L/H	100%	48%	n	n/a	n/a	n/a	n/a
	East	82	28	L/H	25%	24%	n	n/a	n/a	n/a	n/a
	West	171	9	L/H	34%	26%	n	n/a	n/a	n/a	n/a
20	Plumbing Fixture Requirements										
										Building Code Reference: X Part 3 / ☐ Part 9	
	Male/Female Count @ 50%-50%, except as noted otherwise			Occupant Load	BC Table Number	Fixtures Required	Fixtures Provided				
	1st Floor Existing:	Occupancy	Assembly	240	3.7.4.3 (14)	4 male; 5 female	9 male; 9 female				
	2nd Floor Existing:	Occupancy	Assembly	240	3.7.4.3 (14)	4 males; 5 female	4 male; 4 female				
	1st Floor Addition:	Occupancy	Assembly	120	3.7.4.3 (14)	2 male; 2 female	4 male; 4 female				
	2nd Floor Addition:	Occupancy	Assembly	120	3.7.4.3 (14)	2 male; 2 female	1 male; 1 female				
	19 (Spatial Separation – Construction of Exterior Walls - Continued)							3.2.3.		9.10.14.	
	Wall	Area of EBF(m²)	L.D. (m)	L/H Or H/L	Permitted Max. % of Openings	Proposed % of Openings	FRR (Hours)	Listed Design or Description	Comb Const	Comb. Const. Noncombustible Cladding	Noncomb. Constr.

Building Code Data Matrix, Parts 3 or 9 — December, 2013
© Ontario Association of Architects

1 A0.0 OBC MATRIX
NTS

POPE FRANCIS ELEMENTARY SCHOOL ADDITION & RENOVATION

Project #R121

387 Balsam Street North
Timmins, Ontario

Issued for PERMIT &TENDER - MAY 17, 2017

BORTOLOTTO
architecture interior design

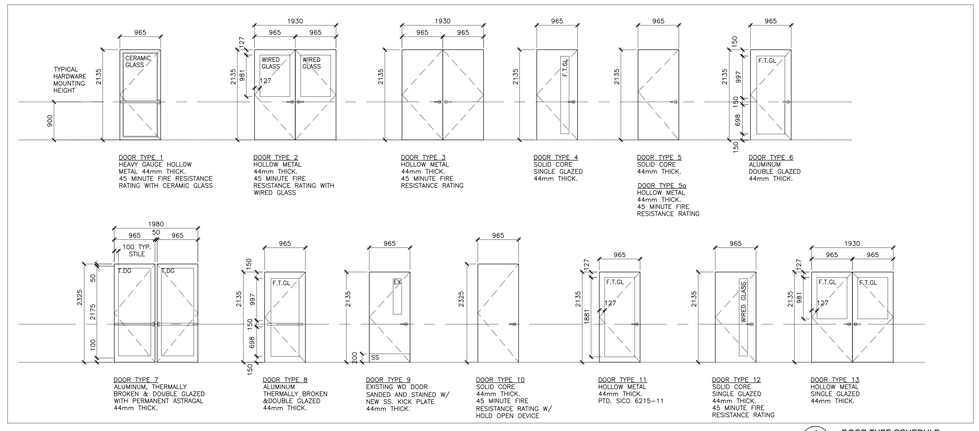
ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1M8
Tel 416 599 5465 x128
engineeringlink.ca

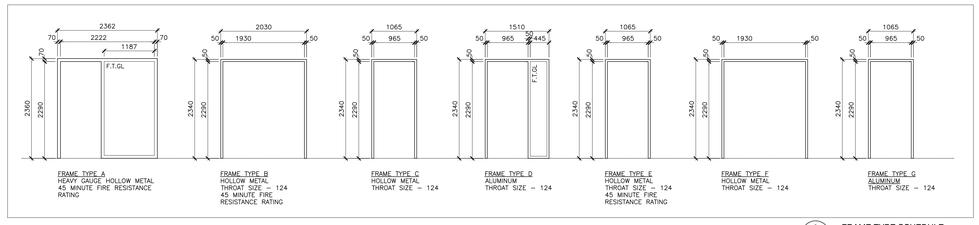
MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

DOOR SCHEDULE - LEVEL 1 EXISTING

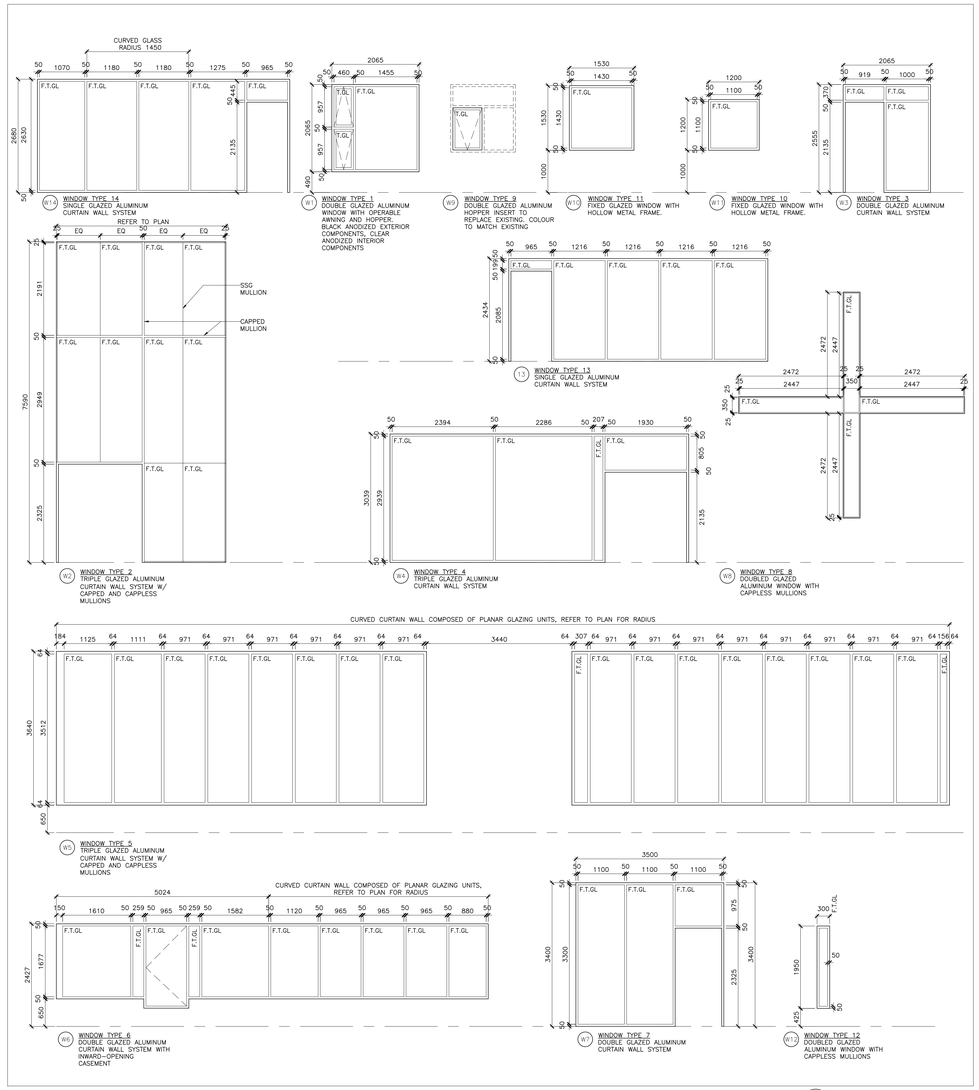
DOOR NUMBER	ROOM NUMBER	ROOM NAME	PANEL QUANTITY	DOOR				FRAME				HARDWARE NOTES
				TYPE	MATERIAL	FINISH	TYPE	MATERIAL	FINISH			
D1101	X101	HALLWAY	2	2	HM	PTD	B	HM	PTD	45 MIN/1 HR FIRE RATED DOOR AND FRAME WITH CLOSER AND PANIC PAR AND PULLS.
D1102	X102	RECEPTION	1	12	HM	PTD	C	HM	PTD	CLASSROOM FUNCTION LOCK
D1103	X103	PRINCIPAL OFFICE	1	4	HM	PTD	C	HM	PTD	CLASSROOM FUNCTION LOCK
D1104	X104	VP OFFICE	1	4	HM	PTD	C	HM	PTD	CLASSROOM FUNCTION LOCK
D1105	X105	–	–	–	–	–	–	–	–	–
D1106	X106	–	–	–	–	–	–	–	–	–
D1107	X107	–	–	–	–	–	–	–	–	–
D1108	X108	–	–	–	–	–	–	–	–	–
D1109	X109	–	–	–	–	–	–	–	–	–
D1110	X110	–	–	–	–	–	–	–	–	–
D1111	X111	–	–	–	–	–	–	–	–	–
D1112	X112	–	–	–	–	–	–	–	–	–
D1113	X113	–	–	–	–	–	–	–	–	–
D1114	X114	SLEEPING ROOM	1	11	HM	PTD	C	HM	PTD	CLASSROOM FUNCTION LOCK
D1115	X115	–	–	–	–	–	–	–	–	–
D1116	X116	–	–	–	–	–	–	–	–	–
D1117	X117	CHILD CARE	1	12	HM	PTD	E	HM	PTD	45 MIN/1 HR RATED DOOR AND FRAME WITH CLOSER AND PANIC PAR AND PULLS.
D1124	X117	CHILD CARE	1	4	HM	PTD	C	HM	PTD	CLASSROOM FUNCTION LOCK
D1123	X123	STAIR	1	5d	HM	PTD	E	HM	PTD	45 MIN/1 HR RATED DOOR AND FRAME WITH CLOSER, STOREROOM FUNCTION LOCK
D1122	X122	STAIR	1	5d	HM	PTD	E	HM	PTD	45 MIN/1 HR RATED DOOR AND FRAME WITH CLOSER, STOREROOM FUNCTION LOCK
D1121	X121	KINDERGARTEN	1	4	HM	PTD	C	HM	PTD	CLASSROOM FUNCTION LOCK
D1120	X120	VESTIBULE	1	8	HM	PTD	•	ALUM.	ANOD.	• REFER TO WINDOW TYPE SCHEDULE W3 CLOSER, PANIC BARS WITH EXTERIOR CYLINDERS AND OFFSET DOOR PULLS, AUTOMATIC DOOR OPERATOR, WEATHER STRIPPING AND SWEEPS, MOUNTING DOOR CONTACTS
D1119	X119	CUBBY AREA	1	6	ALUM.	ANOD.	G	ALUM.	ANOD.	CLOSER, PANIC BARS AND OFFSET DOOR PULLS, AUTOMATIC DOOR OPERATOR,
D1118	X118	CUBBY AREA	1	6	ALUM.	ANOD.	G	ALUM.	ANOD.	CLOSER, PANIC BARS AND OFFSET DOOR PULLS, AUTOMATIC DOOR OPERATOR,
D1117	X117	BARRIER FREE WASHROOM	1	5	HM	PTD	C	HM	PTD	WASHROOM ADJUSTABLE BALL LATCH
D1116	X116	WASHROOM	1	5	HM	PTD	C	HM	PTD	WASHROOM ADJUSTABLE BALL LATCH
D1115	X115	KINDERGARTEN	1	4	HM	PTD	C	HM	PTD	CLASSROOM FUNCTION LOCK
D1114	X114	KINDERGARTEN	1	4	HM	PTD	C	HM	PTD	POCKET DOOR
D1113	X113	KINDERGARTEN	1	4	HM	PTD	C	HM	PTD	CLASSROOM FUNCTION LOCK
D1108	X108	KINDERGARTEN	1	4	HM	PTD	C	HM	PTD	CLASSROOM FUNCTION LOCK
D1109	X109	WASHROOM	1	5	HM	PTD	C	HM	PTD	WASHROOM ADJUSTABLE BALL LATCH
D1110	X110	BARRIER FREE WASHROOM	1	5	HM	PTD	C	HM	PTD	WASHROOM ADJUSTABLE BALL LATCH
D1111	X111	CUBBY AREA	1	6	ALUM.	ANOD.	G	ALUM.	ANOD.	CLOSER, PANIC BARS AND OFFSET DOOR PULLS, AUTOMATIC DOOR OPERATOR,
D1112	X112	CUBBY AREA	1	6	ALUM.	ANOD.	G	ALUM.	ANOD.	CLOSER, PANIC BARS AND OFFSET DOOR PULLS, AUTOMATIC DOOR OPERATOR,
D1114	X114	KINDERGARTEN	1	4	HM	PTD	C	HM	PTD	CLASSROOM FUNCTION LOCK
D1115	X115	KINDERGARTEN	1	4	HM	PTD	C	HM	PTD	CLASSROOM FUNCTION LOCK
D1116	X116	KINDERGARTEN	1	4	HM	PTD	C	HM	PTD	CLASSROOM FUNCTION LOCK
D1117	X117	CHILD CARE	1	12	HM	PTD	E	HM	PTD	45 MIN/1 HR RATED DOOR AND FRAME WITH CLOSER, STOREROOM FUNCTION LOCK
D1124	X117	CHILD CARE	1	4	HM	PTD	C	HM	PTD	CLASSROOM FUNCTION LOCK
D1123	X123	STAIR	1	5d	HM	PTD	E	HM	PTD	45 MIN/1 HR RATED DOOR AND FRAME WITH CLOSER, STOREROOM FUNCTION LOCK
D1122	X122	STAIR	1	5d	HM	PTD	E	HM	PTD	45 MIN/1 HR RATED DOOR AND FRAME WITH CLOSER, STOREROOM FUNCTION LOCK
D1121	X121	KINDERGARTEN	1	4	HM	PTD	C	HM	PTD	CLASSROOM FUNCTION LOCK
D1120	X120	VESTIBULE	1	8	HM	PTD	•	ALUM.	ANOD.	• REFER TO WINDOW TYPE SCHEDULE W3 CLOSER, PANIC BARS WITH EXTERIOR CYLINDERS AND OFFSET DOOR PULLS, AUTOMATIC DOOR OPERATOR, WEATHER STRIPPING AND SWEEPS, DOOR CONTACTS
D1119	X119	CUBBY AREA	1	6	ALUM.	ANOD.	G	ALUM.	ANOD.	CLOSER, PANIC BARS AND OFFSET DOOR PULLS, AUTOMATIC DOOR OPERATOR,
D1118	X118	CUBBY AREA	1	6	ALUM.	ANOD.	G	ALUM.	ANOD.	CLOSER, PANIC BARS AND OFFSET DOOR PULLS, AUTOMATIC DOOR OPERATOR,
D1117	X117	BARRIER FREE WASHROOM	1	5	HM	PTD	C	HM	PTD	WASHROOM ADJUSTABLE BALL LATCH
D1116	X116	WASHROOM	1	5	HM	PTD	C	HM	PTD	WASHROOM ADJUSTABLE BALL LATCH
D1115	X115	KINDERGARTEN	1	4	HM	PTD	C	HM	PTD	CLASSROOM FUNCTION LOCK
D1114	X114	KINDERGARTEN	1	4	HM	PTD	C	HM	PTD	CLASSROOM FUNCTION LOCK
D1113	X113	KINDERGARTEN	1	4	HM	PTD	C	HM	PTD	CLASSROOM FUNCTION LOCK
D1108	X108	KINDERGARTEN	1	4	HM	PTD	C	HM	PTD	CLASSROOM FUNCTION LOCK
D1109	X109	WASHROOM	1	5	HM	PTD	C	HM	PTD	WASHROOM ADJUSTABLE BALL LATCH
D1110	X110	BARRIER FREE WASHROOM	1	5	HM	PTD	C	HM	PTD	WASHROOM ADJUSTABLE BALL LATCH
D1111	X111	CUBBY AREA	1	6	ALUM.	ANOD.	G	ALUM.	ANOD.	CLOSER, PANIC BARS AND OFFSET DOOR PULLS, AUTOMATIC DOOR OPERATOR,
D1112	X112	CUBBY AREA	1	6	ALUM.	ANOD.	G	ALUM.	ANOD.	CLOSER, PANIC BARS AND OFFSET DOOR PULLS, AUTOMATIC DOOR OPERATOR,
D1113	X113	VESTIBULE	1	8	ALUM.	ANOD.	•	ALUM.	ANOD.	• REFER TO WINDOW TYPE SCHEDULE W3 CLOSER, PANIC BARS WITH EXTERIOR CYLINDERS AND OFFSET DOOR PULLS, AUTOMATIC DOOR OPERATOR, WEATHER STRIPPING AND SWEEPS, DOOR CONTACTS



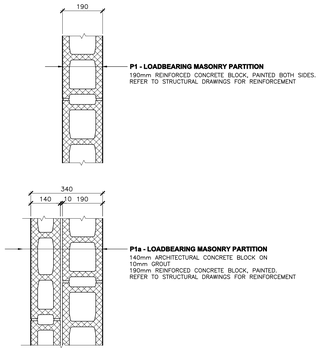
4 A0.3 DOOR TYPE SCHEDULE
1:50

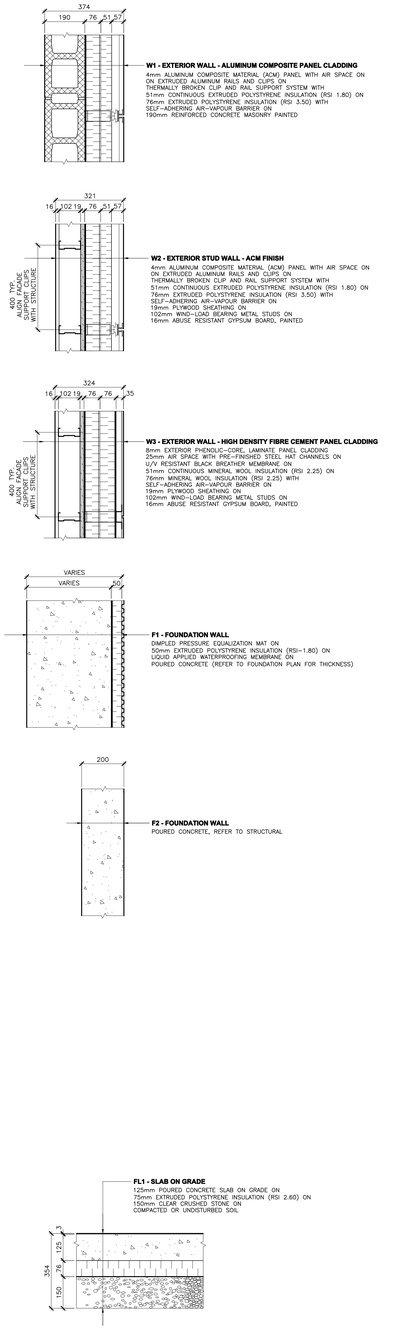


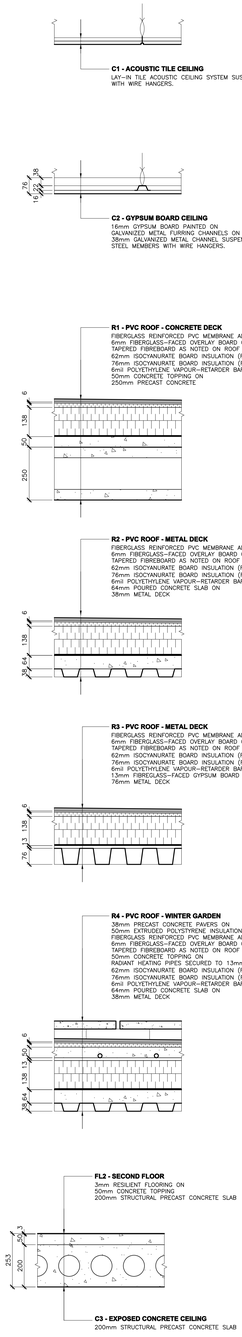
3 A0.3 FRAME TYPE SCHEDULE
1:10



2 A0.3 WINDOW TYPE SCHEDULE
1:50







1 A0.3 ASSEMBLY SCHEDULE
1:10

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION PROJECT#R121

387 Balsam Street North
Timmins, Ontario

Northeastern Catholic District School Board

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REV	DESCRIPTION	DATE
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.05.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24

ONTARIO ASSOCIATION OF ARCHITECTS
TANIA BORTOLOTTO
LICENCE
5374

BORTOLOTTO

PROJECT NUMBER
PP1701 (#R122)

DATE
17.05.17

N

SCALE
AS NOTED

DRAWN BY
BM

ASSEMBLY, DOOR & FRAME TYPE SCHEDULES

A0.3

SITE PLAN NOTES

1. CONTRACTOR TO INCLUDE FOR HAND EXCAVATION WHERE REQUIRED; REFER TO UNIT PRICES APPENDIX.
2. EXCAVATION SHALL CONFORM TO THE O.B.C., THE ONTARIO HEALTH AND SAFETY ACT AND ALL OTHER RELEVANT AUTHORITIES WITH REGARD TO SLOPE, SUPPORT, SHORING, OCCUPATION HEALTH AND SAFETY AND PUBLIC SAFETY.
3. THE CONTRACTOR IS RESPONSIBLE TO ENSURE EFFECTIVE DE-WATERING OF THE EXCAVATION AREA AS WELL AS PROTECTING THE EXCAVATION FROM SURFACE RUN-OFF.
4. THE CONTRACTOR SHALL SEPARATE EXISTING TOP SOIL DURING EXCAVATION AND REPLACE IT AFTER BACKFILLING. EXCAVATION MATERIAL IS TO BE STOCKPILED ACCORDING TO THE WRITTEN DIRECTION OF THE CONSULTANT. REFER TO STAGING NOTES.
5. THE CONTRACTOR IS RESPONSIBLE TO LOCATE AND PROTECT ALL BURIED SERVICES INCLUDING BUT NOT LIMITED TO: ELECTRICAL, GAS, WATER, WASTE, STORM SEWERS ETC.
6. THE CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FROM THE CONSULTANT PRIOR TO MODIFYING, MOVING OR OTHERWISE DISTURBING ANY BURIED SERVICES.
7. LANDSCAPE SHALL BE SOD UNLESS OTHERWISE NOTED. CONTRACTOR TO REPLACE ANY EXISTING SOD AND TOPSOIL REMOVED DURING EXCAVATION OR OTHERWISE DISTURBED DURING CONSTRUCTION.

SITE PLAN LEGEND

- DENOTES PROPERTY LINE
- DENOTES SET BACK LINE
- DENOTES EXISTING FENCING
- DENOTES TEMPORARY 1830mm HIGH CONSTRUCTION FENCING
- DENOTES 1220mm HIGH TREE PROTECTION FENCING
- DENOTES PERMANENT 1220mm HIGH VINYL-COATED CHAIN LINK FENCING
- DENOTES EXISTING TREE
- CB DENOTES CATCH BASIN
- MH DENOTES MANHOLE
- DENOTES NEW ASPHALT AREA
- DENOTES EXISTING ASPHALT AREA
- DENOTES EXISTING GROUND COVER

ZONING & LOT INFORMATION

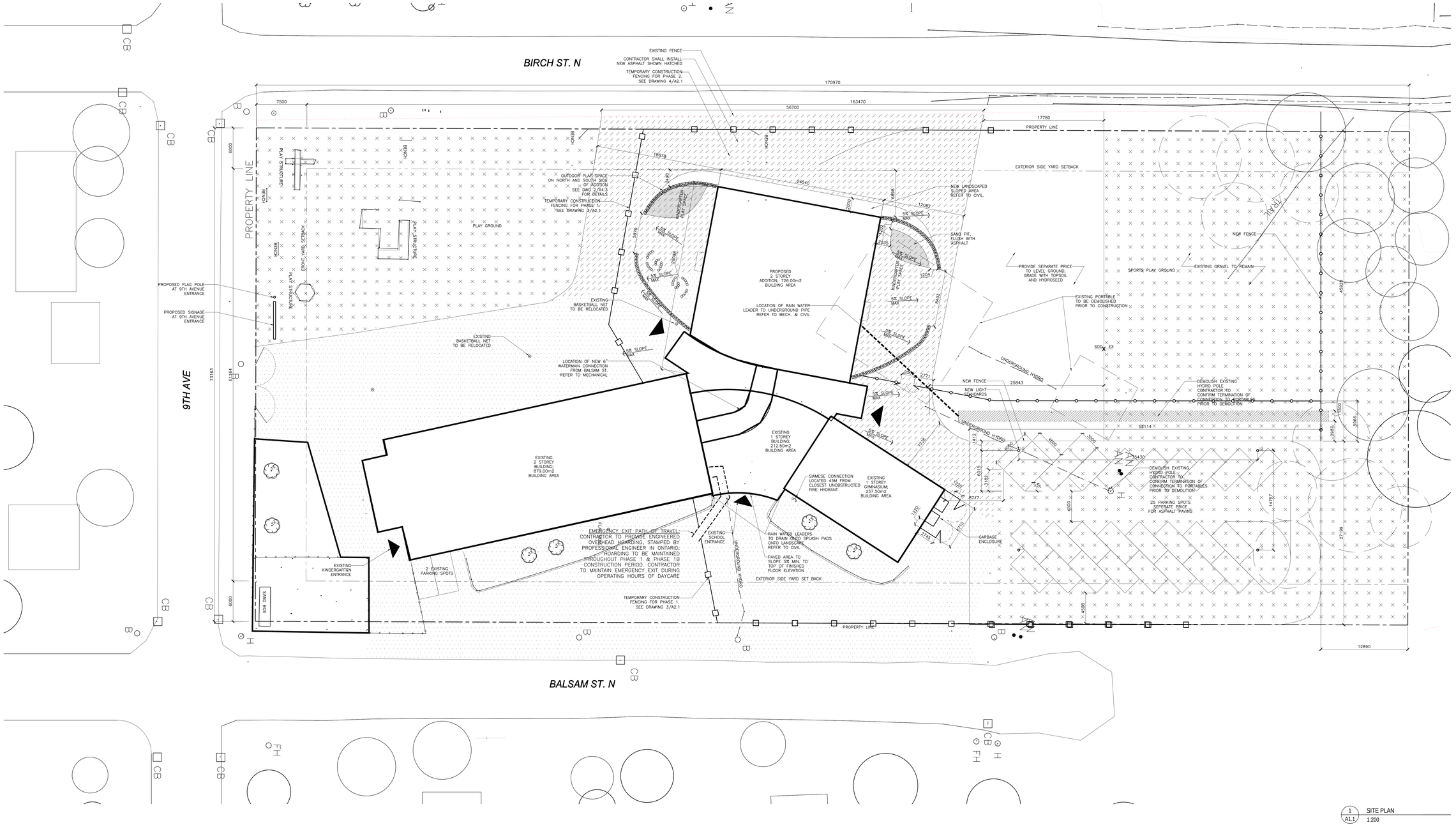
LOT AREA	11,980.00 m2	
BUILDING COVERAGE AREA	EXISTING BUILDING:	1,340.00m²
	PROPOSED ADDITIONS:	728.00m²
	SITE TOTAL:	2068.00m²
COVERAGE (ALL BUILDINGS ON SITE)	EXISTING:	11%
	PROPOSED:	17%
FLOOR SPACE RATIO (ALL BUILDINGS ON SITE)	EXISTING:	0.186
	PROPOSED:	0.239

SURVEY CREDIT

SURVEY INFORMATION FROM FOLLOWING SOURCES:
FILE #16-149; FIELD SURVEY DATE 14/10/2016; PREPARED BY PELTO CONSULTING INDUSTRIAL SURVEY SERVICES

SITE PLAN INFORMATION

CLASSROOMS (ALL BUILDINGS ON SITE)	EXISTING:	14
	PROPOSED ADDITION:	6
PARKING	EXISTING:	2
	PROPOSED:	25
EXISTING ASSEMBLY SPACE	229 m2 (GYMNASIUM)	
PROPOSED OFFICE SPACE	111 m2	



1 / A1.1 SITE PLAN 1:200

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION PROJECT#R121

387 Balsam Street North
Timmins, Ontario

Northeastern Catholic District School Board

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REV	DESCRIPTION	DATE
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.05.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24

ONTARIO ASSOCIATION OF ARCHITECTS
TANIA SCOTT-BOLOTTO
LICENCE 8374

BORTOLOTTO

PROJECT NUMBER
PF1701 (PR121)

DATE
17.05.17

SCALE
1:75

DRAWN BY
BM

SITE PLAN

A1.1

A3.1

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION PROJECT#121

387 Bloor Street North
Timmins, Ontario

Northeastern Catholic District School Board

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E. Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2164 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x42
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8385 Jane Street, Suite 109
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

ONTARIO ASSOCIATION OF ARCHITECTS
TAMIE LOUISE LOTTO
LICENCE
2014

BORTOLOTTO

REV	DESCRIPTION	DATE
1	ISSUED FOR CLASS C COST	17.03.24
2	ISSUED FOR CLASS B COST	17.04.24
3	ISSUED FOR CLASS A COST	17.05.15
4	ISSUED FOR CLIENT REVIEW	17.05.19
5	ISSUED FOR PERMIT & TENDER	17.05.17

PROJECT NUMBER
P21/21 (#P1121)

DATE
17.06.17

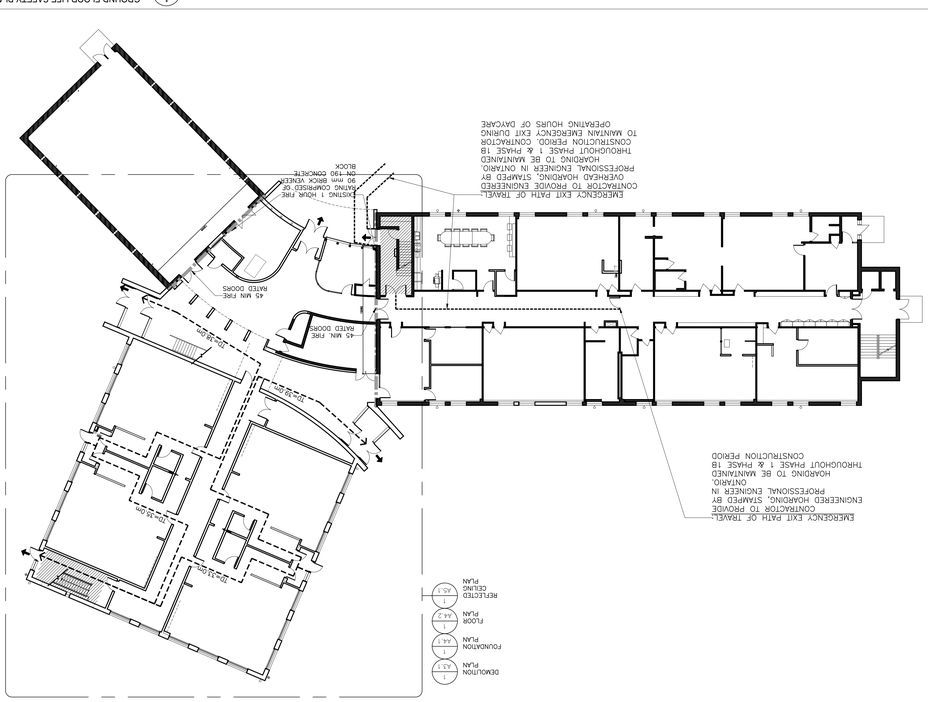
SCALE
1:75

DRAWN BY
BM

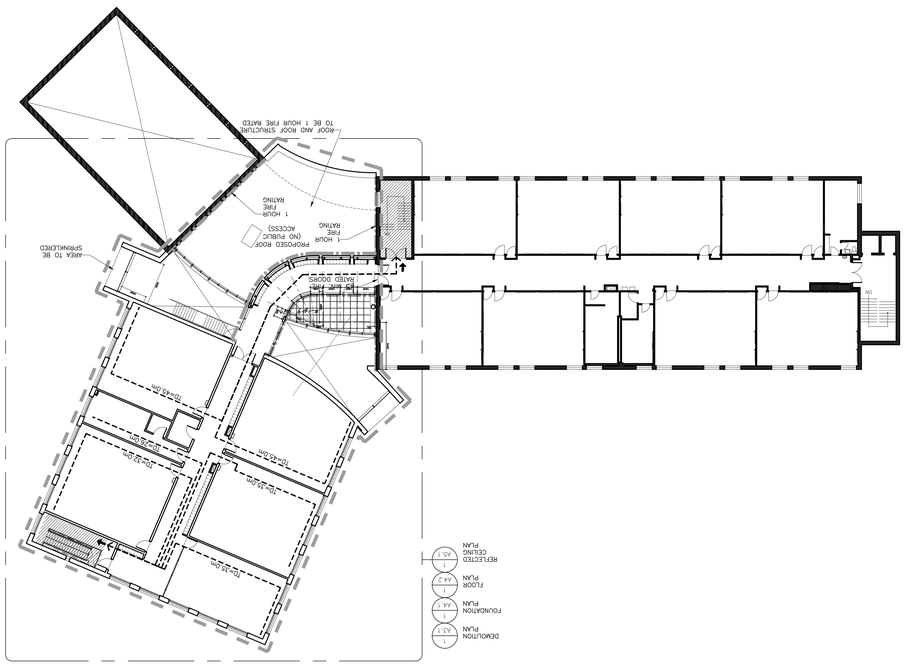
LIFE SAFETY & PHASING PLAN

---

1 GROUND FLOOR LIFE SAFETY PLAN A2.1 1:200



2 SECOND FLOOR LIFE SAFETY PLAN A2.1 1:200

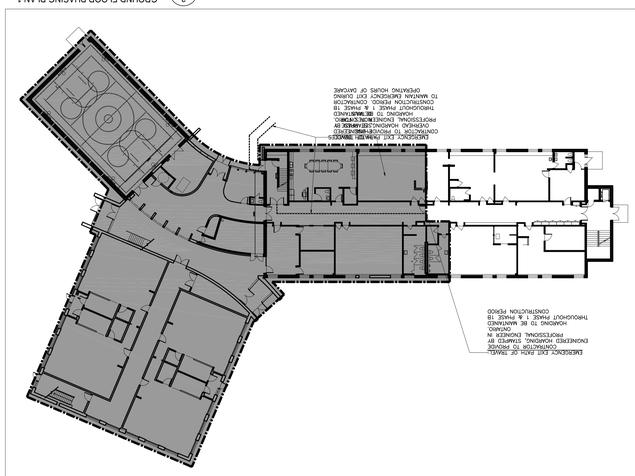


LIFE SAFETY LEGEND

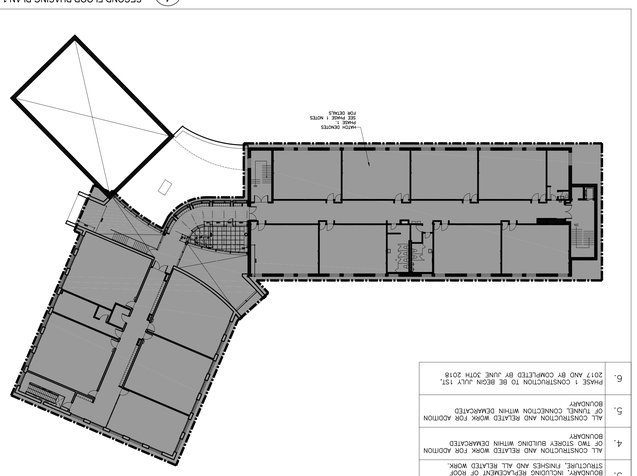
- 1 HOUR FIRE SEPARATION WITH 45 MINUTE CLOSURE WHERE NOTED
- EXIT ENCLOSURE
- TRAVEL DISTANCE (TD)
- #EXIT STAIR NUMBER
- #EXIT CAPACITY (PERSONS)
- EXIT DOOR & DIRECTION OF TRAVEL
- FIRE HOSE CABINET

---

3 GROUND FLOOR PHASING PLAN 1 A2.1 1:300



4 SECOND FLOOR PHASING PLAN 1 A2.1 1:300

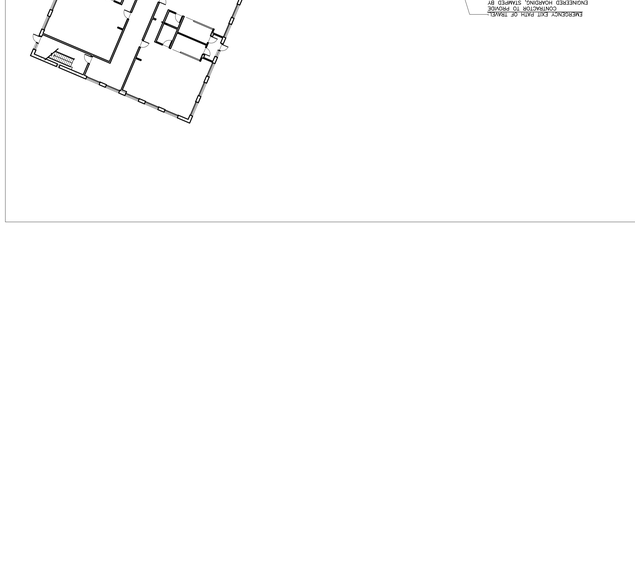


PHASE 1 PLAN NOTES

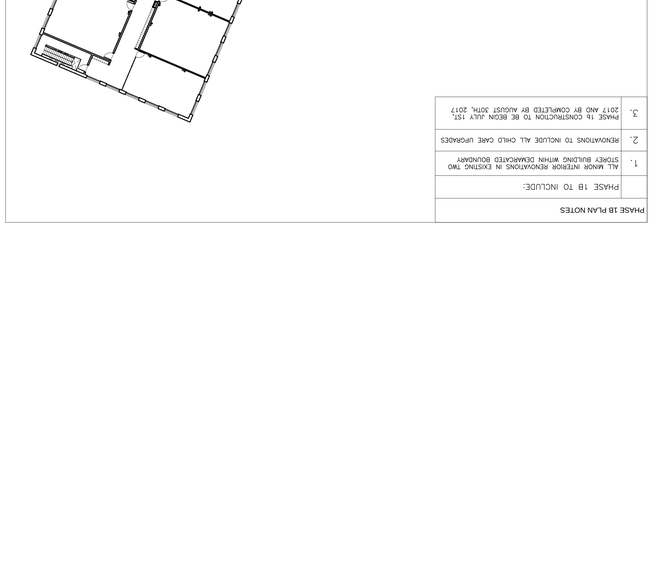
	PHASE 1 TO INCLUDE:
1.	ALL MINOR INTERIOR RENOVATIONS IN EXISTING TWO STOREY BUILDING WITHIN DEMARCATED BOUNDARY
2.	ALL MINOR INTERIOR RENOVATIONS IN EXISTING GYM
3.	ALL RENOVATIONS AND ALTERATION OF EXISTING 1 STOREY MAIN ENTRANCE WITHIN DEMARCATED BOUNDARY, INCLUDING REPLACEMENT OF ROOF STRUCTURE, FINISHES AND ALL RELATED WORK.
4.	ALL CONSTRUCTION AND RELATED WORK FOR ADDITION OF TWO STOREY BUILDING WITHIN DEMARCATED BOUNDARY
5.	ALL CONSTRUCTION AND RELATED WORK FOR ADDITION OF TUNNEL CONNECTION WITHIN DEMARCATED BOUNDARY
6.	PHASE 1 CONSTRUCTION TO BE BEGIN JULY 1ST, 2017 AND BY COMPLETED BY JUNE 30TH 2018

---

5 GROUND FLOOR PHASING PLAN 1B A2.1 1:300

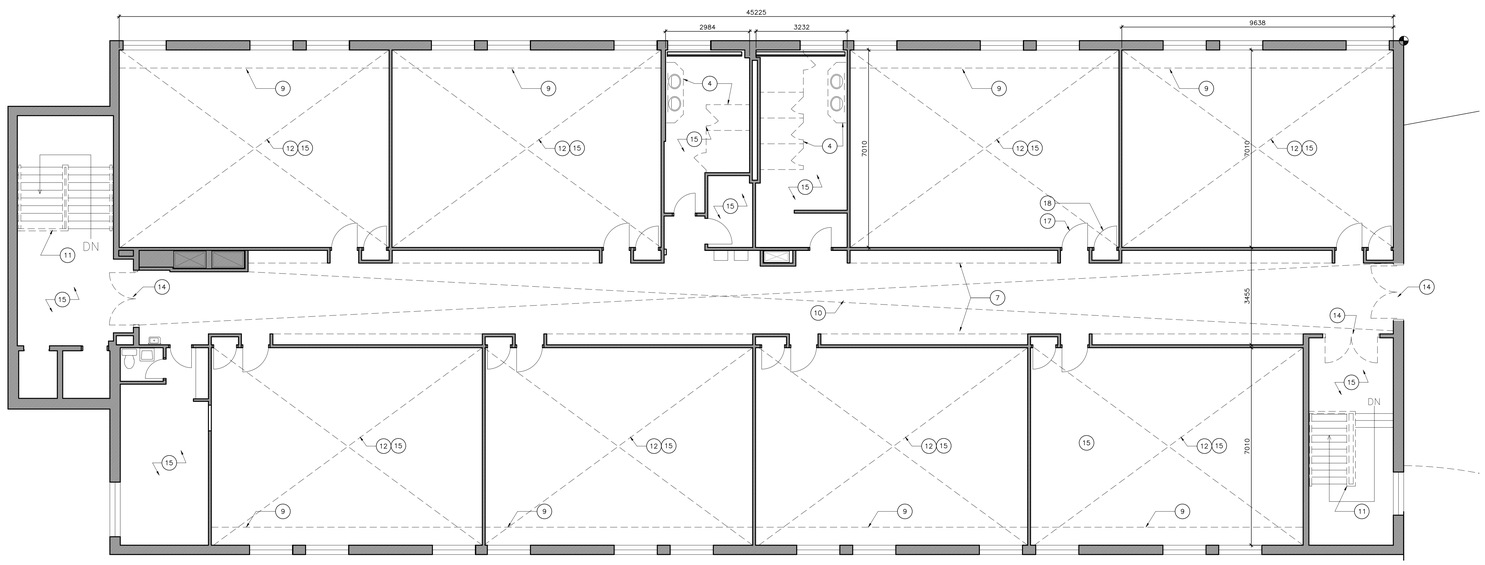


6 SECOND FLOOR PHASING PLAN 1B A2.1 1:300



PHASE 1B PLAN NOTES

	PHASE 1B TO INCLUDE:
1.	ALL MINOR INTERIOR RENOVATIONS IN EXISTING TWO STOREY BUILDING WITHIN DEMARCATED BOUNDARY
2.	RENOVATIONS TO INCLUDE ALL CHILD CARE UPGRADES
3.	PHASE 1B CONSTRUCTION TO BE BEGIN JULY 1ST, 2017 AND BY COMPLETED BY AUGUST 30TH, 2017

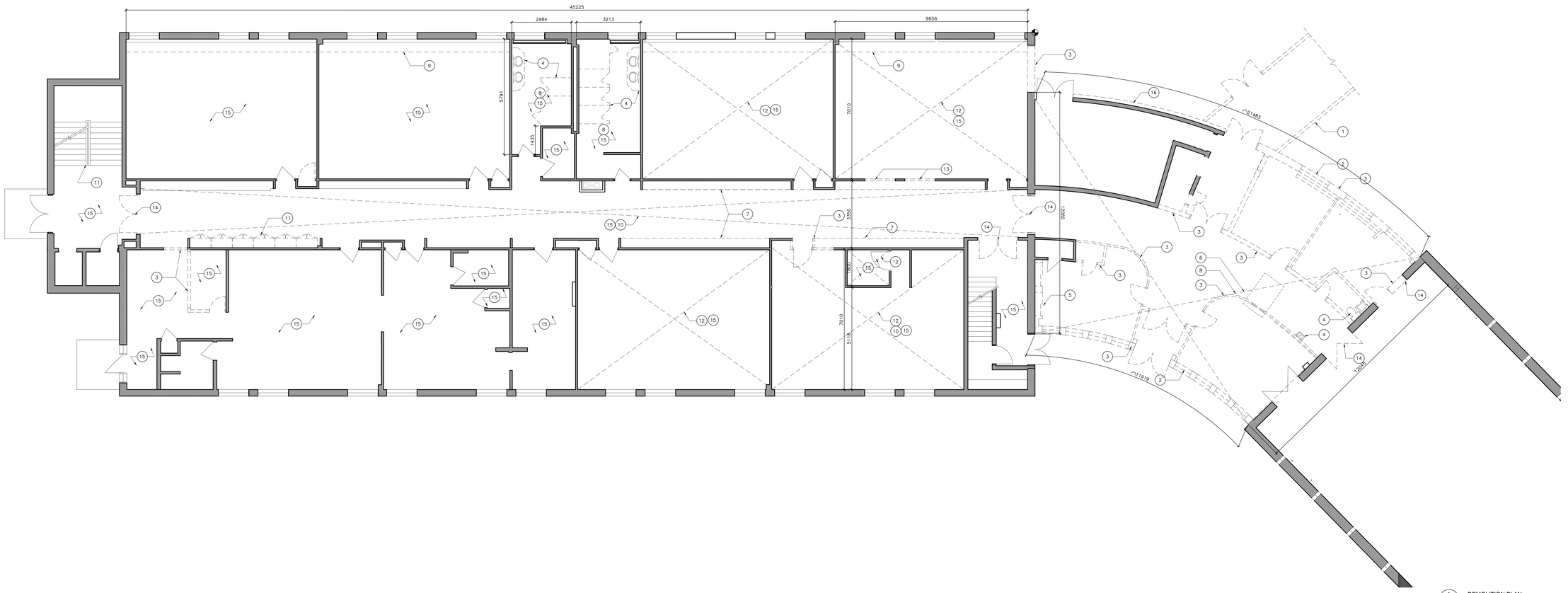


2 A3.1 DEMOLITION SECOND FLOOR PLAN
1:75

DEMOLITION PLAN DRAWING NOTES	
	NOTE SYMBOL
1	DEMOLISH EXISTING PORTABLE LINK
2	DEMOLISH EXISTING WINDOWS
3	DEMOLISH EXISTING WALLS, POST DEMOLITION OF ROOF STRUCTURE AND CEILING. REFER TO DEMOLITION NOTE 6
4	EXISTING FIXTURES AND PARTITIONS TO BE REPLACED. PATCH AND MAKE GOOD TO RECEIVE NEW FIXTURES AND PARTITIONS.
5	DEMOLISH EXISTING MILLWORK. PATCH AND MAKE GOOD ALL EXISTING WALLS DAMAGED AS A RESULT OF DEMOLITION.
6	DEMOLISH ALL CEILING FINISHES, REFER TO MECHANICAL FOR REMOVAL OF CONDUIT. DEMOLISH ALL EXISTING ROOF STRUCTURE IN PREPERATION FOR NEW STRUCTURE. REFER TO STRUCTURAL, MECHANICAL & ELECTRICAL DRAWINGS FOR COORDINATION.
7	DEMOLISH ALL EXISTING LOCKERS, ON ALL LEVELS. PATCH AND MAKE GOOD ALL EXISTING WALLS DAMAGED AS A RESULT OF DEMOLITION.
8	EXISTING FLOOR TO BE REMOVED AND PREPARED FOR NEW FINISHES. EXISTING FLOOR SLAB TO BE SCRAPED AND/OR GROUND SMOOTH TO REMOVE ALL ADHESIVE.
9	EXISTING MILLWORK TO BE DEMOLISHED. PATCH AND MAKE GOOD ANY DAMAGED AREAS AS A RESULT OF DEMOLITION
10	EXISTING CEILING AND LIGHTING FIXTURES TO BE DEMOLISHED
11	EXISTING HANDRAILS IN STAIRWELLS TO BE DEMOLISHED
12	EXISTING FLOORING TO BE REMOVED. REFER TO HAZARDOUS REPORT PROVIDED A BY OWNER APPENDED TO SPECIFICATIONS.
13	DEMOLISH PORTION OF EXISTING WALL TO CREATE OPENING FOR WINDOW
14	DEMOLISH DOORS AND PORTION OF DOOR OPENINGS TO ACCOMMODATE NEW DOOR SIZES WHERE APPLICABLE
15	DEMOLISH EXISTING LIGHTING FIXTURES. DEMOLISHED EXISTING CONDUIT AND JUNCTION BOXES
16	PORTION OF EXISTING WALL MASONRY WALL TO BE DEMOLISHED. REFER TO STRUCTURAL.
17	REFER TO DOOR SCHEDULE FOR EXISTING DOOR TREATMENT. TYPICAL FOR ALL EXISTING CLASSROOM DOORS.
18	EXISTING CLASSROOM CLOSET DOORS TO BE PREPARED AND PAINTED.

DEMOLITION PLAN NOTES
1. MAKE GOOD ALL EXISTING FINISHES TO REMAIN THAT ARE DISTURBED BY ANY DEMOLITION OR NEW CONSTRUCTION INCLUDING: STRUCTURE, FLOORS, WALLS, ELECTRICAL & MECHANICAL EQUIPMENT ETC.
2. PREPARE EXISTING WALLS TO ACCEPT NEW CONSTRUCTION AND FINISHES.
3. REMOVE ALL FLOOR FINISHES. MAKE EXISTING FLOOR LEVEL TO ACCEPT NEW CONSTRUCTION AND FINISHES.
4. GENERAL CONTRACTOR IS TO ASSUME ALL RESPONSIBILITY FOR FOR THE SAFE AND LEGAL DISPOSAL OF ALL WASTE MATERIALS GENERATED UNDER THIS CONTRACT. ALL FEES LEVIED RELATING TO WASTE DISPOSAL TO BE PAID FOR BY THE GENERAL CONTRACTOR.
5. PATCH AND MAKE GOOD TO MATCH NEW WALLS ALL WALLS THAT WILL BE EXPOSED AT NEW CEILING HEIGHT.
6. PATCH AND MAKE GOOD ANY VOIDS LEFT IN EXISTING WALLS AND/OR DAMAGED WALLS AS A RESULT OF DEMOLITION. VOIDS IN BLOCK WALLS TO BE PATCHED WITH NON-SHRINK GROUT, SEALED AND PAINTED TO MATCH ADJACENT.
7. ALL LOOSE FURNITURE TO BE REMOVED BY OWNER
8. ALL LOOSE EQUIPMENT TO BE REMOVED BY OWNER
9. GENERAL CONTRACTOR IS TO SITE VERIFY ALL EXISTING CONDITIONS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT BEFORE COMMENCING WORK.
10. ALL EXISTING LIGHT FIXTURES AND MECHANICAL REGISTERS SCHEDULED TO REMAIN SHALL BE REMOVED, STORED AND REINSTALLED IN THEIR ORIGINAL LOCATIONS.
11. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR X-RAY SCANNING OF EXISTING CONCRETE FLOOR PRIOR TO CUTTING. NOTIFY ARCHITECT OF ANY EMBEDDED SERVICES, REINFORCING OR SUBSURFACE CONDITIONS.
12. DEMOLISH EXISTING OBSOLETE CONDUITS
13. CUTS AT EXISTING FLOOR FINISHES SHALL BE STRAIGHT AND NEAT.
14. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR MECHANICAL AND ELECTRICAL DEMOLITION

ASBESTOS / DESIGNATED SUBSTANCES
1. REFER TO THE DESIGNATED SUBSTANCE SURVEY PROVIDED BY OWNER, PREPARED BY PICHIN APPENDED TO THE SPECIFICATIONS FOR LOCATION, SCOPE OF REMOVAL, HANDLING PROCEDURES AND DISPOSAL PROCEDURES FOR DESIGNATED SUBSTANCES.



1 A3.1 DEMOLITION PLAN
1:75

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION PROJECT#R121

387 Balsam Street North
Timmins, Ontario

Northeastern Catholic District School Board

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REV	DESCRIPTION	DATE
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.05.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24

ONTARIO ASSOCIATION OF ARCHITECTS
TANIA BORTOLOTTO
LICENCE
5374

BORTOLOTTO

PROJECT NUMBER
PP1701 (#R121)

DATE
17.05.17

N

SCALE
1:75

DRAWN BY
BM

DEMOLITION PLAN

A3.1

A4.1

FOUNDATION PLAN

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

Northeastern Catholic District School Board
357 Isabella Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E. Suite 200
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2164 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8385 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointing.com

REV	DESCRIPTION	DATE
1	ISSUED FOR CLASS C COST	17.03.24
2	ISSUED FOR CLASS B COST	17.04.24
3	ISSUED FOR CLASS A COST	17.05.01
4	ISSUED FOR CLIENT REVIEW	17.05.19
5	ISSUED FOR PERMIT & TENDER	17.05.17

BORTOLOTTO

PROJECT NUMBER
[redacted]

DATE
17.05.17

SCALE
1:75

DRAWN BY
BM

FOUNDATION PLAN

FOUNDATION PLAN NOTES

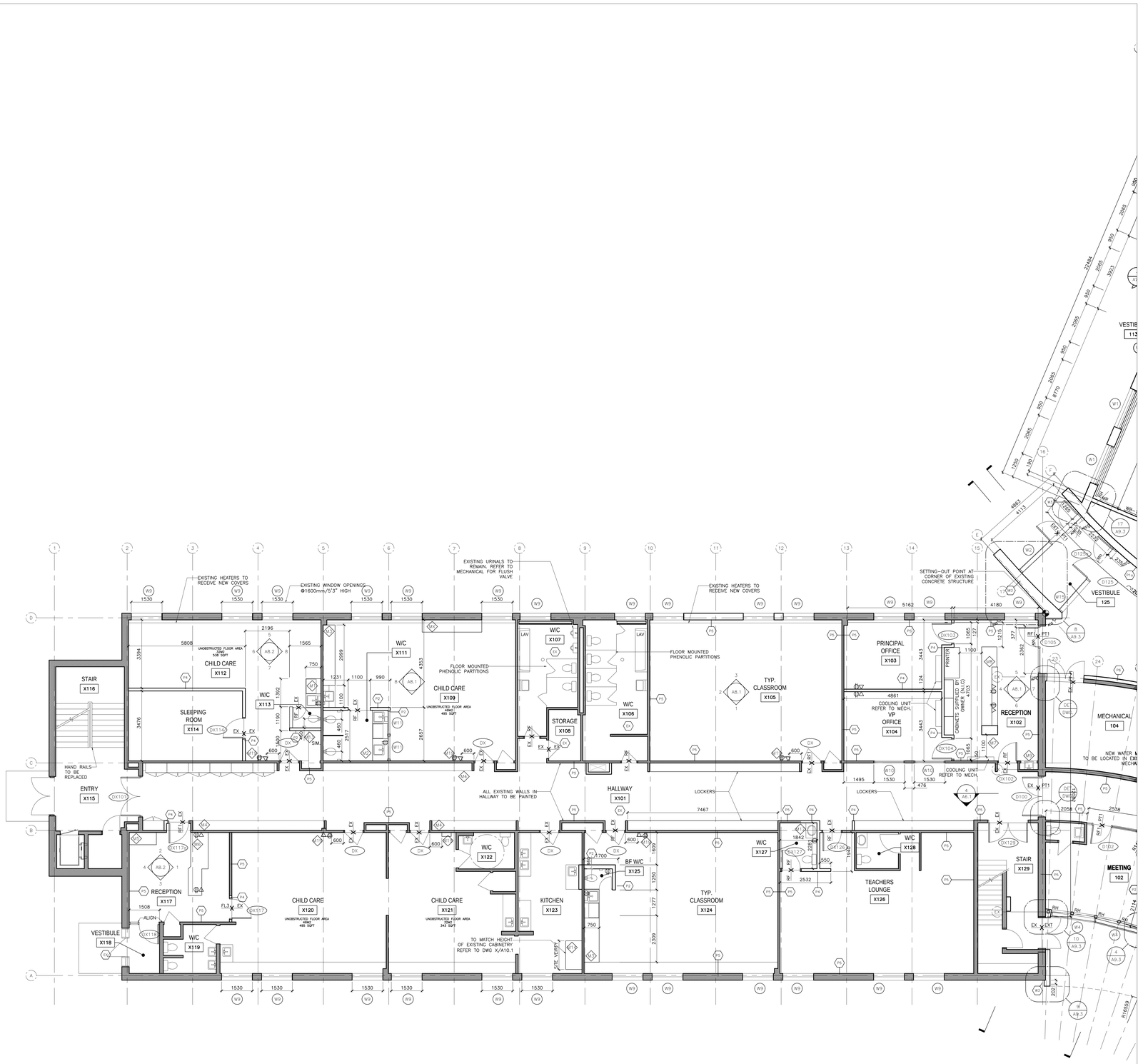
1. REFER TO STRUCTURAL DRAWINGS AND GEOTECHNICAL REPORT FOR FOUNDING DEPTH OF FOOTINGS

FLOOR PLAN NOTES

1. GENERAL CONTRACTOR IS TO SITE VERIFY ALL EXISTING CONDITIONS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT BEFORE COMMENCING WORK.
2. ALL EXISTING SURFACES TO RECEIVE PAINT ARE TO BE PATCHED, REPAIRED AND CLEANED FOR NEW PAINT. SEE SPECIFICATION, SECTION 09 91 99
3. PATCH AND MAKE GOOD ANY AREAS DISTURBED BY THE WORK OF THIS CONTRACT, MAINTAIN THE INTEGRITY OF DUCTWORK OR OTHER BUILDING SERVICES ALTERED UNDER THIS CONTRACT. PROVIDE FIRE DAMPERS FOR DUCTWORK AS REQUIRED. REFER TO MECHANICAL DRAWINGS.
4. ALL EXISTING WALLS, DOOR FRAMES, STEEL BEAMS, CONDUIT AND EXPOSED METALS TO BE PAINTED.
5. ALL EXISTING WOOD DOORS TO BE SANDED AND COATED WITH A CLEAR FINISH. SEE DOOR SCHEDULE FOR DETAILS.
6. CONTRACTOR TO SITE VERIFY ALL EXISTING DIMENSIONS PRIOR TO CONSTRUCTION

PLAN LEGEND

CB-1	2440mm LONG x 1220mm HIGH CORKBOARD, MOUNTED 600mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
CB-2	1220mm LONG x 1220mm HIGH CORKBOARD, MOUNTED 600mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
WB-1	2440mm LONG x 1220mm HIGH MAGNETIC WHITEBOARD WITH CORK TACK STRIP AT TOP AND MARKER TRAY AT BOTTOM MOUNTED 600mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
WB-2	1220mm LONG x 1220mm HIGH MAGNETIC WHITEBOARD WITH CORK TACK STRIP AT TOP AND MARKER TRAY AT BOTTOM MOUNTED 600mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
TS-1	2440mm LONG x 50mm HIGH CORK TACK STRIP, MOUNTED 1820mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
TS-2	1220mm LONG x 50mm HIGH CORK TACK STRIPS, MOUNTED 1820mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
AP	1600mm LONG x 1000mm HIGH x 400mm ACOUSTIC PANELS.
RH	RADIANT HEATER, REFER TO MECHANICAL.



1 / A4.2 GROUND FLOOR PLAN - RENO
1:75

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION PROJECT#R121

387 Balsam Street North
Timmins, Ontario

Northeastern Catholic District School Board

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REV	DESCRIPTION	DATE
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.05.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24

ONTARIO ASSOCIATION OF ARCHITECTS
TANIA BORTOLOTTO
LICENCE
5374

BORTOLOTTO

PROJECT NUMBER
PF1701 (#R121)

DATE
17.05.17

SCALE
1:75

DRAWN BY
BM

GROUND FLOOR PLAN - RENO

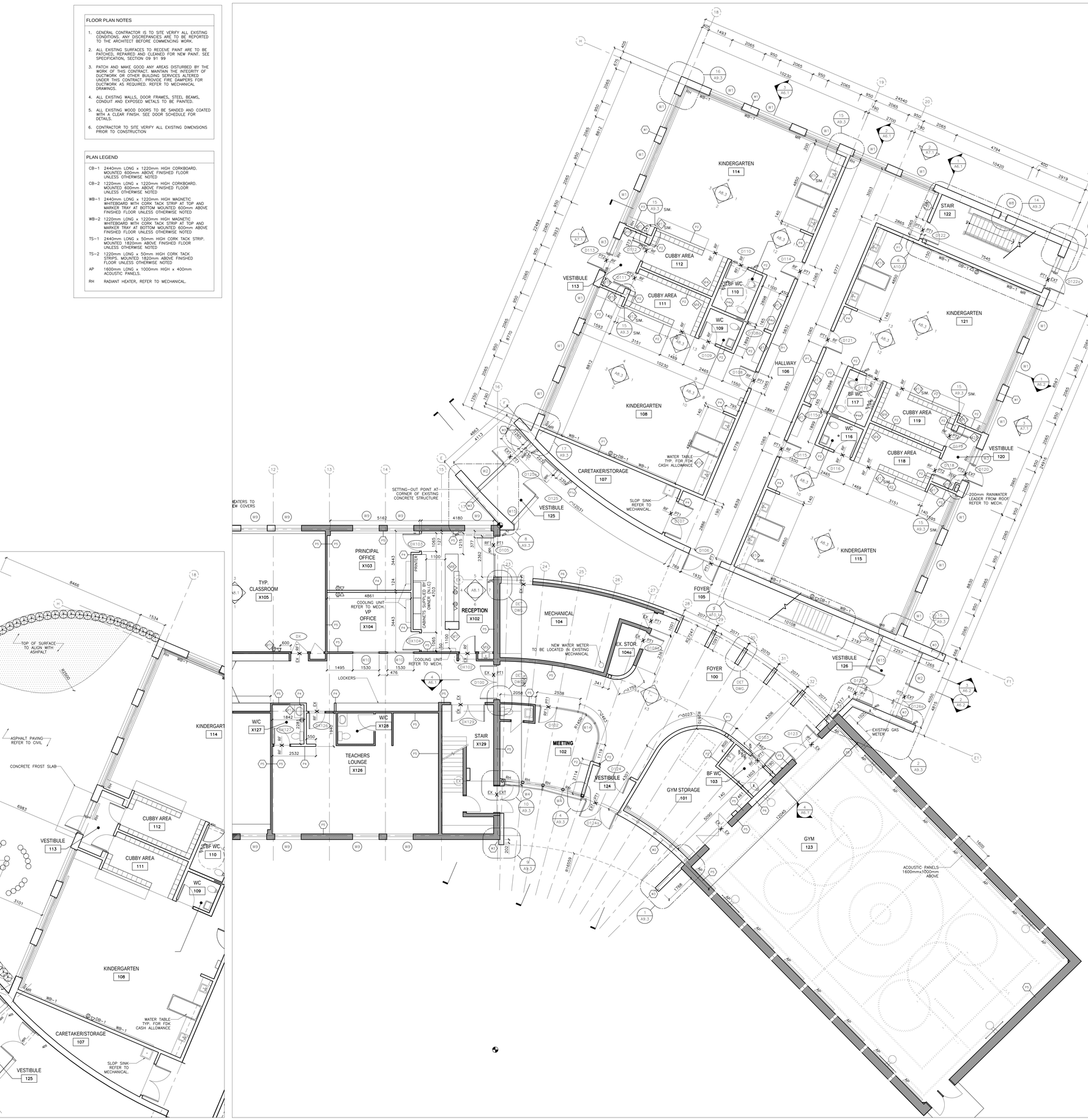
A4.2

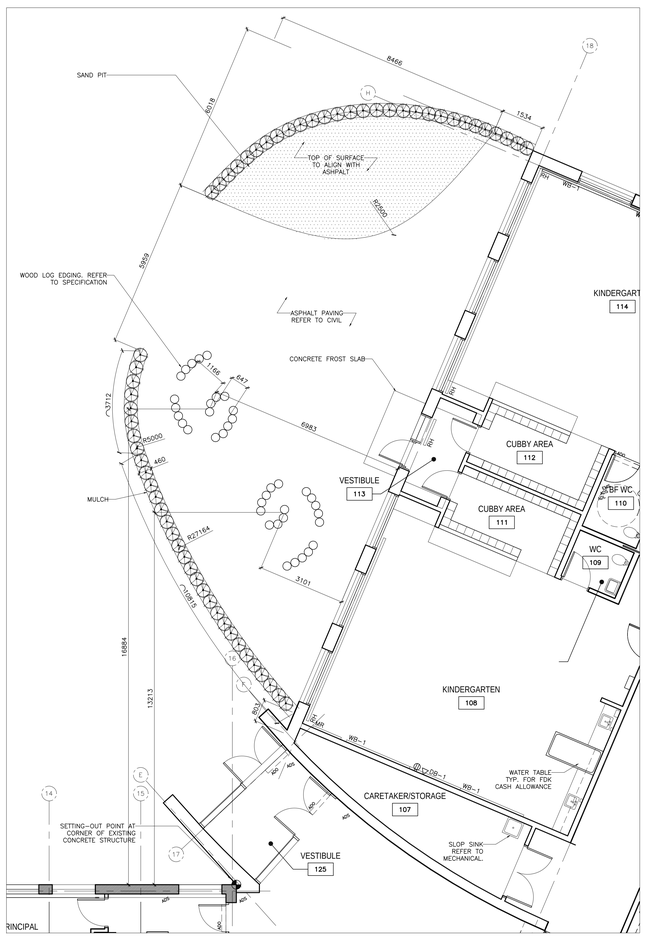
FLOOR PLAN NOTES

1. GENERAL CONTRACTOR IS TO SITE VERIFY ALL EXISTING CONDITIONS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT BEFORE COMMENCING WORK.
2. ALL EXISTING SURFACES TO RECEIVE PAINT ARE TO BE PATCHED, REPAIRED AND CLEANED FOR NEW PAINT. SEE SPECIFICATION, SECTION 09 91 99
3. PATCH AND MAKE GOOD ANY AREAS DISTURBED BY THE WORK OF THIS CONTRACT, MAINTAIN THE INTEGRITY OF DUCTWORK OR OTHER BUILDING SERVICES ALTERED UNDER THIS CONTRACT. PROVIDE FIRE DAMPERS FOR DUCTWORK AS REQUIRED. REFER TO MECHANICAL DRAWINGS.
4. ALL EXISTING WALLS, DOOR FRAMES, STEEL BEAMS, CONDUIT AND EXPOSED METALS TO BE PAINTED.
5. ALL EXISTING WOOD DOORS TO BE SANDED AND COATED WITH A CLEAR FINISH. SEE DOOR SCHEDULE FOR DETAILS.
6. CONTRACTOR TO SITE VERIFY ALL EXISTING DIMENSIONS PRIOR TO CONSTRUCTION

PLAN LEGEND

CB–1	2440mm LONG x 1220mm HIGH CORKBOARD, MOUNTED 600mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
CB–2	1220mm LONG x 1220mm HIGH CORKBOARD, MOUNTED 600mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
WB–1	2440mm LONG x 1220mm HIGH MAGNETIC WHITEBOARD WITH CORK TACK STRIP AT TOP AND MARKER TRAY AT BOTTOM MOUNTED 600mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
WB–2	1220mm LONG x 1220mm HIGH MAGNETIC WHITEBOARD WITH CORK TACK STRIP AT TOP AND MARKER TRAY AT BOTTOM MOUNTED 600mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
TS–1	2440mm LONG x 50mm HIGH CORK TACK STRIP, MOUNTED 1820mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
TS–2	1220mm LONG x 50mm HIGH CORK TACK STRIPS, MOUNTED 1820mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
AP	1600mm LONG x 1000mm HIGH x 400mm ACOUSTIC PANELS.
RH	RADIANT HEATER, REFER TO MECHANICAL.





2 / A4.3 PLAY AREA LANDSCAPE TYP.
1:75

1 / A4.3 GROUND FLOOR PLAN - ADDITION
1:75

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION PROJECT#R121

387 Balsam Street North
Timmins, Ontario

Northeastern Catholic District SCHOOL BOARD

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REV	DESCRIPTION	DATE
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.05.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24

ONTARIO ASSOCIATION OF ARCHITECTS
TANIA BORTOLOTTO
LICENCE
5374

BORTOLOTTO

PROJECT NUMBER
PF1701 (#R121)

DATE
17.05.17

SCALE
1:75

DRAWN BY
BM

GROUND FLOOR PLAN - ADDITION

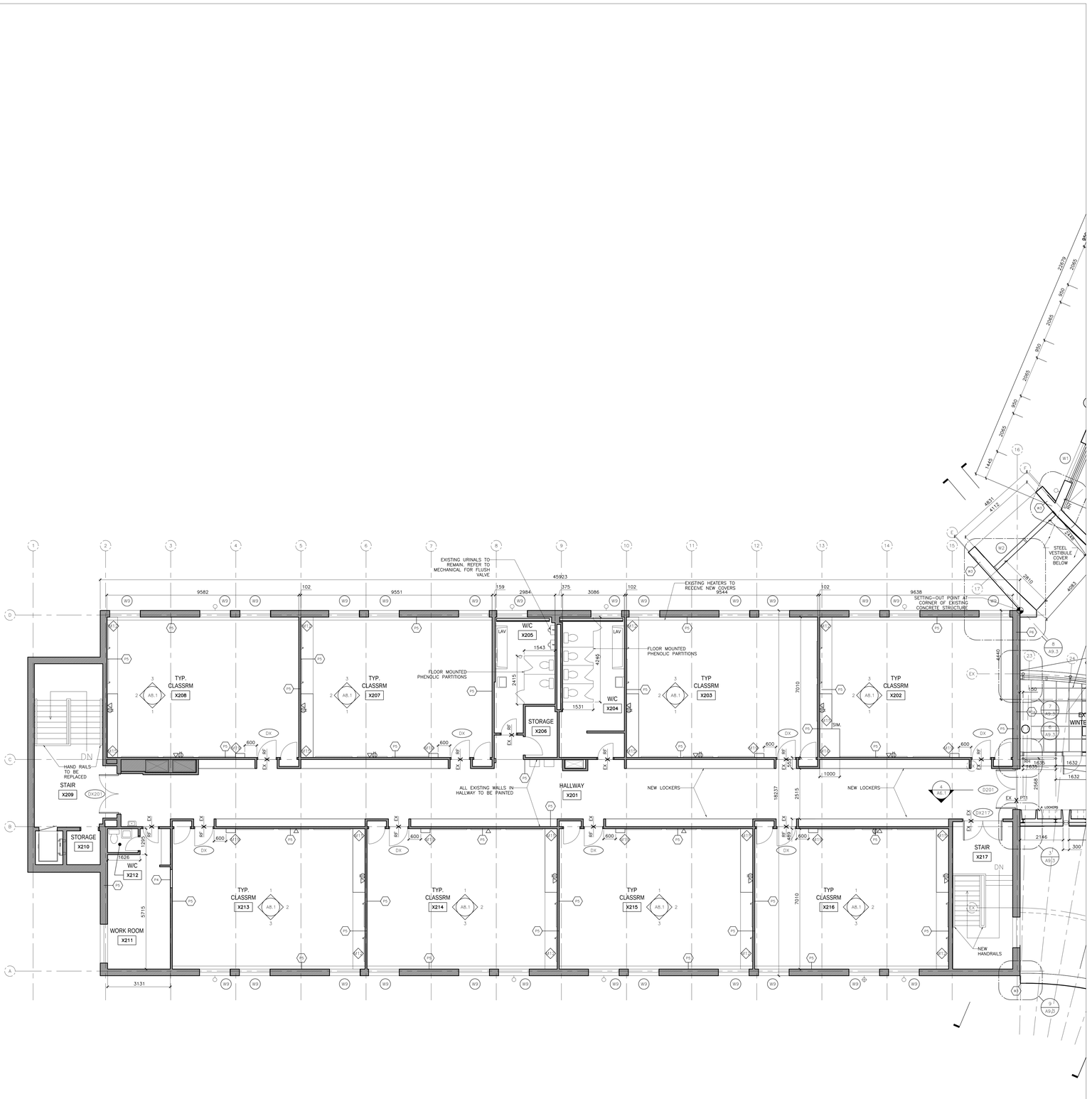
A4.3

FLOOR PLAN NOTES

1. GENERAL CONTRACTOR IS TO SITE VERIFY ALL EXISTING CONDITIONS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT BEFORE COMMENCING WORK.
2. ALL EXISTING SURFACES TO RECEIVE PAINT ARE TO BE PATCHED, REPAIRED AND CLEANED FOR NEW PAINT. SEE SPECIFICATION, SECTION 09 91 99
3. PATCH AND MAKE GOOD ANY AREAS DISTURBED BY THE WORK OF THIS CONTRACT. MAINTAIN THE INTEGRITY OF DUCTWORK OR OTHER BUILDING SERVICES ALTERED UNDER THIS CONTRACT. PROVIDE FIRE DAMPERS FOR DUCTWORK AS REQUIRED. REFER TO MECHANICAL DRAWINGS.
4. ALL EXISTING WALLS, DOOR FRAMES, STEEL BEAMS, CONDUIT AND EXPOSED METALS TO BE PAINTED.
5. ALL EXISTING WOOD DOORS TO BE SANDED AND COATED WITH A CLEAR FINISH. SEE DOOR SCHEDULE FOR DETAILS.
6. CONTRACTOR TO SITE VERIFY ALL EXISTING DIMENSIONS PRIOR TO CONSTRUCTION

PLAN LEGEND

CB-1	2440mm LONG x 1220mm HIGH CORKBOARD. MOUNTED 600mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
CB-2	1220mm LONG x 1220mm HIGH CORKBOARD. MOUNTED 600mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
WB-1	2440mm LONG x 1220mm HIGH MAGNETIC WHITEBOARD WITH CORK TACK STRIP AT TOP AND MARKER TRAY AT BOTTOM MOUNTED 600mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
WB-2	1220mm LONG x 1220mm HIGH MAGNETIC WHITEBOARD WITH CORK TACK STRIP AT TOP AND MARKER TRAY AT BOTTOM MOUNTED 600mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
TS-1	2440mm LONG x 50mm HIGH CORK TACK STRIP. MOUNTED 1820mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
TS-2	1220mm LONG x 50mm HIGH CORK TACK STRIPS. MOUNTED 1820mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
AP	1600mm LONG x 1000mm HIGH x 400mm ACOUSTIC PANELS.
RH	RADIANT HEATER, REFER TO MECHANICAL.



1 A4.4 SECOND FLOOR PLAN - RENO
1:75

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION PROJECT#R121

387 Balsam Street North
Timmins, Ontario

Northeastern Catholic District SCHOOL BOARD

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1M8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REV	DESCRIPTION	DATE
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.05.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24

ONTARIO ASSOCIATION OF ARCHITECTS
TANIA BORTOLOTTO
LICENCE
5374

BORTOLOTTO

PROJECT NUMBER
PF1701 (#R121)

DATE
17.05.17

SCALE
1:75

DRAWN BY
BM

SECOND FLOOR PLAN - RENO

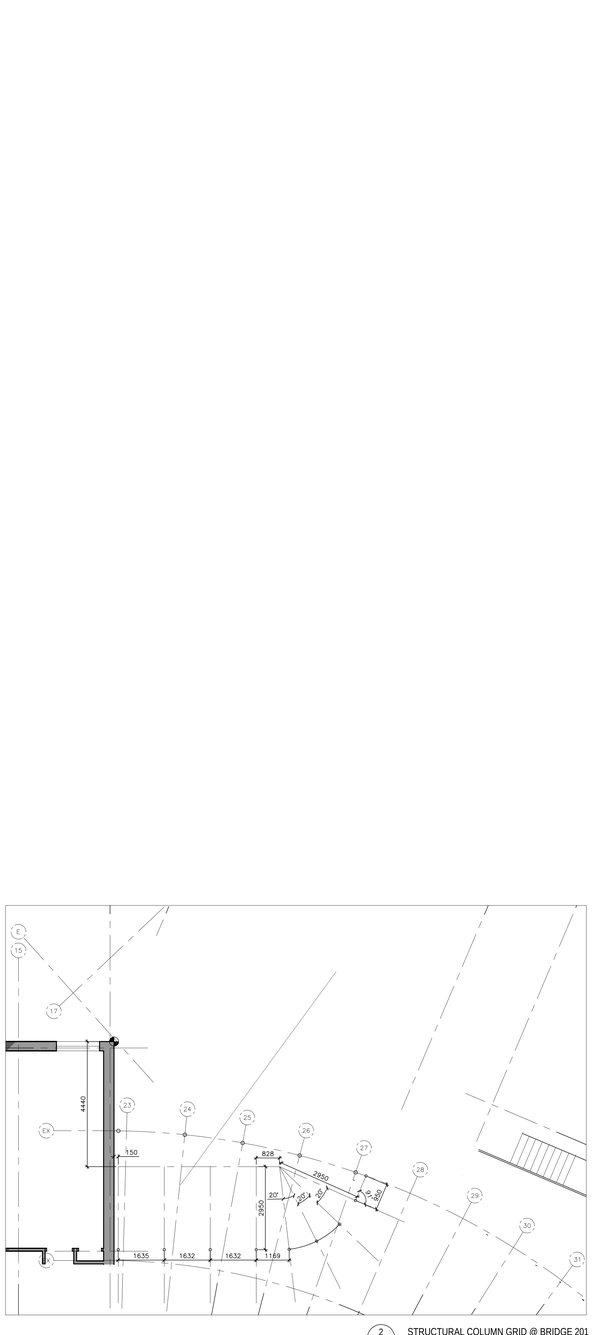
A4.4

FLOOR PLAN NOTES

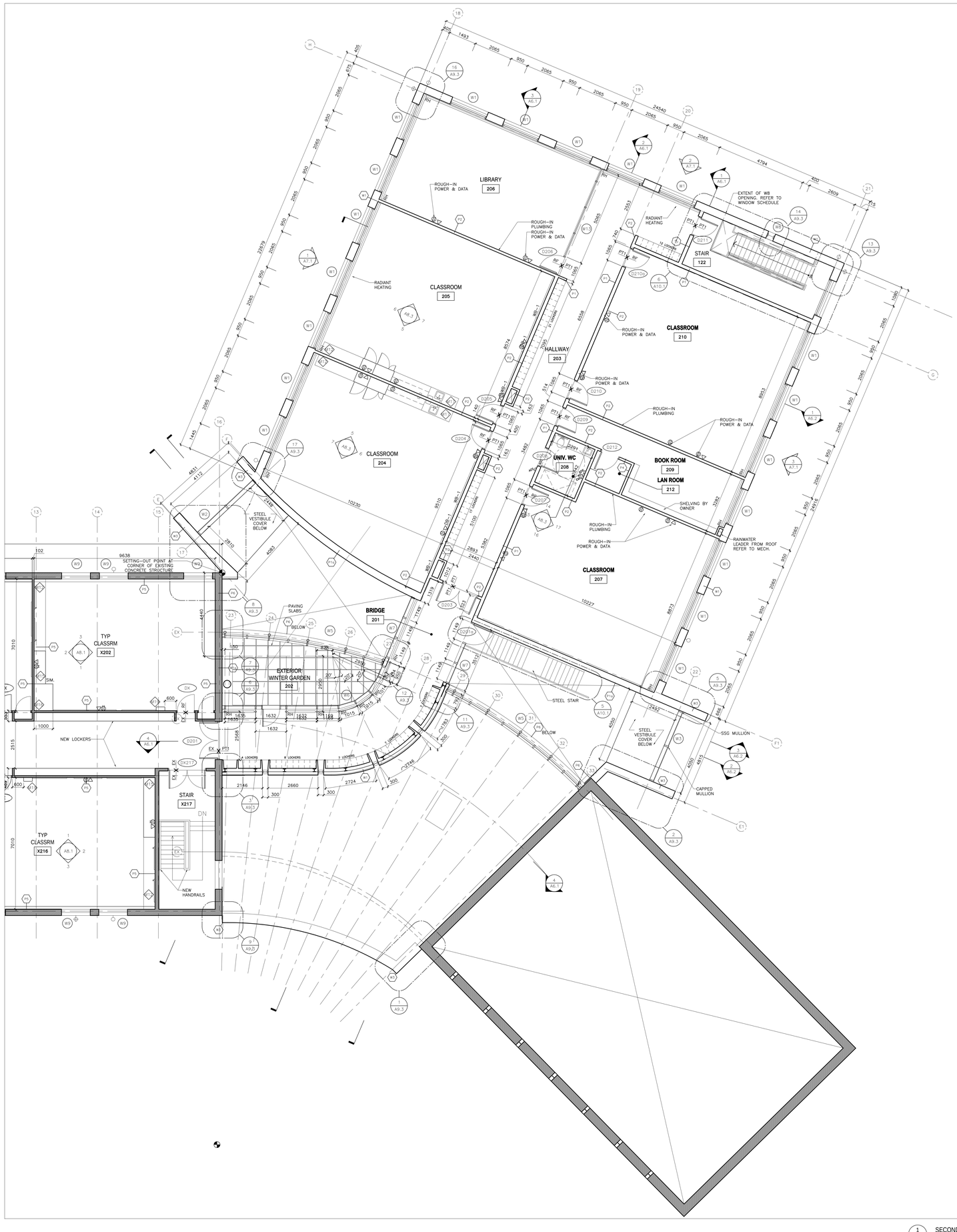
1. GENERAL CONTRACTOR IS TO SITE VERIFY ALL EXISTING CONDITIONS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT BEFORE COMMENCING WORK.
2. ALL EXISTING SURFACES TO RECEIVE PAINT ARE TO BE PATCHED, REPAIRED AND CLEANED FOR NEW PAINT. SEE SPECIFICATION, SECTION 09 91 99
3. PATCH AND MAKE GOOD ANY AREAS DISTURBED BY THE WORK OF THIS CONTRACT. MAINTAIN THE INTEGRITY OF DUCTWORK OR OTHER BUILDING SERVICES ALTERED UNDER THIS CONTRACT. PROVIDE FIRE DAMPERS FOR DUCTWORK AS REQUIRED. REFER TO MECHANICAL DRAWINGS.
4. ALL EXISTING WALLS, DOOR FRAMES, STEEL BEAMS, CONDUIT AND EXPOSED METALS TO BE PAINTED.
5. ALL EXISTING WOOD DOORS TO BE SANDED AND COATED WITH A CLEAR FINISH. SEE DOOR SCHEDULE FOR DETAILS.
6. CONTRACTOR TO SITE VERIFY ALL EXISTING DIMENSIONS PRIOR TO CONSTRUCTION

PLAN LEGEND

CB–1	2440mm LONG x 1220mm HIGH CORKBOARD, MOUNTED 600mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
CB–2	1220mm LONG x 1220mm HIGH CORKBOARD, MOUNTED 600mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
WB–1	2440mm LONG x 1220mm HIGH MAGNETIC WHITEBOARD WITH CORK TACK STRIP AT TOP AND MARKER TRAY AT BOTTOM MOUNTED 600mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
WB–2	1220mm LONG x 1220mm HIGH MAGNETIC WHITEBOARD WITH CORK TACK STRIP AT TOP AND MARKER TRAY AT BOTTOM MOUNTED 600mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
TS–1	2440mm LONG x 50mm HIGH CORK TACK STRIP, MOUNTED 1820mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
TS–2	1220mm LONG x 50mm HIGH CORK TACK STRIPS, MOUNTED 1820mm ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED
AP	1600mm LONG x 1000mm HIGH x 400mm ACOUSTIC PANELS.
RH	RADIANT HEATER, REFER TO MECHANICAL.



2 / A4.5 STRUCTURAL COLUMN GRID @ BRIDGE 201
1:75



1 / A4.5 SECOND FLOOR PLAN - ADDITION
1:75

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION PROJECT#R121

387 Balsam Street North
Timmins, Ontario

Northeastern Catholic District School Board

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REV	DESCRIPTION	DATE
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.05.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24

ONTARIO ASSOCIATION OF ARCHITECTS
TANIA BORTOLOTTO
LICENCE
5374

BORTOLOTTO

PROJECT NUMBER
PF1701 (#R121)

DATE
17.05.17

N

SCALE
1:75

DRAWN BY
BM

SECOND FLOOR PLAN - ADDITION

A4.5

A4.6

A4.6 - ROOF PLAN

DRAWN BY	BM
SCALE	1:75
DATE	17.06.17
PROJECT NUMBER	PEYUL (PETLD)

BORTOLOTTO

ONTARIO ASSOCIATION OF ARCHITECTS
TARIK BORTOLOTTO
LICENCE
5274

REV	DESCRIPTION	DATE
1	ISSUED FOR CLASS C COST	17.03.24
2	ISSUED FOR CLASS B COST	17.04.24
3	ISSUED FOR CLASS A COST	17.05.01
4	ISSUED FOR CLIENT REVIEW	17.05.09
5	ISSUED FOR PERMIT & TENDER	17.05.17

CONSULTANT TEAM

NORTHEASTERN CATHOLIC DISTRICT SCHOOL BOARD

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E. Suite 200
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

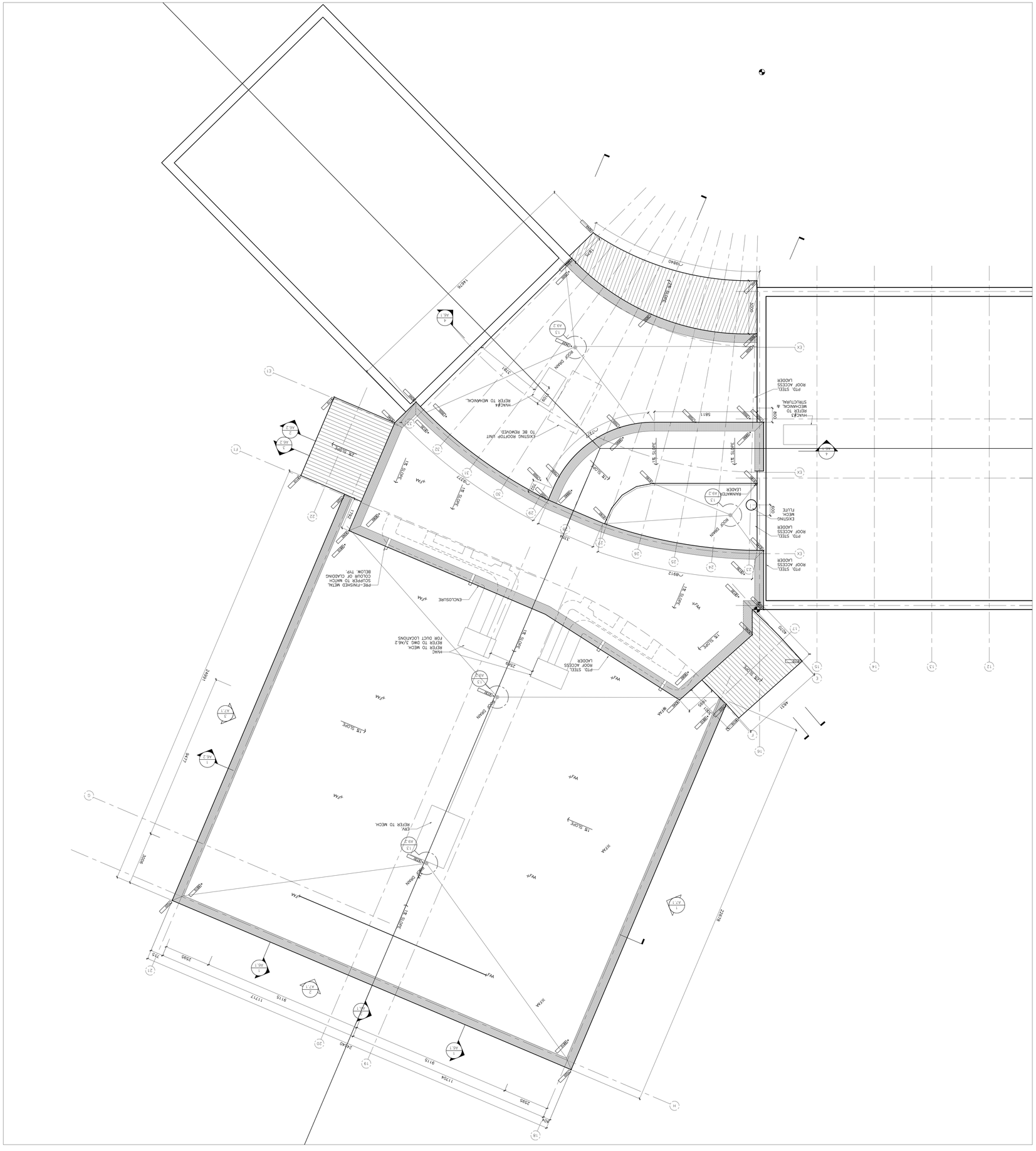
MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2164 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultjohnpgengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

387 Bloom Street North
Timmins, Ontario

1 A4.6 - ROOF PLAN
A4.6 1:75


ROOF PLAN NOTES
1. GENERAL CONTRACTOR IS TO SITE VERIFY ALL EXISTING CONDITIONS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT BEFORE COMMENCING WORK.
2. CAP FLASHING AT ADDITION SHALL MATCH COLOUR OF ADDITION CLADDING
3. CAP FLASHING AT EXISTING BUILDING SHALL MATCH COLOUR OF EXISTING CAP FLASHING
ROOF PLAN LEGEND
DENOTES CAP FLASHING
DENOTES FALL ARREST ANCHOR
DENOTES SLOPED INSULATION
EXISTING ROOFTOP UNIT TO BE REMOVED
NEW ROOFTOP UNIT
PRE-FINISHED METAL SCUPPER TO MATCH COLOUR OF CLADDING BELOW. TYP.
ENCLOSURE
HMC REFER TO MECH. REFER TO DWG A-A6.2 FOR DUCT LOCATIONS
EXISTING MECH FLUE
PTD. STEEL ROOF ACCESS LADDER
ROOF DRAIN
OVERFLOW
EXISTING ROOF ACCESS LADDER
EXISTING MECHANICAL & ELECTRICAL EQUIPMENT
REFER TO MECHANICAL
EXISTING ROOFTOP UNIT TO BE REMOVED
EXISTING MECHANICAL & ELECTRICAL EQUIPMENT
PTD. STEEL ROOF ACCESS LADDER
EXISTING MECH FLUE
PTD. STEEL ROOF ACCESS LADDER
PTD. STEEL ROOF ACCESS LADDER
EXISTING MECHANICAL & ELECTRICAL EQUIPMENT
REFER TO MECHANICAL
EXISTING ROOFTOP UNIT TO BE REMOVED

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

Northeastern Catholic District SCHOOL BOARD

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

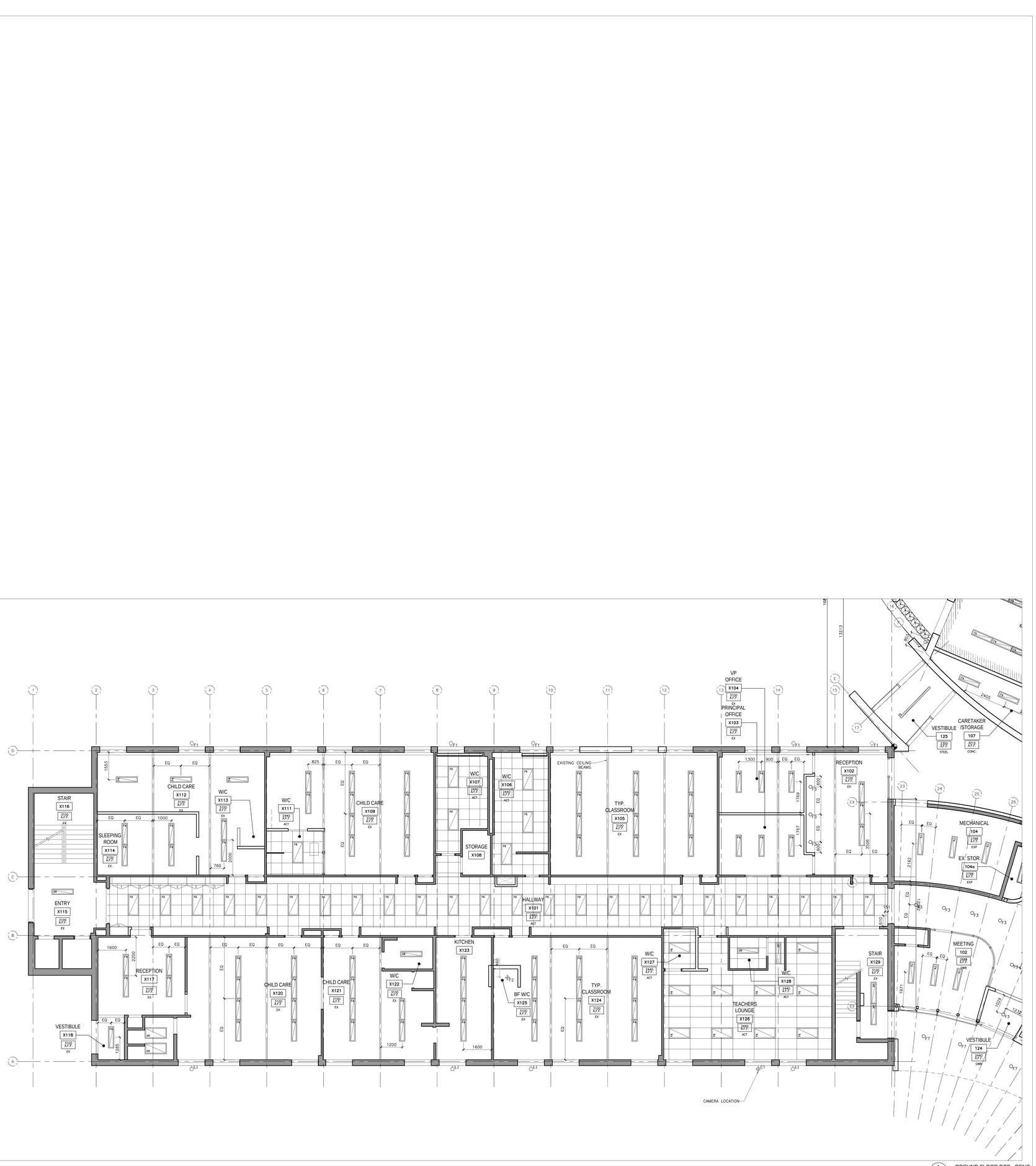
STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1M8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REFLECTED CEILING LEGEND

XR	EXISTING LIGHT FIXTURE TO REPLACED WITH LED FIXTURE OF THE SAME DIMENSIONS.
$\bigcirc_{F1}$	EXTERIOR LIGHTING
$\bigcirc_{F2}$	SURFACE MOUNTED LIGHT FIXTURE
$\bigcirc_{F3}$	RECESSED POT LIGHT
	1220mm SUSPENDED LED LIGHT FIXTURE
	2440mm SUSPENDED LED LIGHT FIXTURE
	1220mm RECESSED LED LIGHT FIXTURE
$\bigcirc_{F7}$	EXTERIOR RECESSED POT LIGHT
$\bigcirc_{SH}$	PREFERRED SPRINKLER HEAD LOCATION CONTRACTOR TO COORDINATE ALL SPRINKLER HEAD AND CONDUIT LOCATIONS WITH ARCHITECT



1 / A5.1 GROUND FLOOR RCP - RENO
1:75

REV	DESCRIPTION	DATE
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.05.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24

ONTARIO ASSOCIATION OF ARCHITECTS
TAMILA BORTOLOTTO
LICENCE
8247

BORTOLOTTO

PROJECT NUMBER
PP1701 (#R121)

DATE
17.05.17

SCALE
1:75

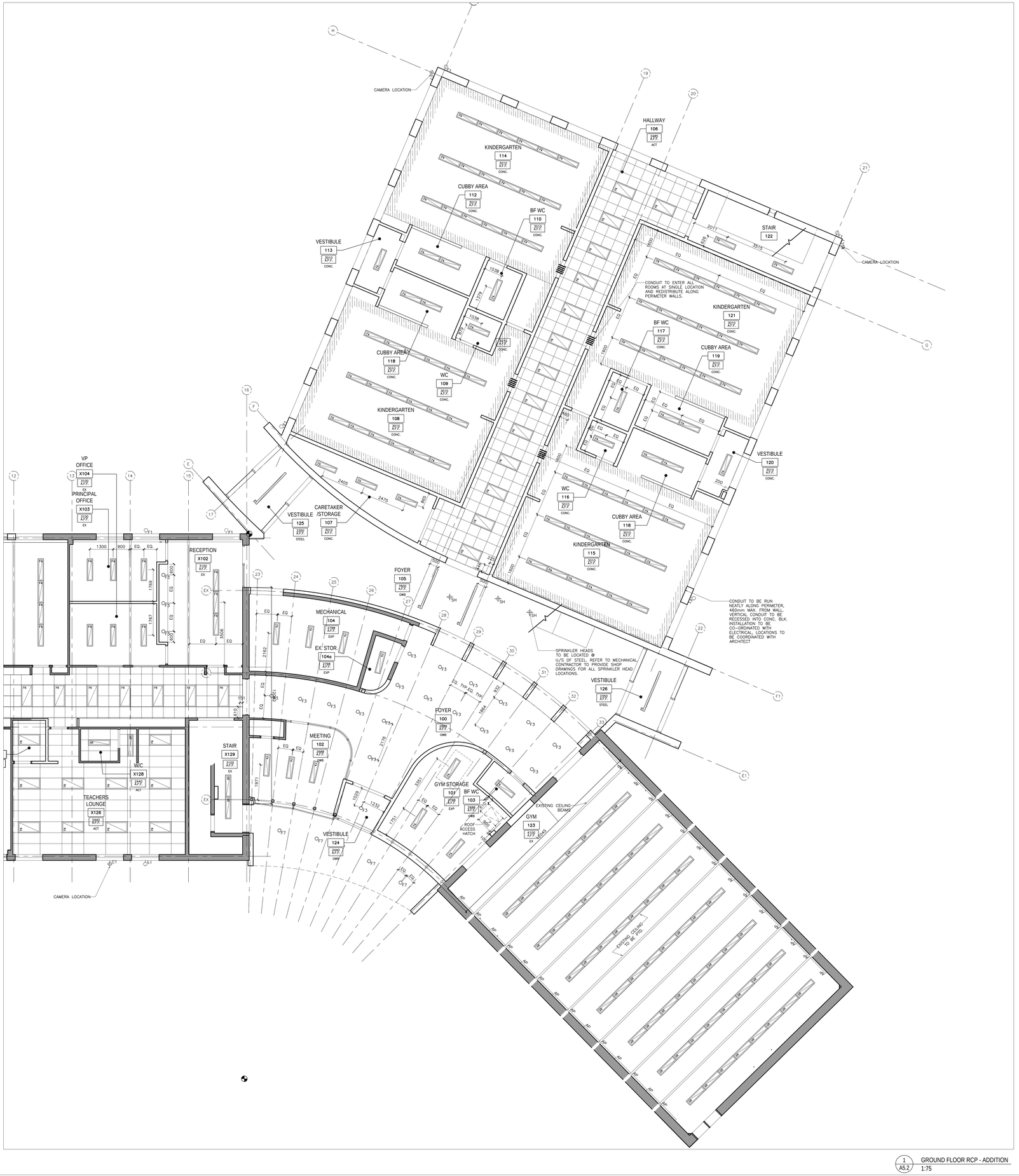
DRAWN BY
GH

GROUND FLOOR RCP - RENO

A5.1

REFLECTED CEILING LEGEND

XR	EXISTING LIGHT FIXTURE TO REPLACED WITH LED FIXTURE OF THE SAME DIMENSIONS.
$\bigcirc_{T1}$	EXTERIOR LIGHTING
$\dashv\vdash_{F2}$	SURFACE MOUNTED LIGHT FIXTURE
$\bigcirc_{F3}$	RECESSED POT LIGHT
	1220mm SUSPENDED LED LIGHT FIXTURE
	2440mm SUSPENDED LED LIGHT FIXTURE
	1220mm RECESSED LED LIGHT FIXTURE
$\bigcirc_{F7}$	EXTERIOR RECESSED POT LIGHT
$\dashv\vdash_{SH}$	PREFERRED SPRINKLER HEAD LOCATION CONTRACTOR TO COORDINATE ALL SPRINKLER HEAD AND CONDUIT LOCATIONS WITH ARCHITECT



1 / A5.2 GROUND FLOOR RCP - ADDITION
1:75

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION PROJECT#R121

387 Balsam Street North
Timmins, Ontario

Northeastern Catholic District SCHOOL BOARD

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REV	DESCRIPTION	DATE
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.05.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24

ONTARIO ASSOCIATION OF ARCHITECTS
TANIA BORTOLOTTO
LICENCE
5374

BORTOLOTTO

PROJECT NUMBER
PR1701 (#R121)

DATE
17.05.17

N

SCALE
1:75

DRAWN BY
BM

GROUND FLOOR RCP - ADDITION

A5.2

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

287 Bloom Street North
Timmins, Ontario

Northeastern Catholic District School Board

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2164 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x42
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 109
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

BORTOLOTTO
ARCHITECTS
ONTARIO ASSOCIATION OF ARCHITECTS
LICENCE
5274

PROJECT NUMBER
PROJECT NUMBER

DATE
17.06.17

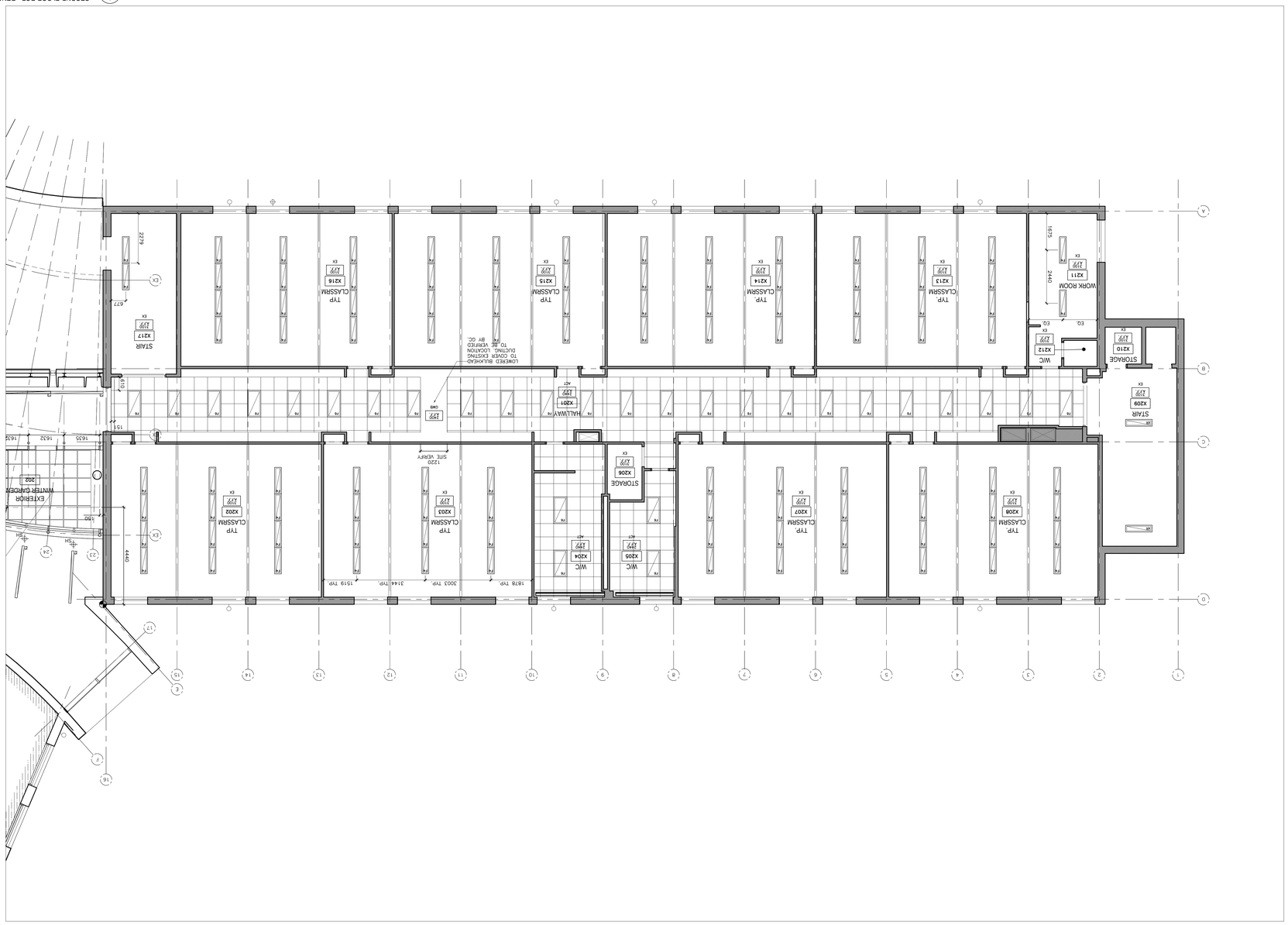
SCALE
1:75

DRAWN BY
CH

SECOND FLOOR RCP - RENO

REV	DESCRIPTION	DATE
1	ISSUED FOR CLASS C COST	17.03.24
2	ISSUED FOR CLASS B COST	17.04.24
3	ISSUED FOR CLASS A COST	17.05.01
4	ISSUED FOR CLIENT REVIEW	17.05.09
5	ISSUED FOR PERMIT & TENDER	17.06.17

1 SECOND FLOOR RCP - RENO
A5.3 1:75



REFLECTED CEILING LEGEND

XR	EXISTING LIGHT FIXTURE TO REPLACED WITH LED FIXTURE OF THE SAME DIMENSIONS.
Q_{71}	EXTERIOR LIGHTING
ϕ_{F2}	SURFACE MOUNTED LIGHT FIXTURE.
Q_{72}	RECESSED POT LIGHT
	1220mm SUSPENDED LED LIGHT FIXTURE
	2440mm SUSPENDED LED LIGHT FIXTURE
	1220mm RECESSED LED LIGHT FIXTURE
Q_{77}	EXTERIOR RECESSED POT LIGHT
ϕ_{FSH}	PERFORED SPRINKLER HEAD LOCATION CONTRACTOR TO COORDINATE ALL SPRINKLER HEAD AND CONDUIT LOCATIONS WITH ARCHITECT

A5.3



REFLECTED CEILING LEGEND

XR	EXISTING LIGHT FIXTURE TO REPLACED WITH LED FIXTURE OF THE SAME DIMENSIONS.
$\bigcirc_{F1}$	EXTERIOR LIGHTING
ϕ_{F2}	SURFACE MOUNTED LIGHT FIXTURE
$\bigcirc_{F3}$	RECESSED POT LIGHT
	1220mm SUSPENDED LED LIGHT FIXTURE
	2440mm SUSPENDED LED LIGHT FIXTURE
	1220mm RECESSED LED LIGHT FIXTURE
$\bigcirc_{F7}$	EXTERIOR RECESSED POT LIGHT
ϕ_{SP}	PEPPERED SPRINKLER HEAD LOCTION CONTRACTOR TO COORDINATE ALL SPRINKLER HEAD AND CONDUIT LOCATIONS WITH ARCHITECT

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION
PROJECT#121
787 Balsam Street North
Timmins, Ontario

Northeastern Catholic District SCHOOL BOARD

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A6
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2164 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x32
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 109
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REV	DESCRIPTION	DATE
1	ISSUED FOR CLASS C COST	17.03.24
2	ISSUED FOR CLASS B COST	17.04.24
3	ISSUED FOR CLASS A COST	17.05.01
4	ISSUED FOR CLIENT REVIEW	17.05.09
5	ISSUED FOR PERMIT & TENDER	17.05.17

BORTOLOTTO

PROJECT NUMBER
[redacted]

DATE
17.05.17

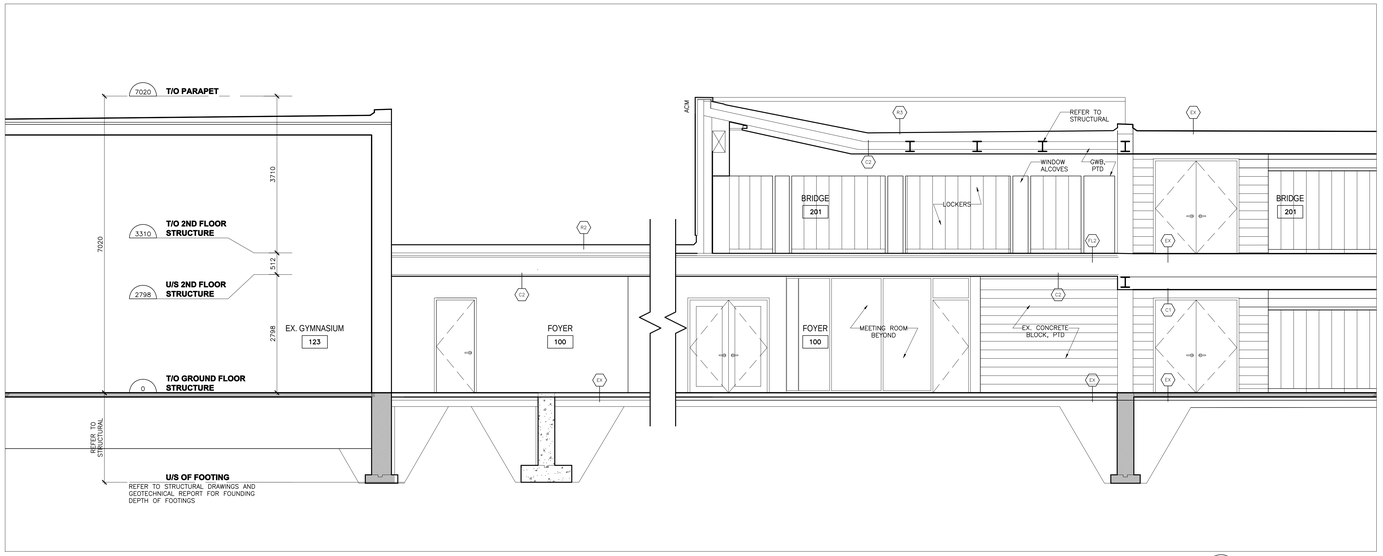
SCALE
1:75

DRAWN BY
BM

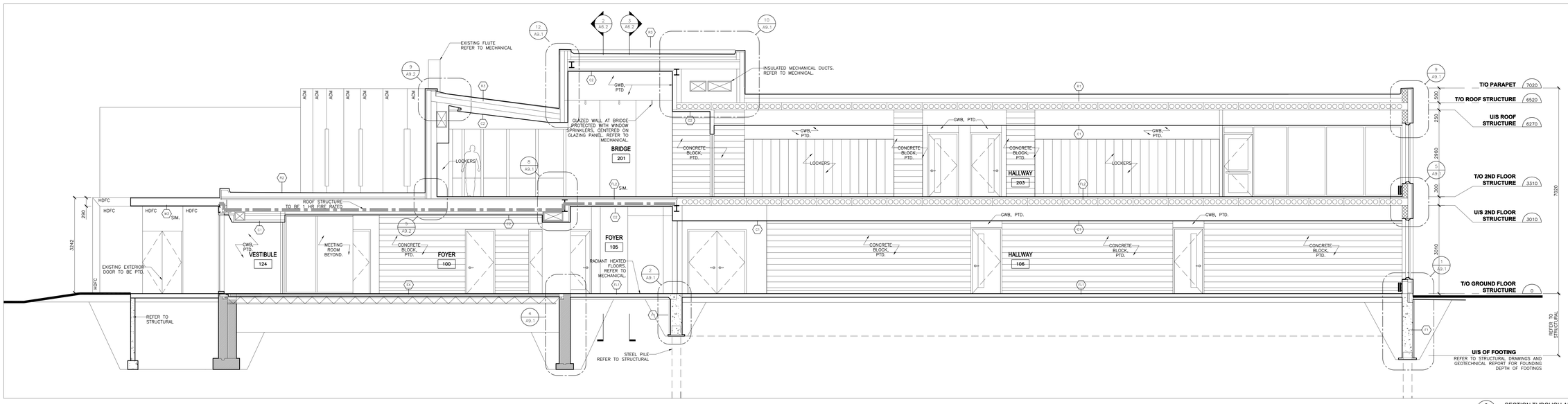
SECOND FLOOR RCP - ADDITION

1 / A5.4 — SECOND FLOOR RCP - ADDITION
1:75

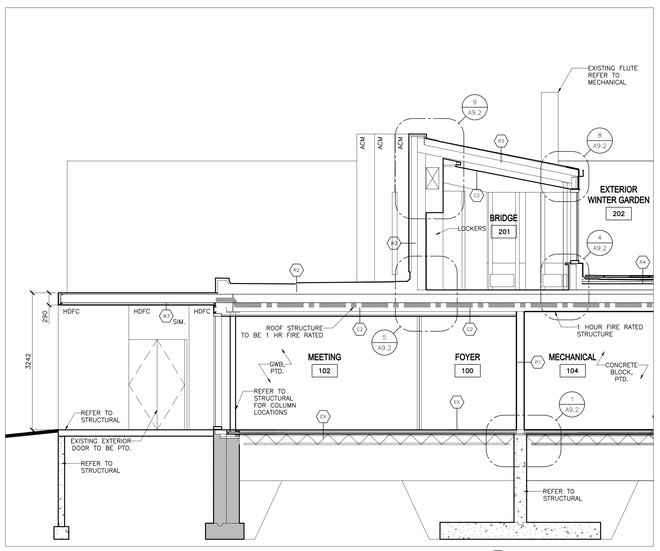
A5.4



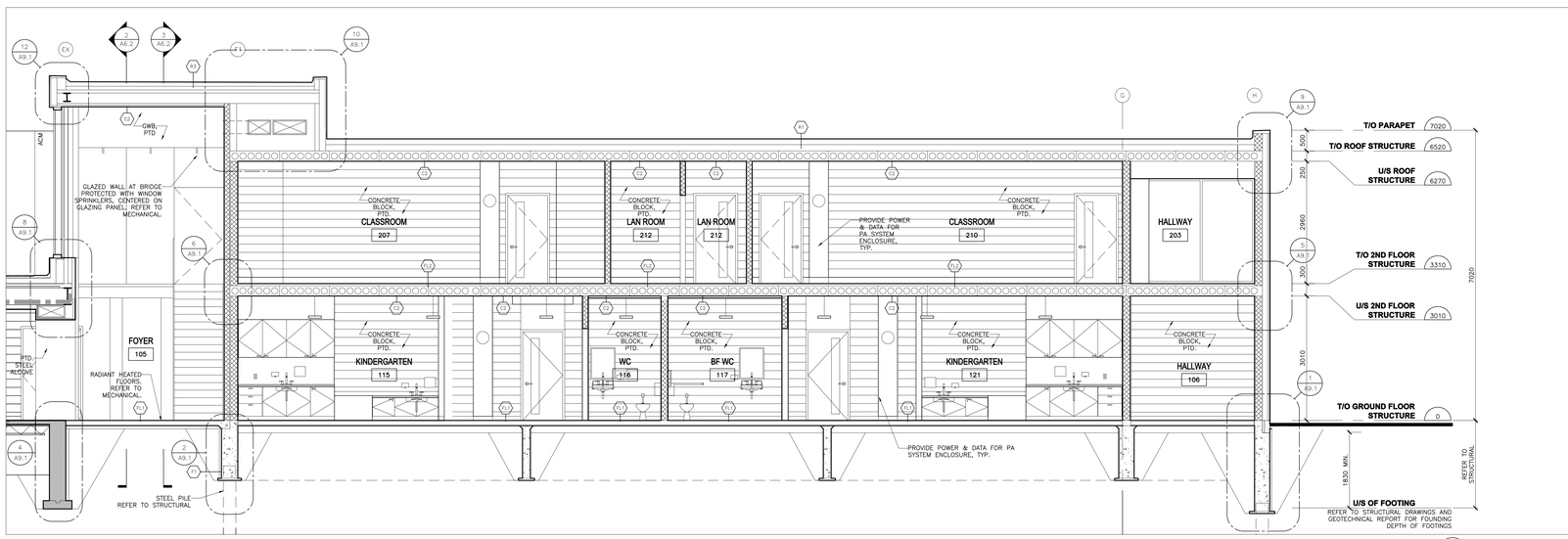
4 A6.1 SECTION THROUGH EXISTING
1:50



2 A6.1 SECTION THROUGH ADDITION
1:50



3 A6.1 SECTION THROUGH ADDITION
1:50



1 A6.1 SECTION THROUGH ADDITION
1:50

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION PROJECT#R121

387 Balsam Street North
Timmins, Ontario

Northeastern Catholic District School Board

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REV	DESCRIPTION	DATE
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.05.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24

ONTARIO ASSOCIATION OF ARCHITECTS
TANIA BORTOLOTTO
LICENCE
6374

BORTOLOTTO

PROJECT NUMBER
PP1701 (#R121)

DATE
17.05.17

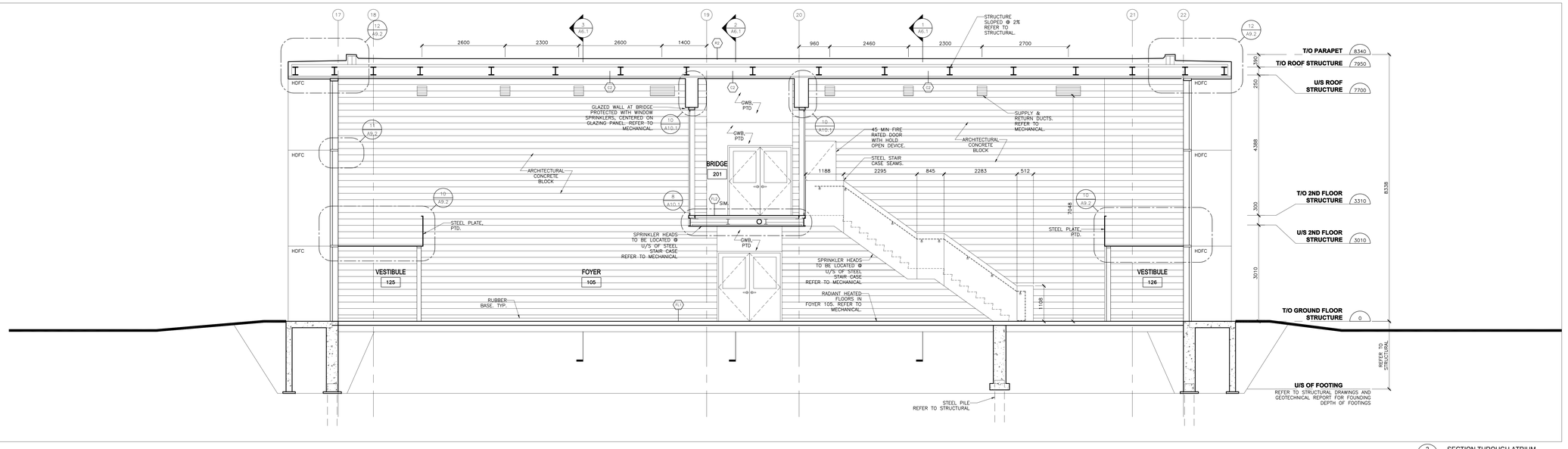
SCALE
1:50

N

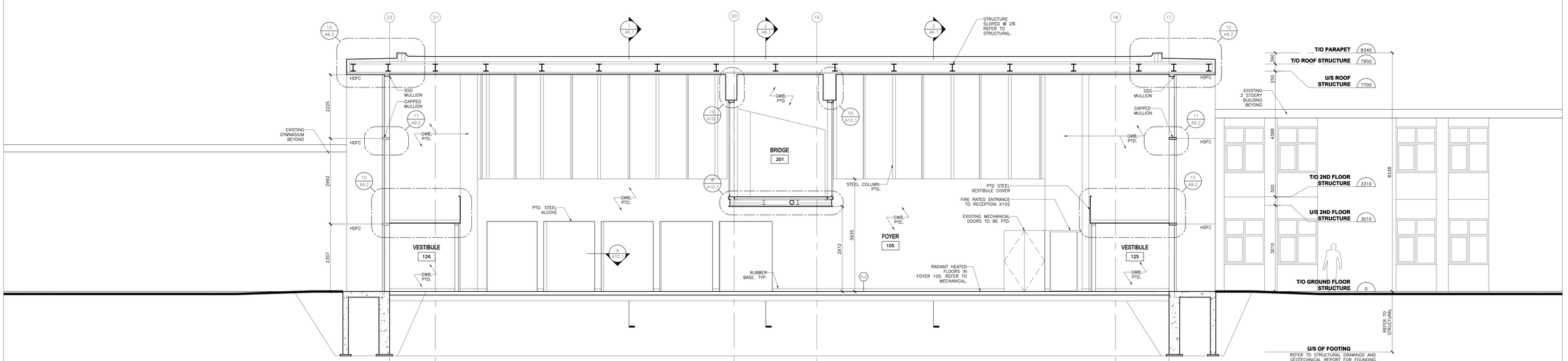
DRAWN BY
BM

SECTIONS

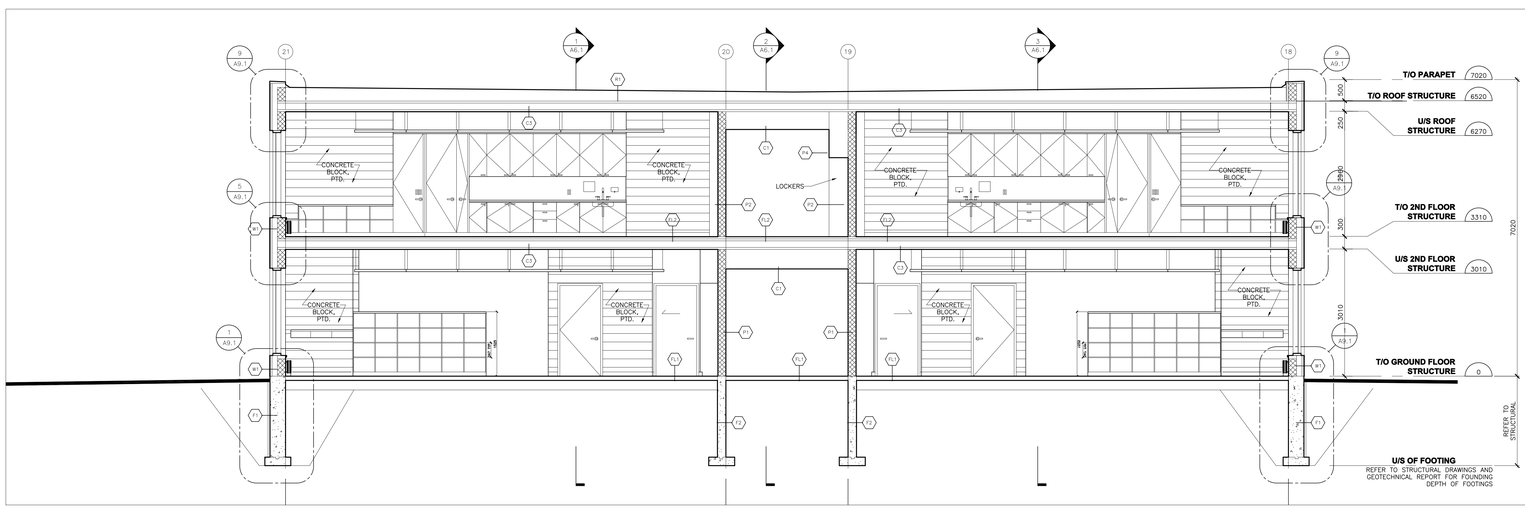
A6.1



3 A6.2 SECTION THROUGH ATRIUM
1:50



2 A6.2 SECTION THROUGH ATRIUM
1:50



1 A6.2 SECTION THROUGH ADDITION, TYP
1:50

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION PROJECT#R121

387 Balsam Street North
Timmins, Ontario

Northeastern Catholic District School Board

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REV	DESCRIPTION	DATE
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.05.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24

ONTARIO ASSOCIATION OF ARCHITECTS
TANIA BORTOLOTTO
LICENCE
5374

BORTOLOTTO

PROJECT NUMBER
PP1701 (#R121)

DATE
17.05.17

SCALE
1:50

DRAWN BY
BM

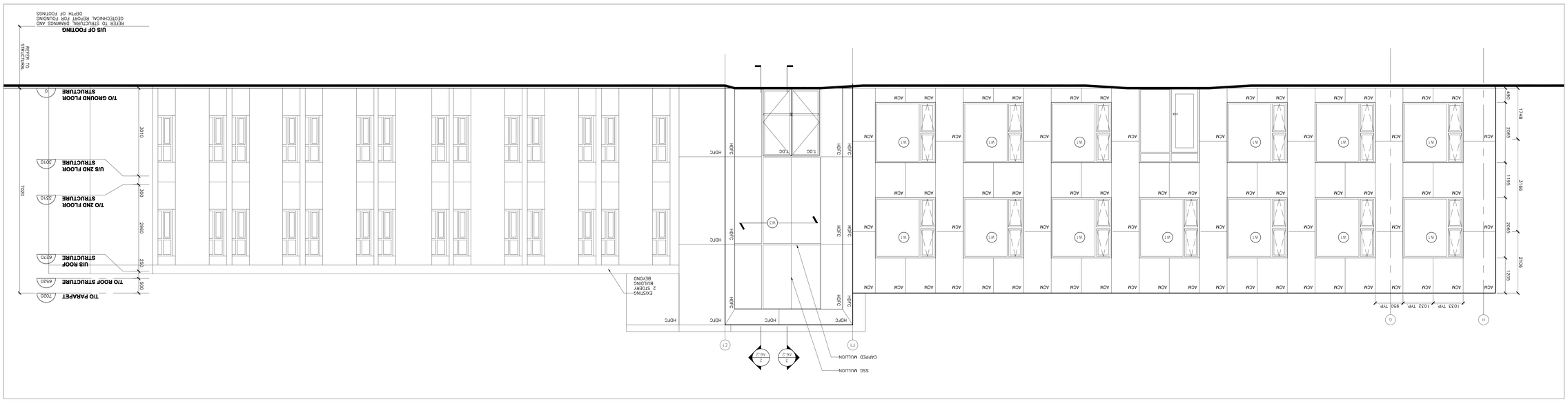
SECTIONS

A6.2

A7.1

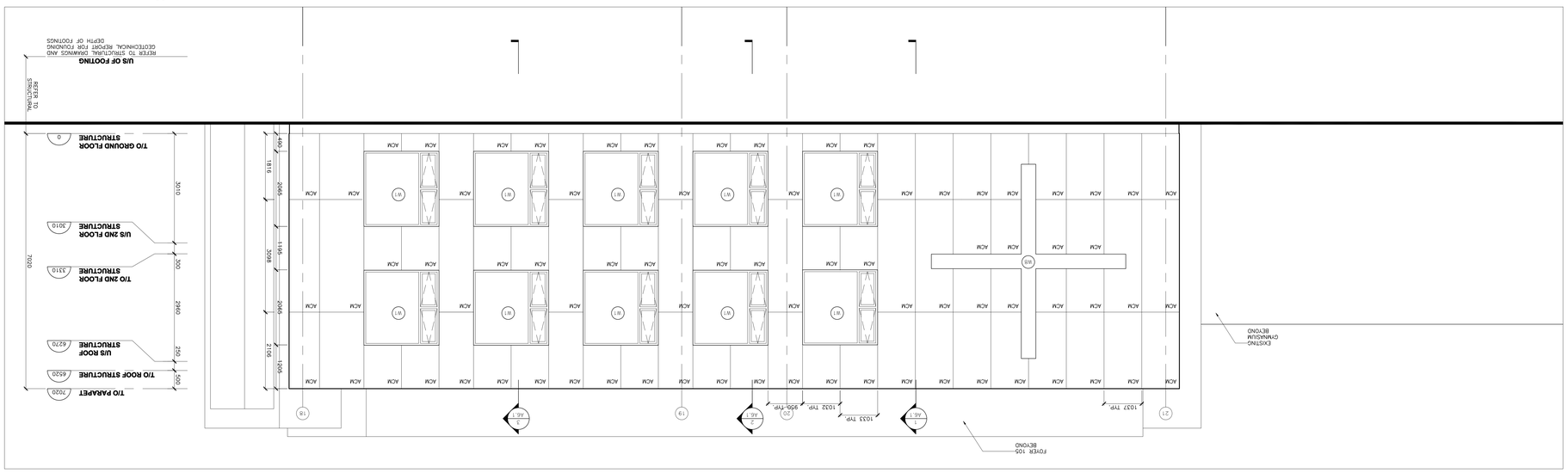
SOUTH ELEVATION

1 / A7.1 — 1:50



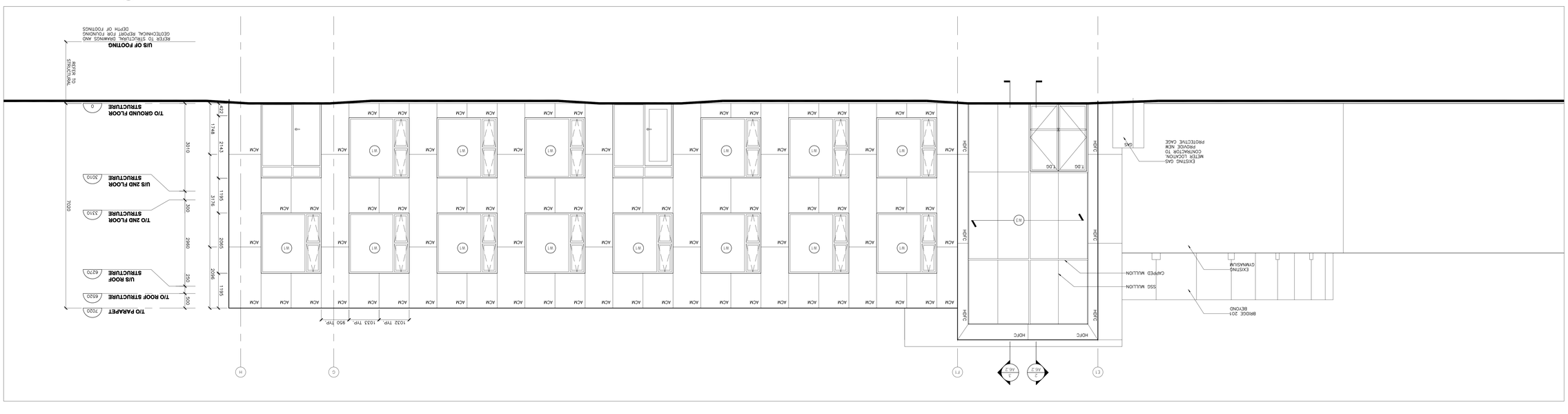
WEST ELEVATION

2 / A7.1 — 1:50



NORTH ELEVATION

3 / A7.1 — 1:50



POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#21121

387 Bloor Street North
Timmins, Ontario

Northeastern Catholic District School Board

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
constructmgmtengineers.ca

CIVIL ENGINEER
COMMTERRAFORM ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
commterraforming.com

BORTOLOTTO
ARCHITECTS INC.
LICENCE
5274
ONTARIO ASSOCIATION OF

REV	DESCRIPTION	DATE
1	ISSUED FOR CLASS C COST	17.03.24
2	ISSUED FOR CLASS B COST	17.04.24
3	ISSUED FOR CLASS A COST	17.05.01
4	ISSUED FOR CLIENT REVIEW	17.05.05
5	ISSUED FOR PERMIT & TENDER	17.05.17

PROJECT NUMBER
PEFNS (#21121)

DATE
17.05.17

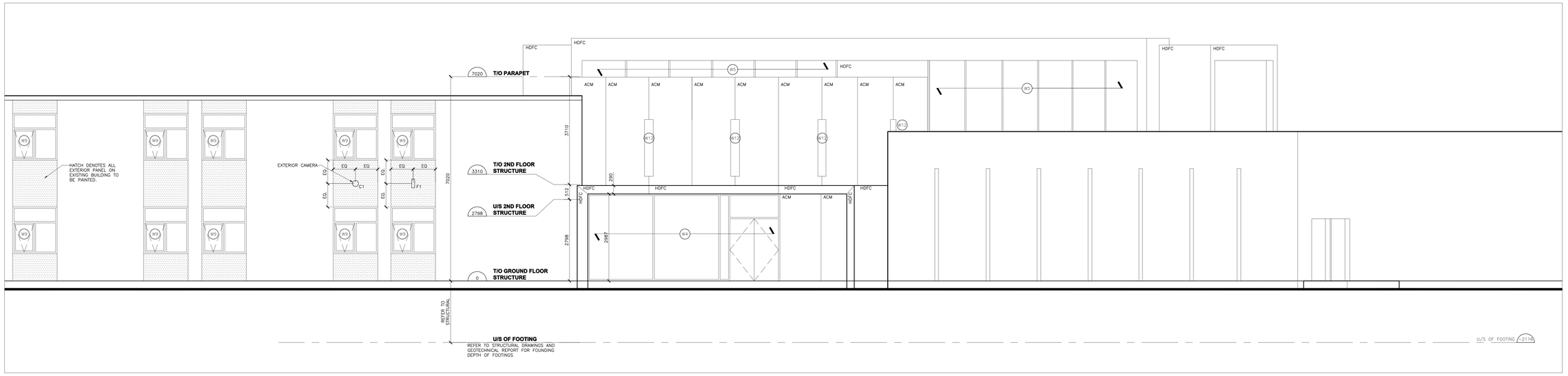
SCALE
1:50

N

DRAWN BY
BM

ELEVATIONS

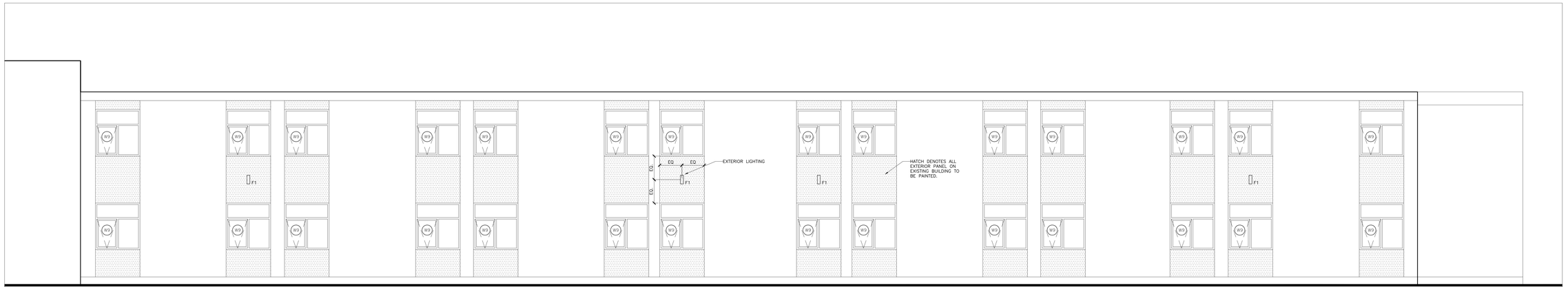
A7.1



3 A7.2 EAST ELEVATION - ENTRANCE
1:50



2 A7.2 EAST ELEVATION EXISTING
1:50



1 A7.2 WEST ELEVATION EXISTING
1:50

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION PROJECT#R121

387 Balsam Street North
Timmins, Ontario

Northeastern Catholic District SCHOOL BOARD

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1M8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REV	DESCRIPTION	DATE
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.05.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24

ONTARIO ASSOCIATION OF ARCHITECTS
TANIA BORTOLOTTO
LICENCE
5374

BORTOLOTTO

PROJECT NUMBER
PF1701 (#R121)

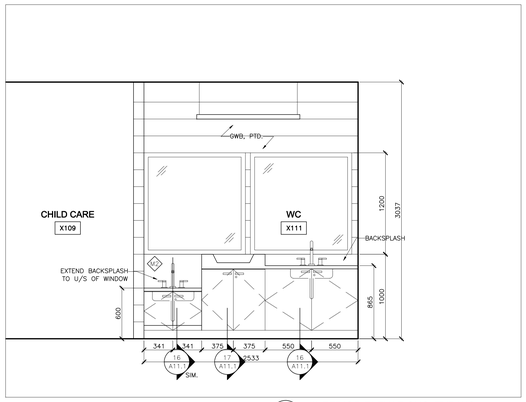
DATE
17.05.17

SCALE
1:50

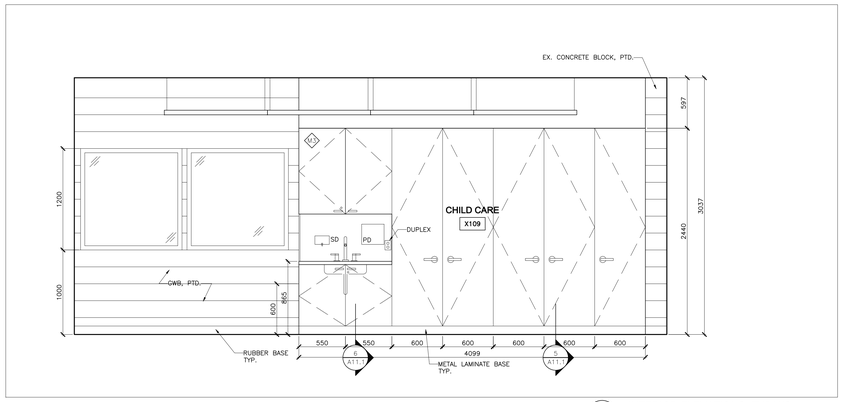
DRAWN BY
BM

ELEVATIONS

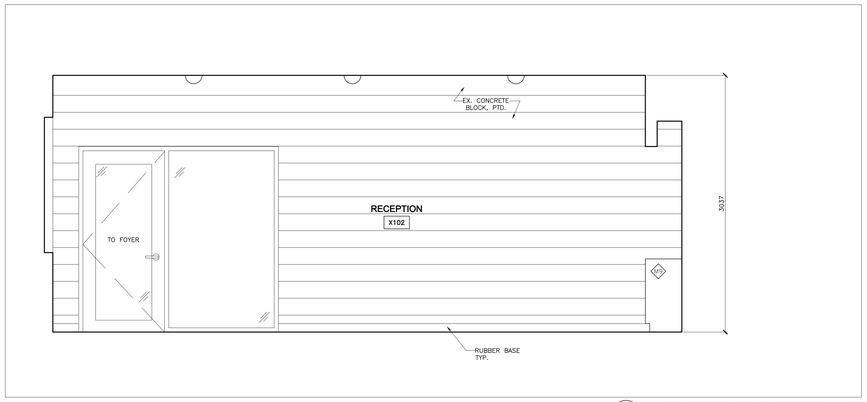
A7.2



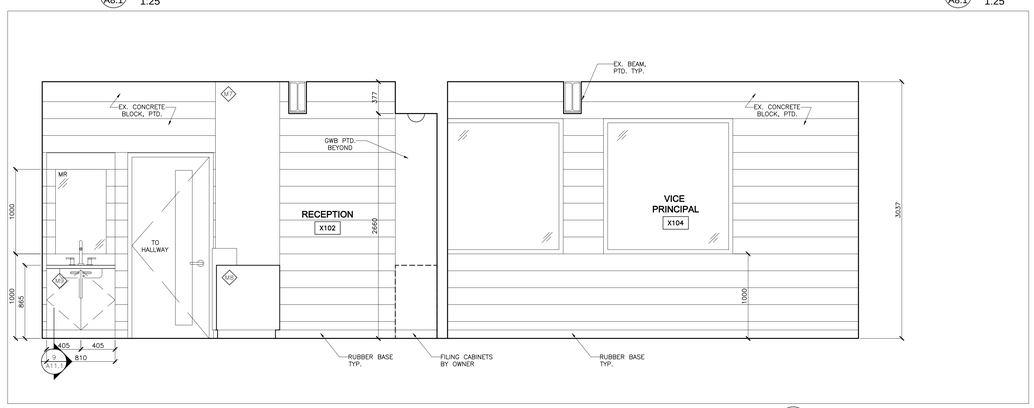
9 A8.1 INTERIOR ELEVATIONS: TYP WC
1:25



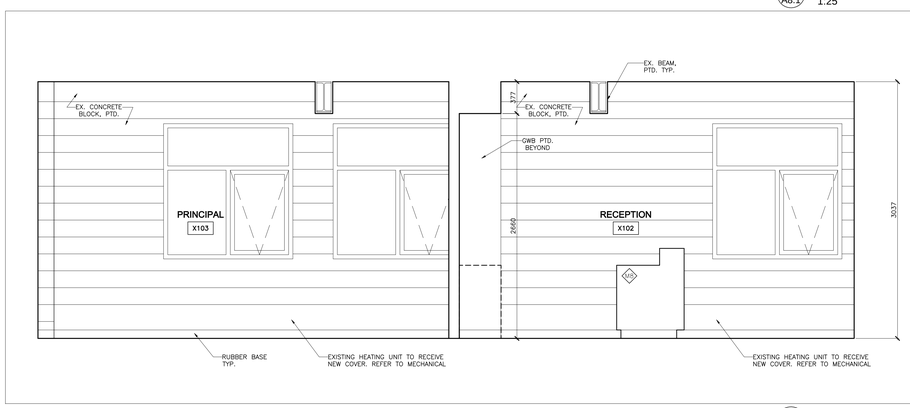
8 A8.1 INTERIOR ELEVATIONS: TYP WC
1:25



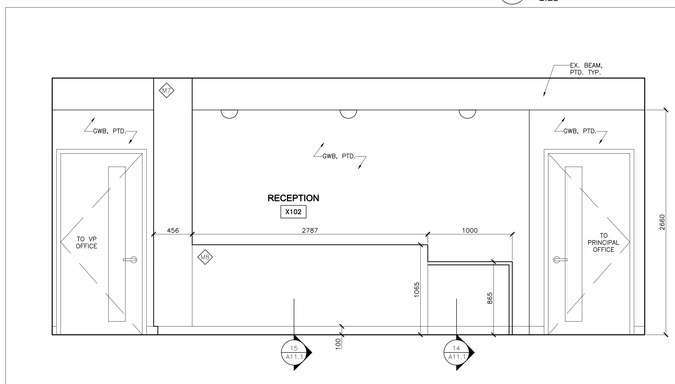
7 A8.1 INTERIOR ELEVATIONS: RECEPTION X102
1:25



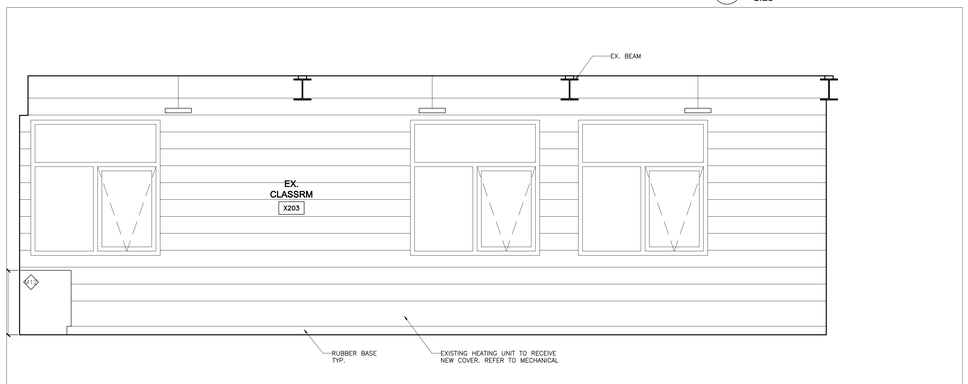
6 A8.1 INTERIOR ELEVATIONS: RECEPTION
1:25



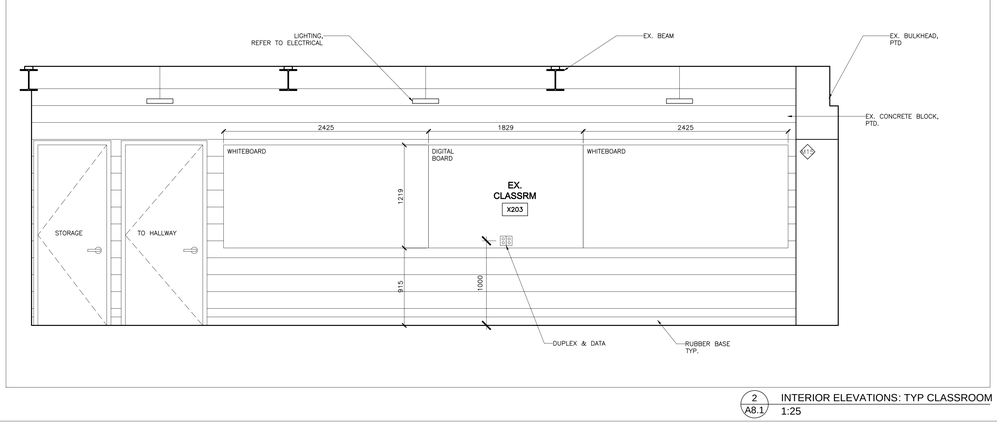
5 A8.1 INTERIOR ELEVATIONS: RECEPTION
1:25



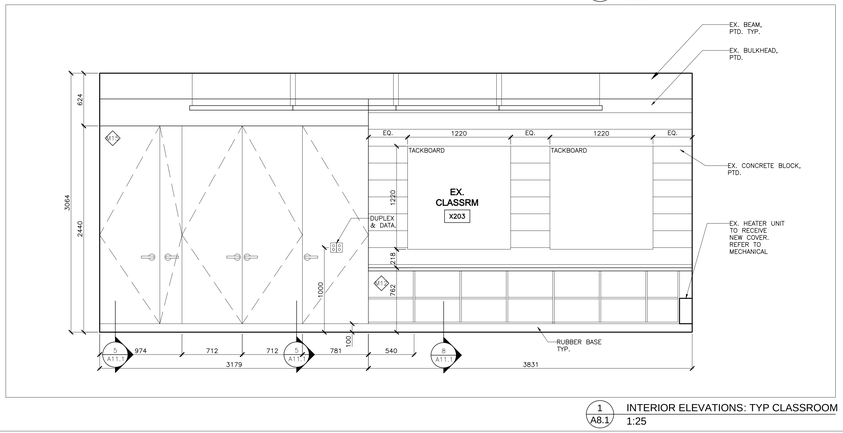
4 A8.1 INTERIOR ELEVATIONS: RECEPTION
1:25



3 A8.1 INTERIOR ELEVATIONS: TYP CLASSROOM
1:25



2 A8.1 INTERIOR ELEVATIONS: TYP CLASSROOM
1:25



1 A8.1 INTERIOR ELEVATIONS: TYP CLASSROOM
1:25

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION PROJECT#R121

387 Balsam Street North
Timmins, Ontario

Northeastern Catholic District SCHOOL BOARD

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REV	DESCRIPTION	DATE
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.05.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24

ONTARIO ASSOCIATION OF ARCHITECTS
TANIA BORTOLOTTO
LICENCE
5374

BORTOLOTTO

PROJECT NUMBER
PF1701 (#R121)

DATE
17.05.17

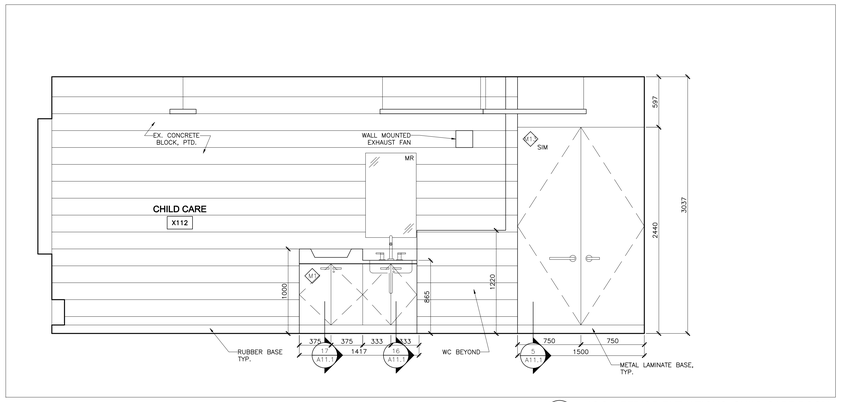
N

SCALE
1:50

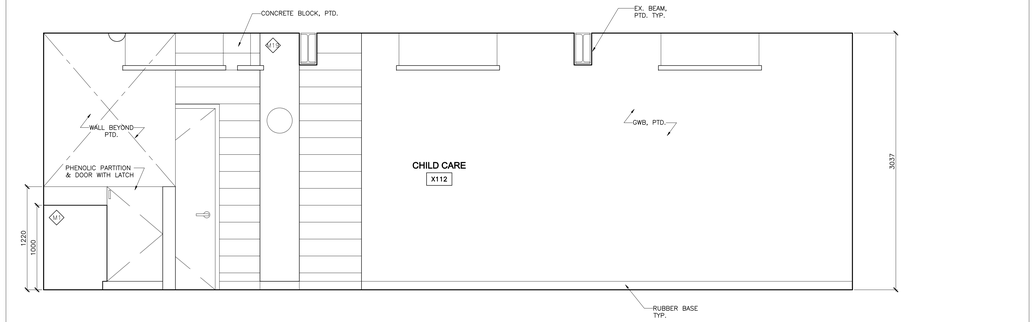
DRAWN BY
BM

EXISTING BUILDING
INTERIOR ELEVATIONS

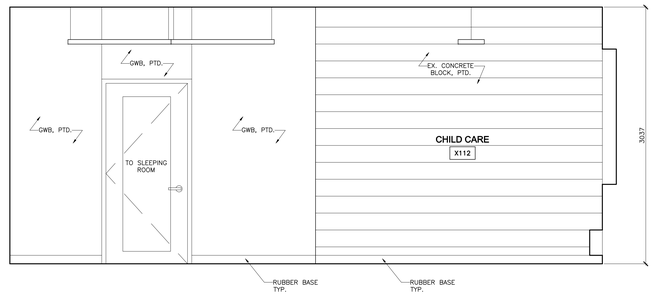
A8.1



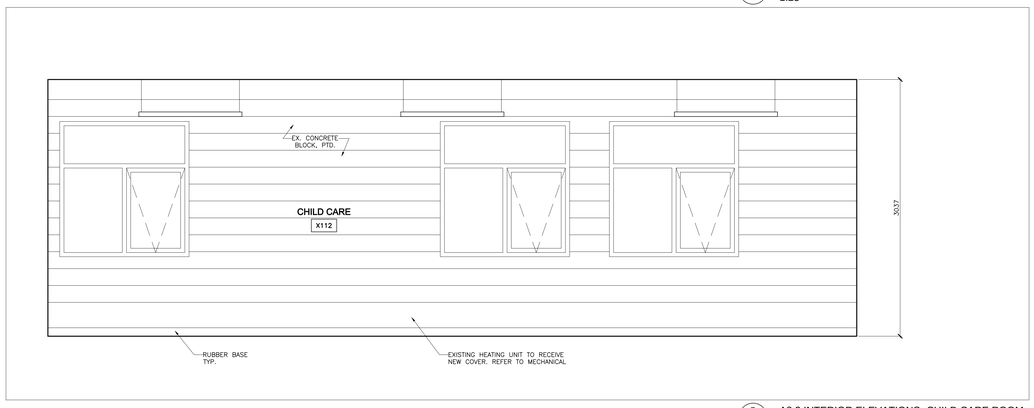
8 A8.2 A8.2 INTERIOR ELEVATIONS: CHILD CARE ROOM
1:25



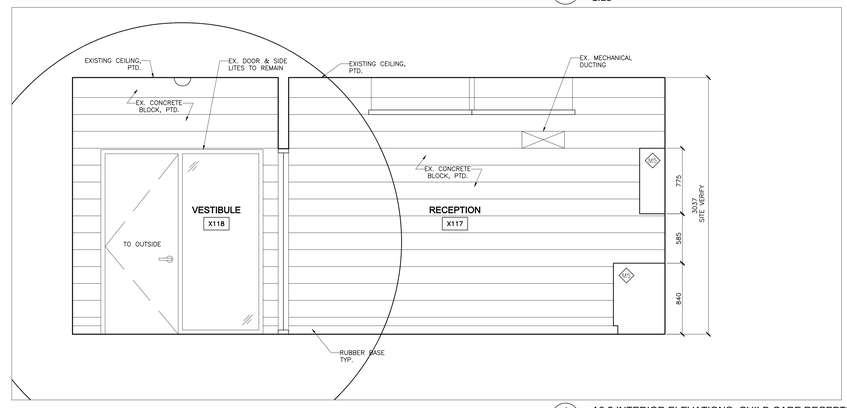
7 A8.2 A8.2 INTERIOR ELEVATIONS: CHILD CARE ROOM
1:25



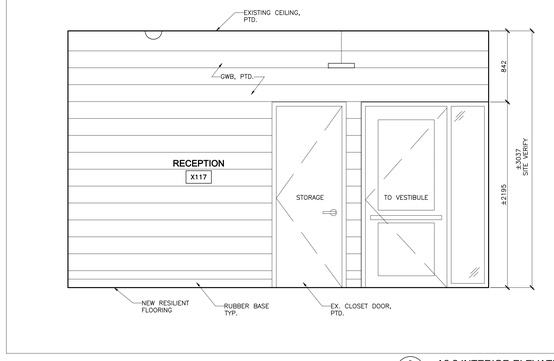
6 A8.2 A8.2 INTERIOR ELEVATIONS: CHILD CARE ROOM
1:25



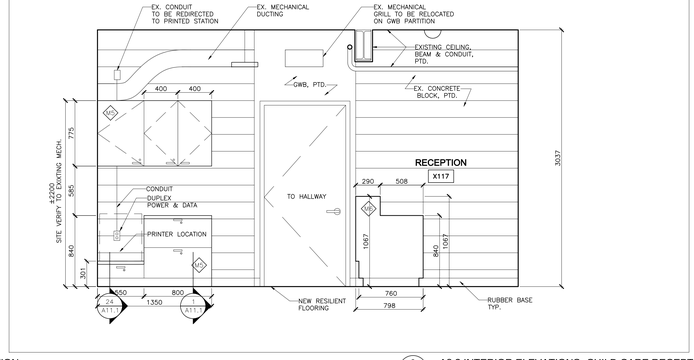
5 A8.2 A8.2 INTERIOR ELEVATIONS: CHILD CARE ROOM
1:25



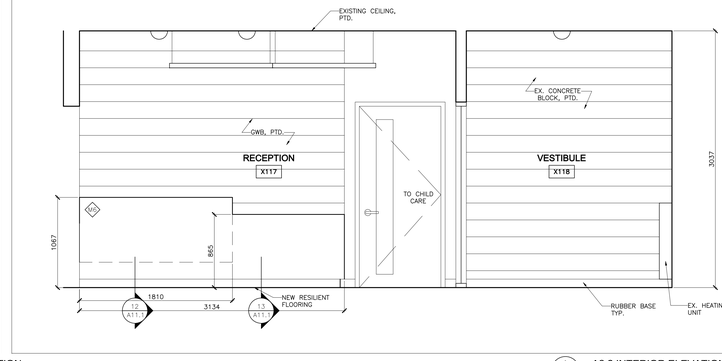
4 A8.2 A8.2 INTERIOR ELEVATIONS: CHILD CARE RECEPTION
1:25



3 A8.2 A8.2 INTERIOR ELEVATIONS: CHILD CARE RECEPTION
1:25



2 A8.2 A8.2 INTERIOR ELEVATIONS: CHILD CARE RECEPTION
1:25



1 A8.2 A8.2 INTERIOR ELEVATIONS: CHILD CARE RECEPTION
1:25

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

Northeastern Catholic District SCHOOL BOARD

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1M8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REV	DESCRIPTION	DATE
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.05.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24

ONTARIO ASSOCIATION OF ARCHITECTS
TANIA BORTOLOTTO
LICENCE
5374

BORTOLOTTO

PROJECT NUMBER
PF1701 (#R121)

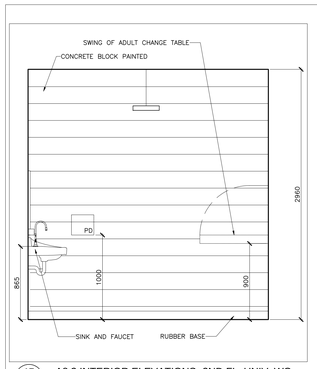
DATE
17.05.17

SCALE
1:50

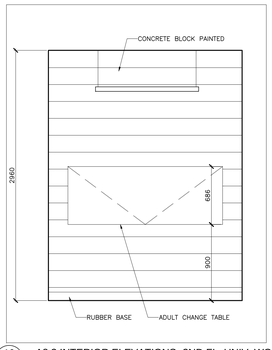
DRAWN BY
BM

EXISTING BUILDING
A8.2 INTERIOR ELEVATIONS

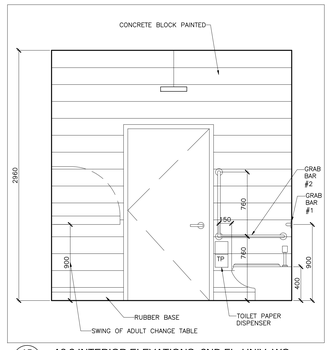
A8.2



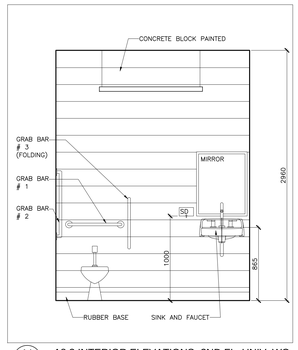
17 A8.3 A8.3 INTERIOR ELEVATIONS: 2ND FL. UNIV. WC
1:25



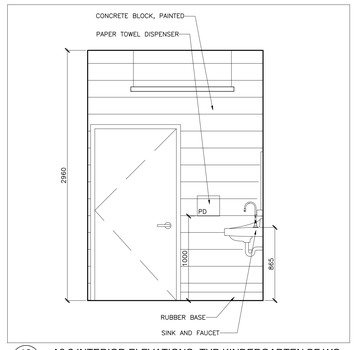
16 A8.3 A8.3 INTERIOR ELEVATIONS: 2ND FL. UNIV. WC
1:25



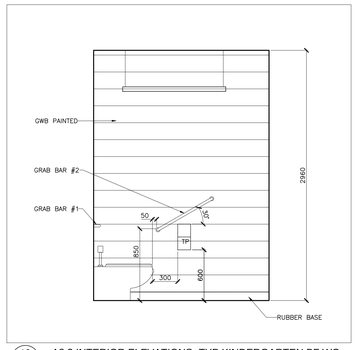
15 A8.3 A8.3 INTERIOR ELEVATIONS: 2ND FL. UNIV. WC
1:25



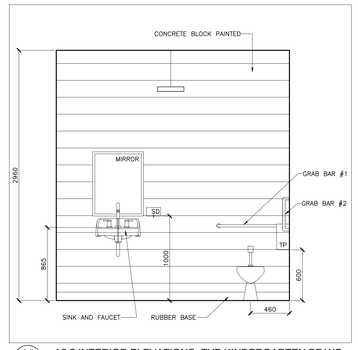
14 A8.3 A8.3 INTERIOR ELEVATIONS: 2ND FL. UNIV. WC
1:25



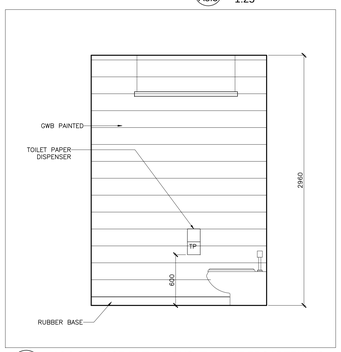
13 A8.3 A8.3 INTERIOR ELEVATIONS: TYP KINDERGARTEN BF WC
1:25



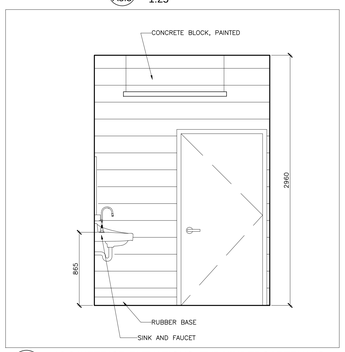
12 A8.3 A8.3 INTERIOR ELEVATIONS: TYP KINDERGARTEN BF WC
1:25



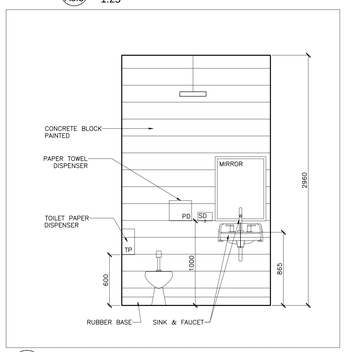
11 A8.3 A8.3 INTERIOR ELEVATIONS: TYP KINDERGARTEN BF WC
1:25



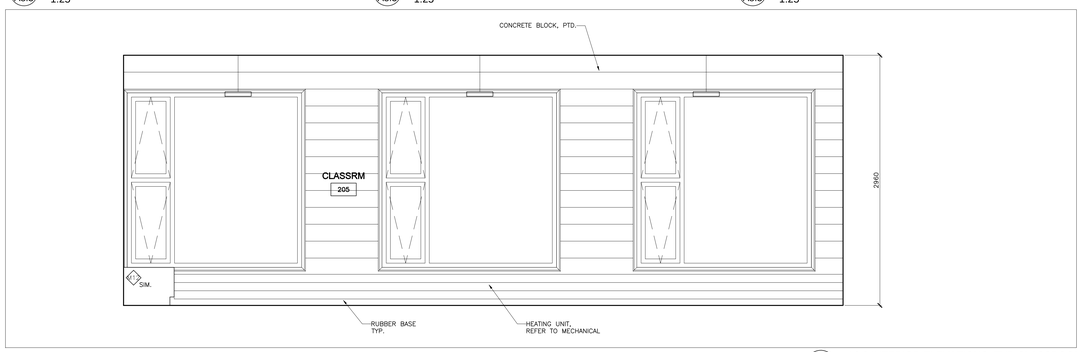
10 A8.3 A8.3 INTERIOR ELEVATIONS: TYP KINDERGARTEN WC
1:25



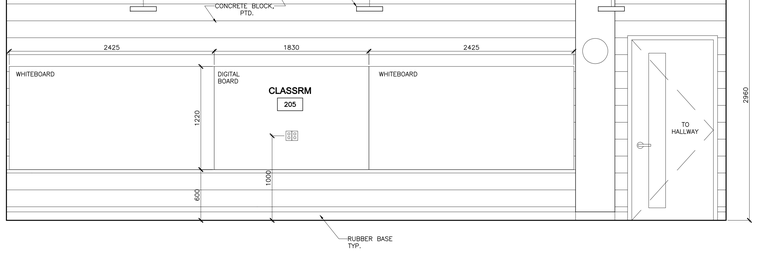
9 A8.3 A8.3 INTERIOR ELEVATIONS: TYP KINDERGARTEN WC
1:25



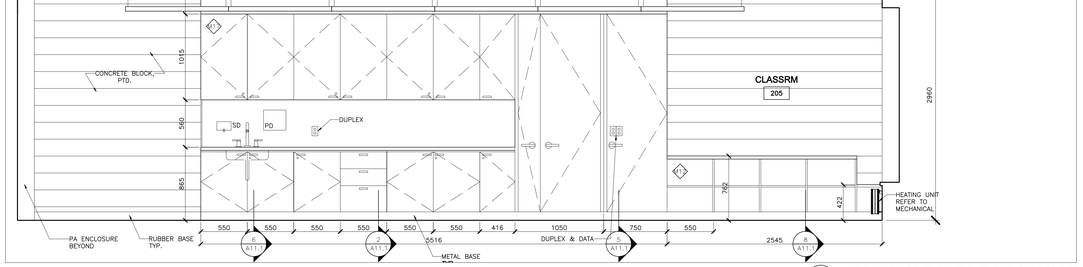
8 A8.3 A8.3 INTERIOR ELEVATIONS: TYP KINDERGARTEN WC
1:25



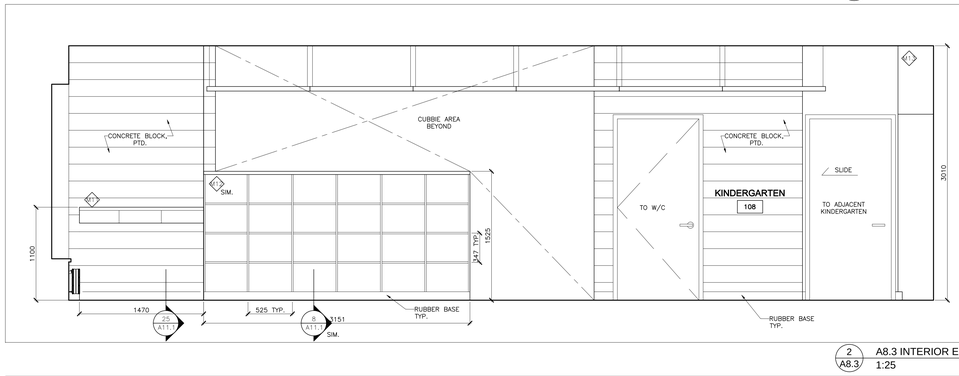
7 A8.3 A8.3 INTERIOR ELEVATIONS: TYP CLASSROOM
1:25



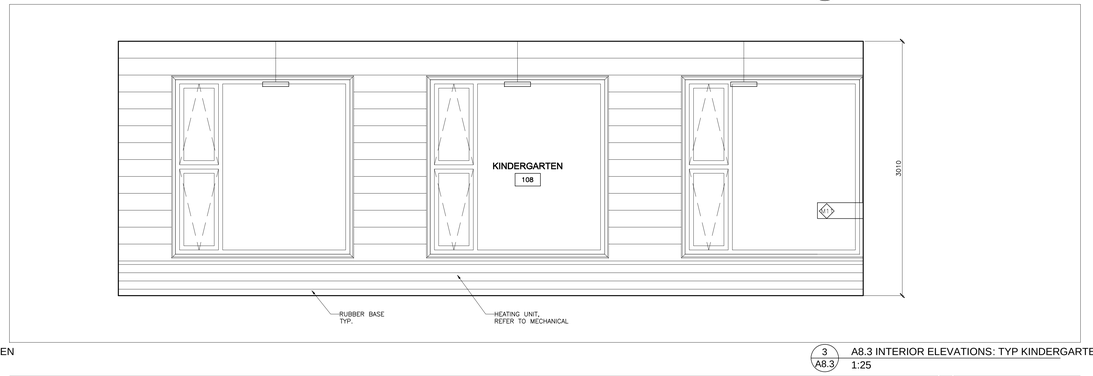
6 A8.3 A8.3 INTERIOR ELEVATIONS: TYP CLASSROOM
1:25



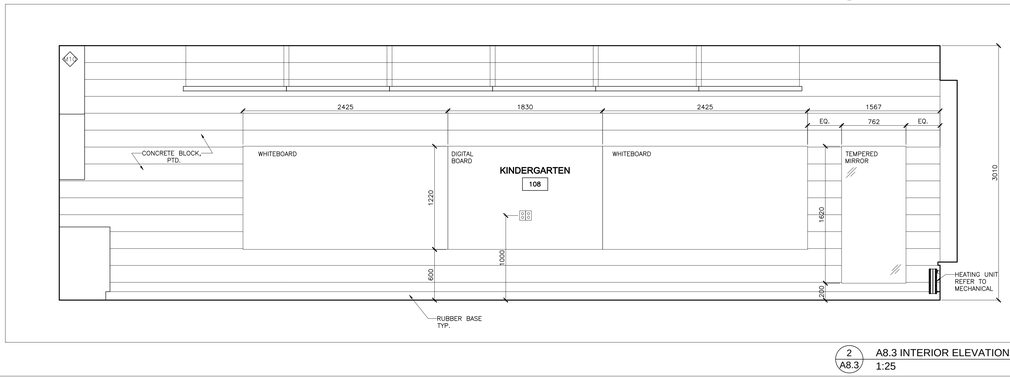
5 A8.3 A8.3 INTERIOR ELEVATIONS: TYP CLASSROOM
1:25



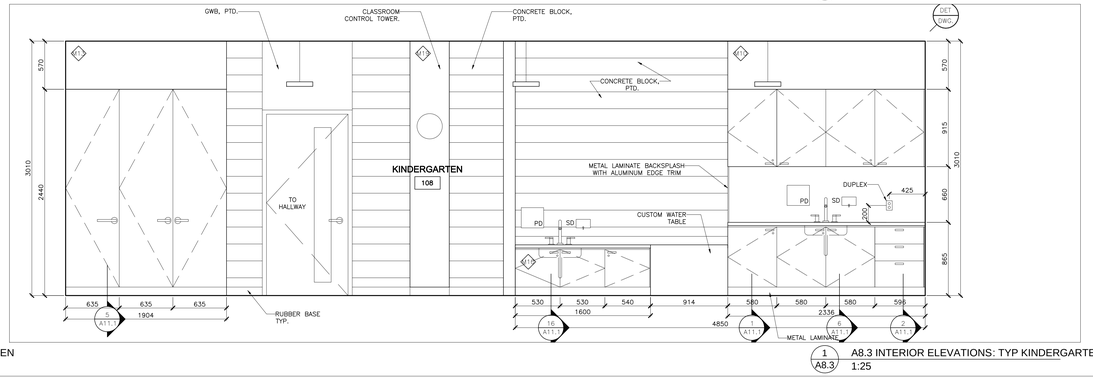
2 A8.3 A8.3 INTERIOR ELEVATIONS: TYP KINDERGARTEN
1:25



3 A8.3 A8.3 INTERIOR ELEVATIONS: TYP KINDERGARTEN
1:25



2 A8.3 A8.3 INTERIOR ELEVATIONS: TYP KINDERGARTEN
1:25



1 A8.3 A8.3 INTERIOR ELEVATIONS: TYP KINDERGARTEN
1:25

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION PROJECT#R121

387 Balsam Street North
Timmins, Ontario

Northeastern Catholic District SCHOOL BOARD

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REV	DESCRIPTION	DATE
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.05.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24

ONTARIO ASSOCIATION OF ARCHITECTS
TANIA BORTOLOTTO
LICENCE
5374

BORTOLOTTO

PROJECT NUMBER
PF(TD).(#R121)

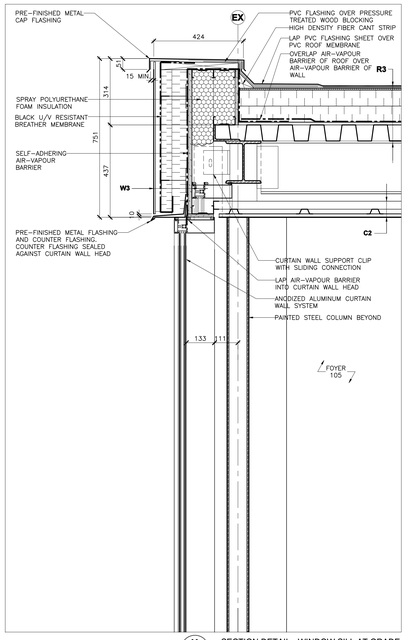
DATE
17.05.17

SCALE
1:50

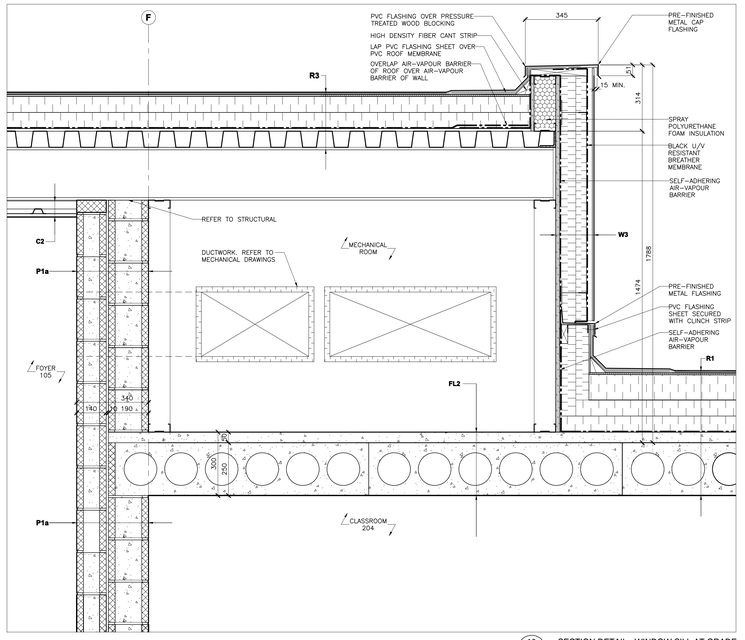
DRAWN BY
BM

ADDITION
A8.3 INTERIOR ELEVATIONS

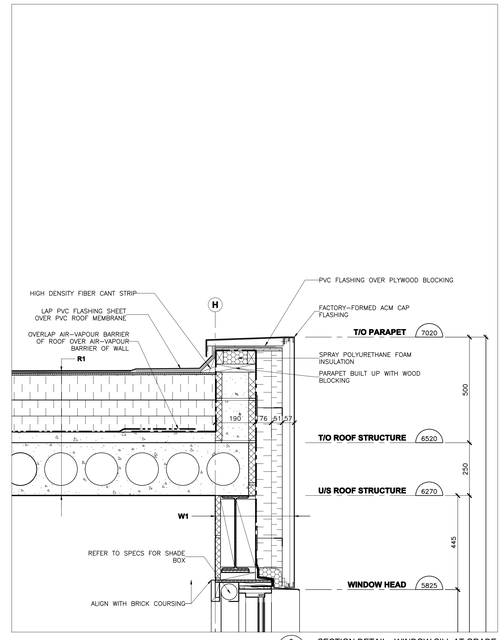
A8.3



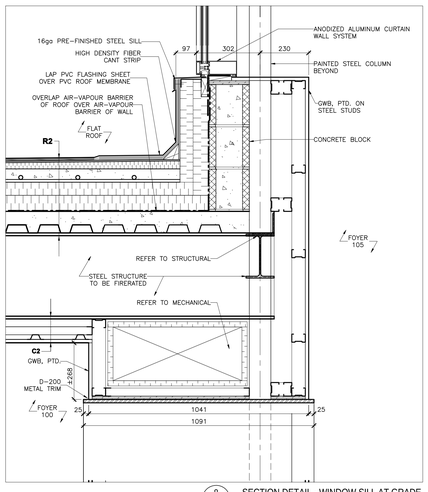
11 A9.1 SECTION DETAIL - WINDOW SILL AT GRADE
1:10



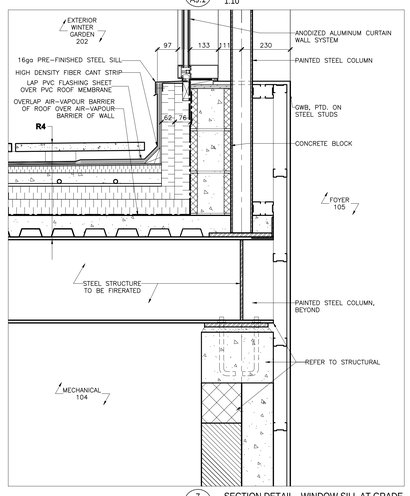
10 A9.1 SECTION DETAIL - WINDOW SILL AT GRADE
1:10



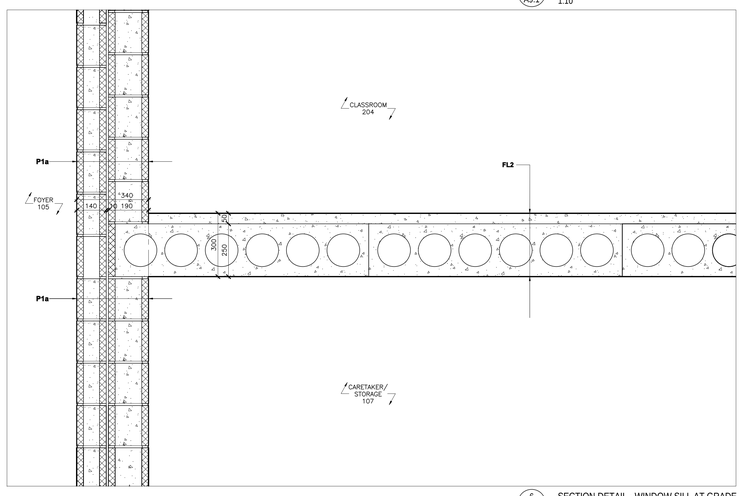
9 A9.1 SECTION DETAIL - WINDOW SILL AT GRADE
1:10



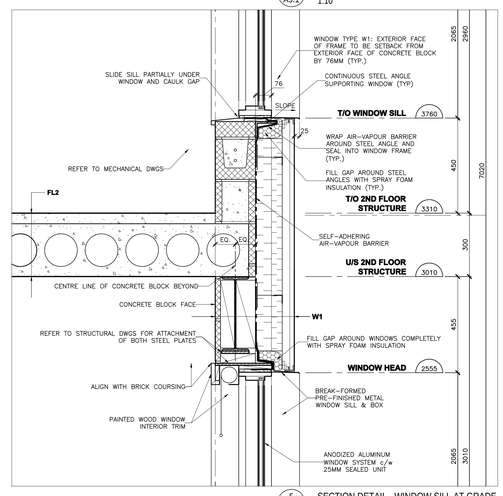
8 A9.1 SECTION DETAIL - WINDOW SILL AT GRADE
1:10



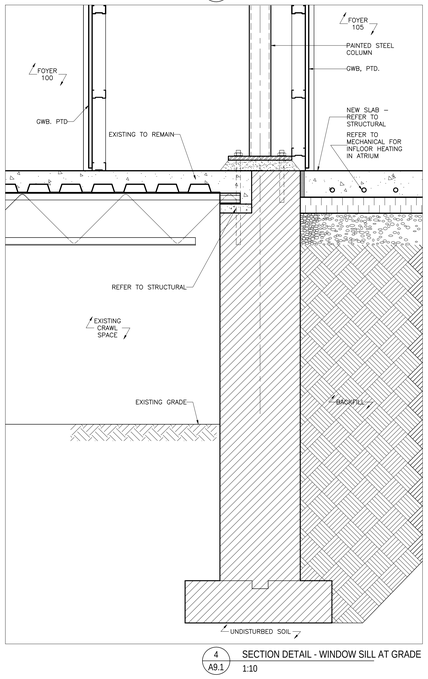
7 A9.1 SECTION DETAIL - WINDOW SILL AT GRADE
1:10



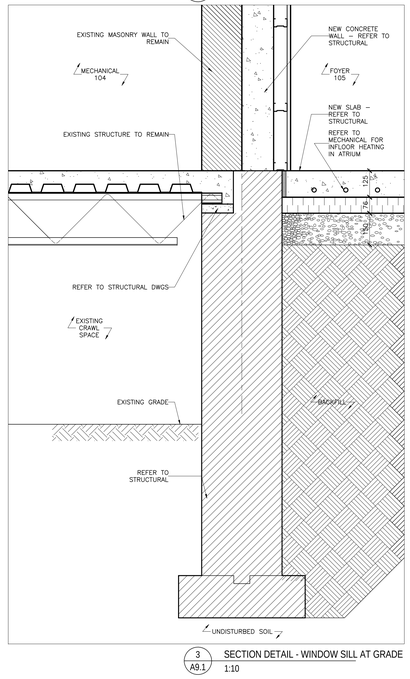
6 A9.1 SECTION DETAIL - WINDOW SILL AT GRADE
1:10



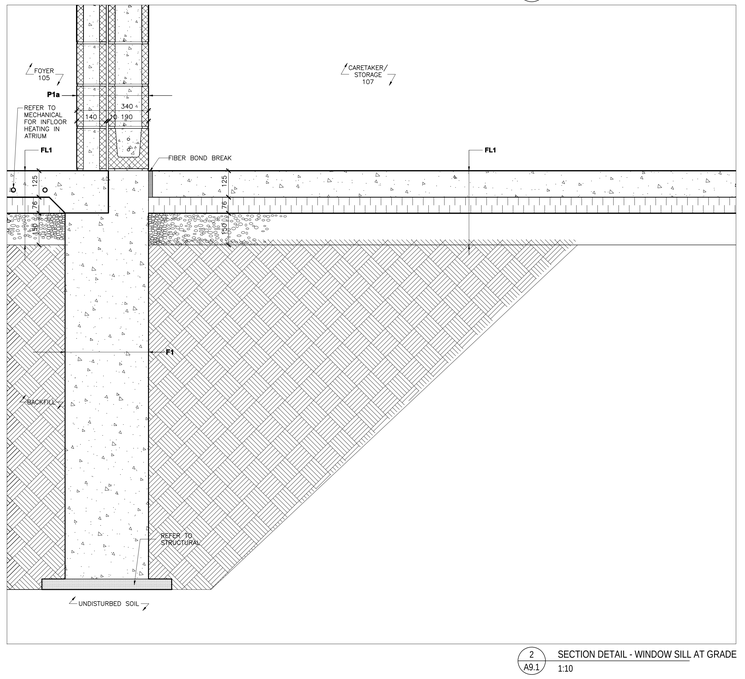
5 A9.1 SECTION DETAIL - WINDOW SILL AT GRADE
1:10



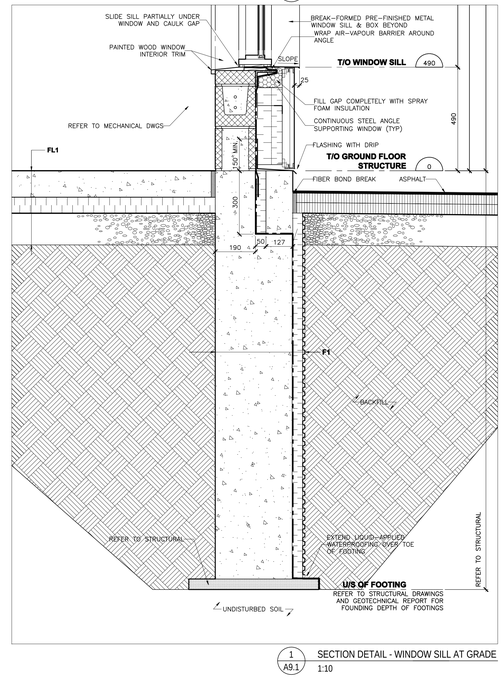
4 A9.1 SECTION DETAIL - WINDOW SILL AT GRADE
1:10



3 A9.1 SECTION DETAIL - WINDOW SILL AT GRADE
1:10



2 A9.1 SECTION DETAIL - WINDOW SILL AT GRADE
1:10



1 A9.1 SECTION DETAIL - WINDOW SILL AT GRADE
1:10

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

Northeastern Catholic District SCHOOL BOARD

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1M8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REV	DESCRIPTION	DATE
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.05.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24

ONTARIO ASSOCIATION OF ARCHITECTS
TANIA BORTOLOTTO
LICENCE
5374

BORTOLOTTO

PROJECT NUMBER
PF1701 (#R121)

DATE
17.05.17

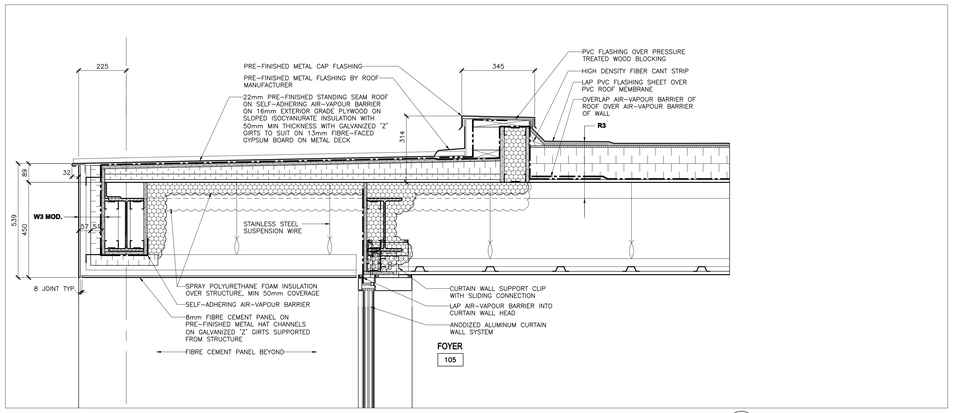
N

SCALE
AS NOTED

DRAWN BY
BM

ENVELOPE SECTION DETAILS

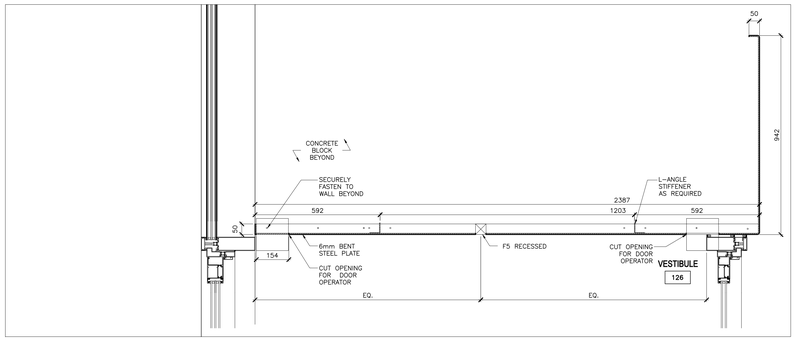
A9.1



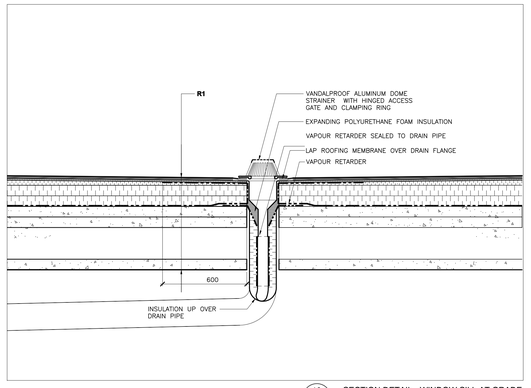
12 A9.2 SECTION DETAIL - WINDOW SILL AT GRADE
1:10



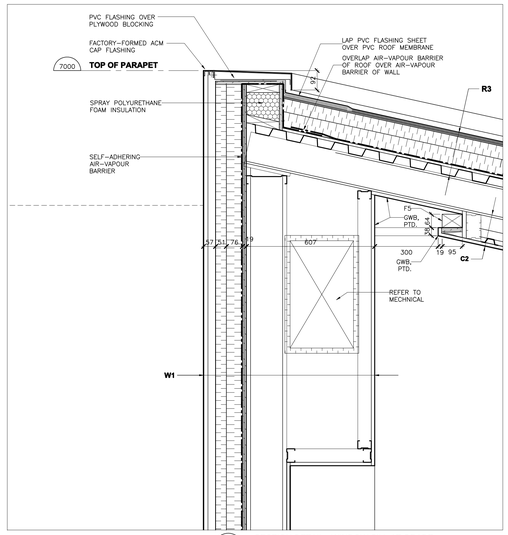
11 A9.2 SECTION DETAIL - WINDOW SILL AT GRADE
1:10



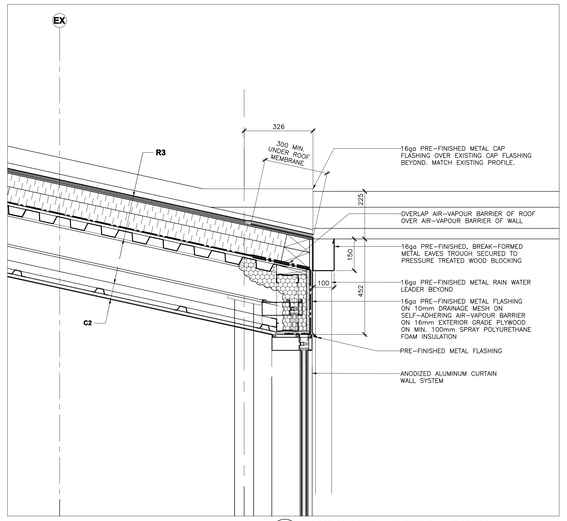
10 A9.2 SECTION DETAIL - WINDOW SILL AT GRADE
1:10



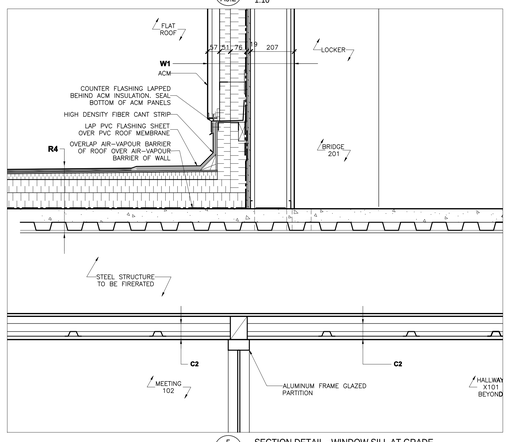
13 A9.2 SECTION DETAIL - WINDOW SILL AT GRADE
1:10



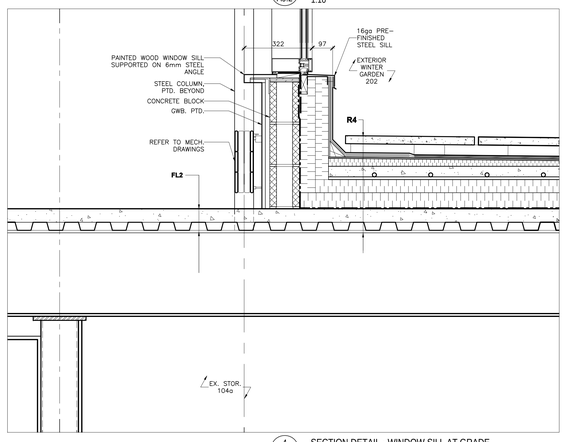
9 A9.2 SECTION DETAIL - WINDOW SILL AT GRADE
1:10



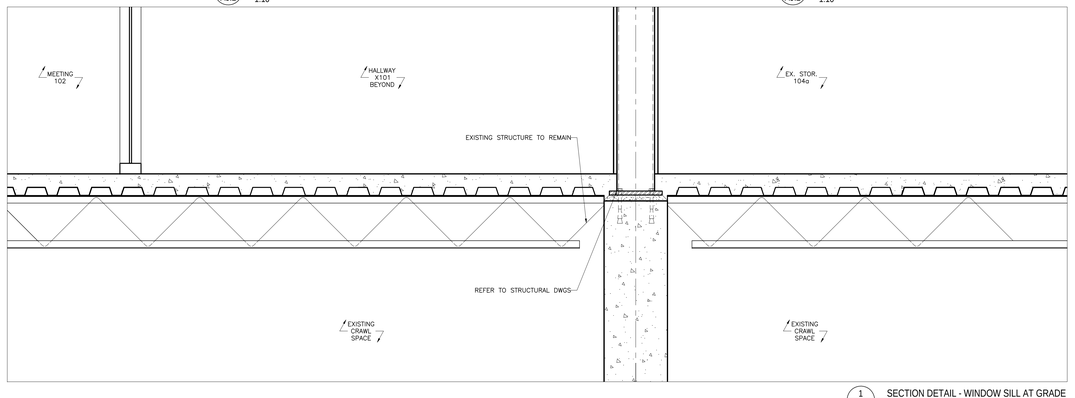
8 A9.2 SECTION DETAIL - WINDOW SILL AT GRADE
1:10



5 A9.2 SECTION DETAIL - WINDOW SILL AT GRADE
1:10



4 A9.2 SECTION DETAIL - WINDOW SILL AT GRADE
1:10



1 A9.2 SECTION DETAIL - WINDOW SILL AT GRADE
1:10

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION PROJECT#R121

387 Balsam Street North
Timmins, Ontario

Northeastern Catholic District SCHOOL BOARD

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1M8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REV	DESCRIPTION	DATE
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.05.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24

ONTARIO ASSOCIATION OF ARCHITECTS
TANIA BORTOLOTTO LICENCE 5374

BORTOLOTTO

PROJECT NUMBER
PF1701 (#R121)

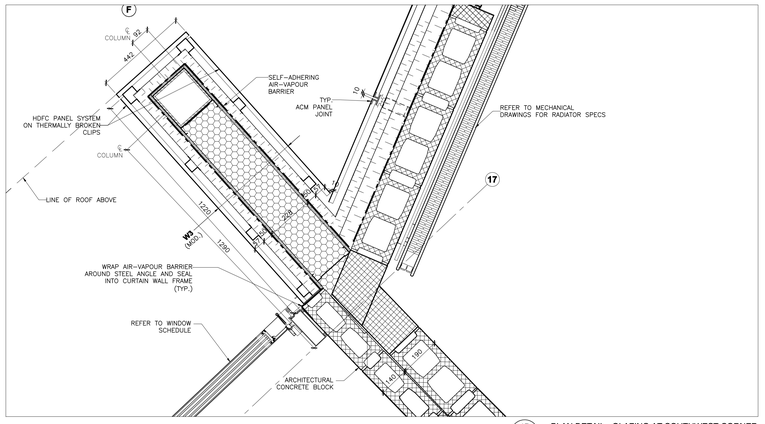
DATE
17.05.17

SCALE
AS NOTED

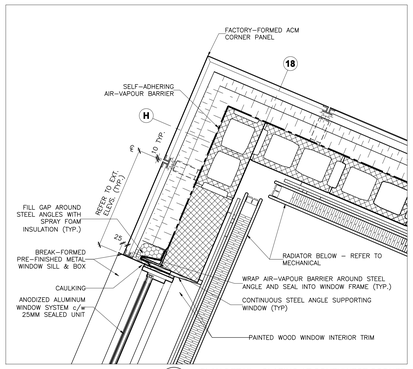
DRAWN BY
BM

ENVELOPE SECTION DETAILS

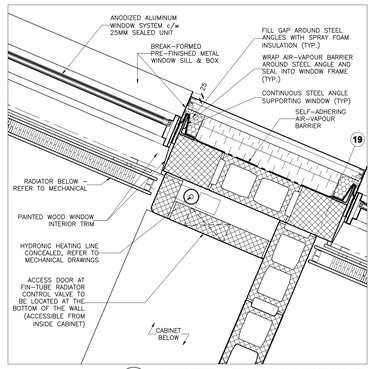
A9.2



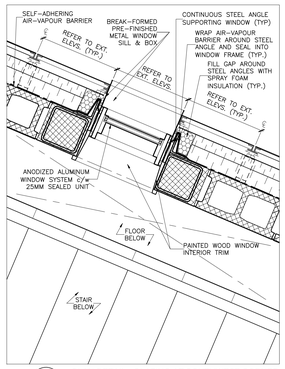
17 A9.3 PLAN DETAIL - GLAZING AT SOUTHWEST CORNER 1:10



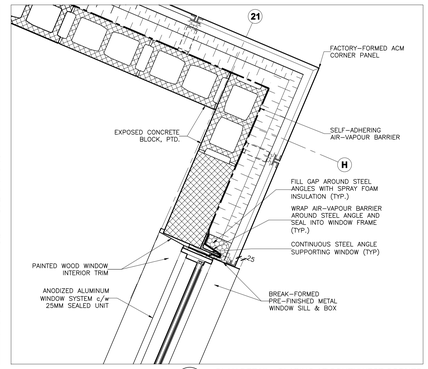
16 A9.3 PLAN DETAIL - GLAZING AT SOUTHWEST CORNER 1:10



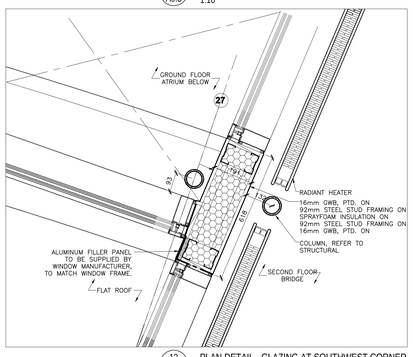
15 A9.3 PLAN DETAIL - GLAZING AT SOUTHWEST CORNER 1:10



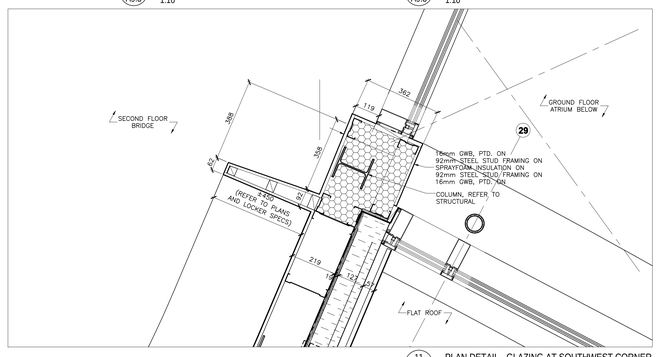
14 A9.3 PLAN DETAIL - GLAZING AT SOUTHWEST CORNER 1:10



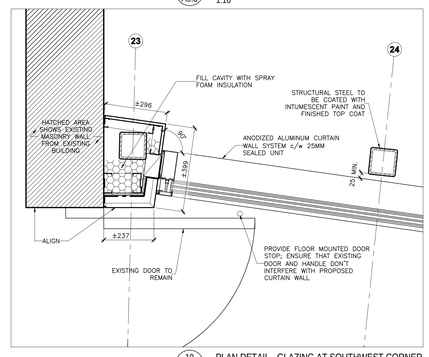
13 A9.3 PLAN DETAIL - GLAZING AT SOUTHWEST CORNER 1:10



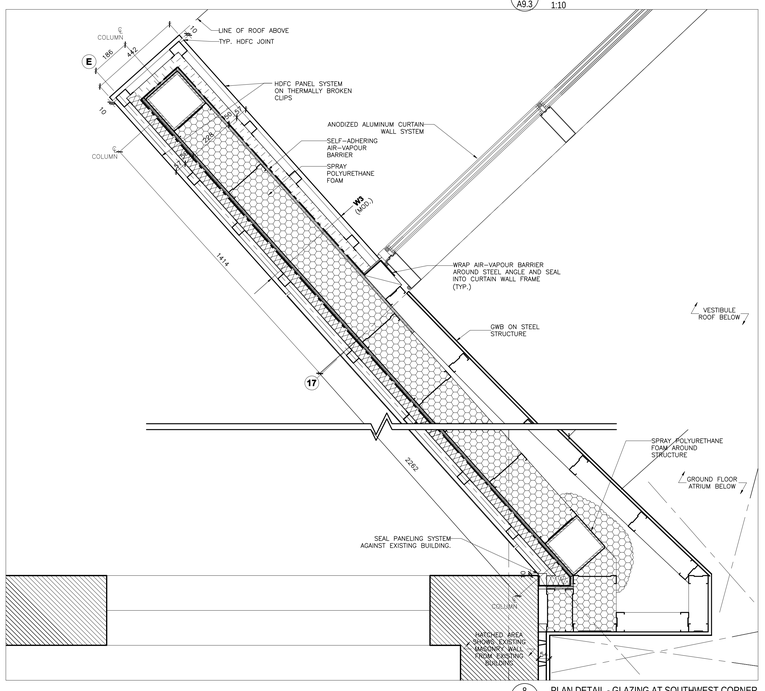
12 A9.3 PLAN DETAIL - GLAZING AT SOUTHWEST CORNER 1:10



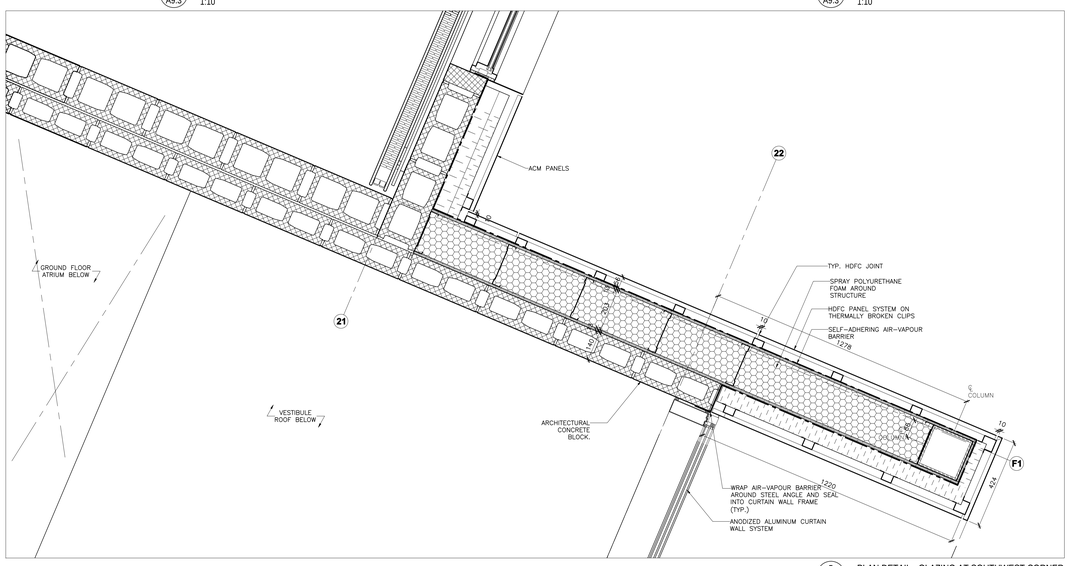
11 A9.3 PLAN DETAIL - GLAZING AT SOUTHWEST CORNER 1:10



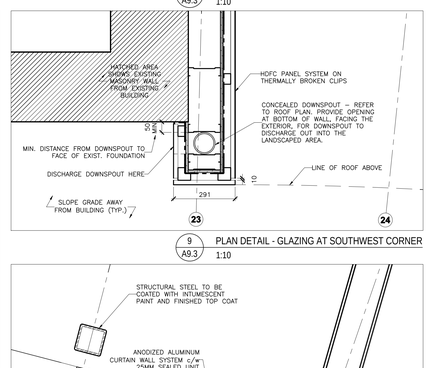
10 A9.3 PLAN DETAIL - GLAZING AT SOUTHWEST CORNER 1:10



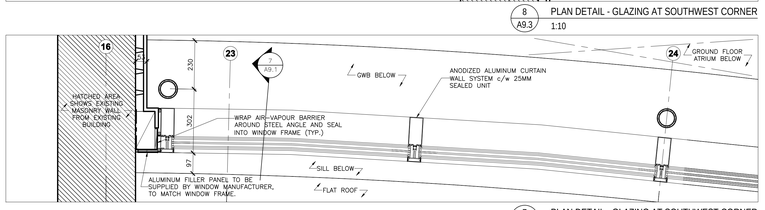
8 A9.3 PLAN DETAIL - GLAZING AT SOUTHWEST CORNER 1:10



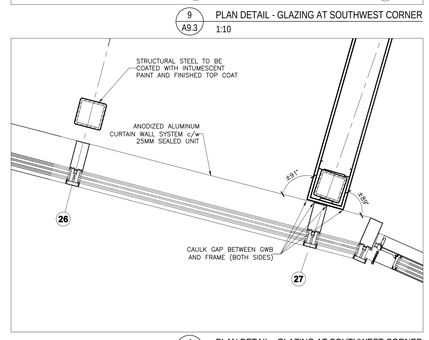
5 A9.3 PLAN DETAIL - GLAZING AT SOUTHWEST CORNER 1:10



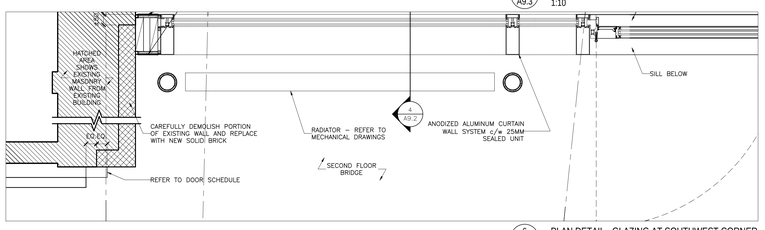
9 A9.3 PLAN DETAIL - GLAZING AT SOUTHWEST CORNER 1:10



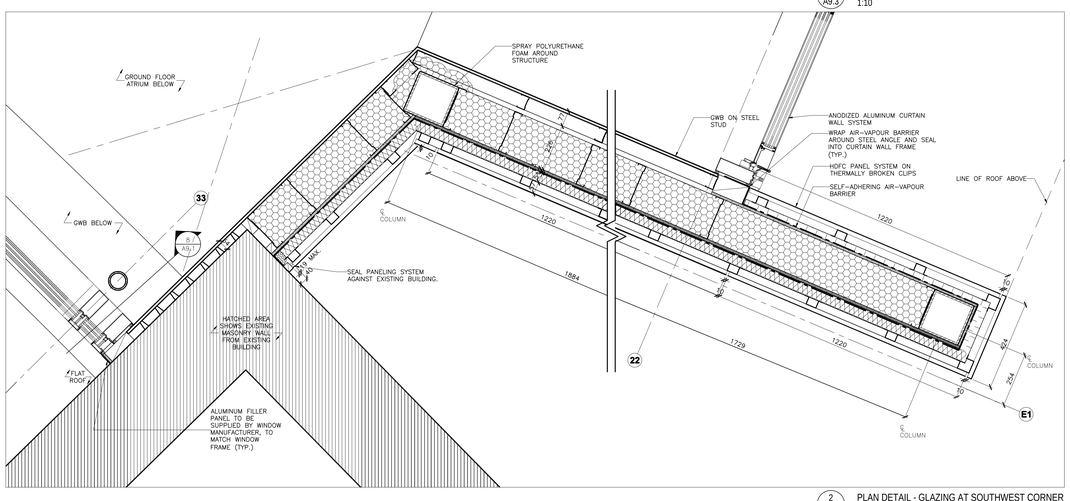
7 A9.3 PLAN DETAIL - GLAZING AT SOUTHWEST CORNER 1:10



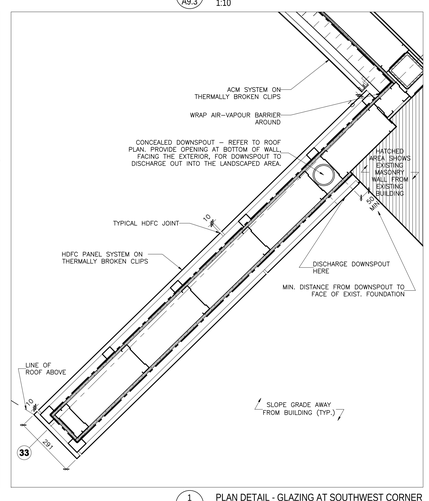
4 A9.3 PLAN DETAIL - GLAZING AT SOUTHWEST CORNER 1:10



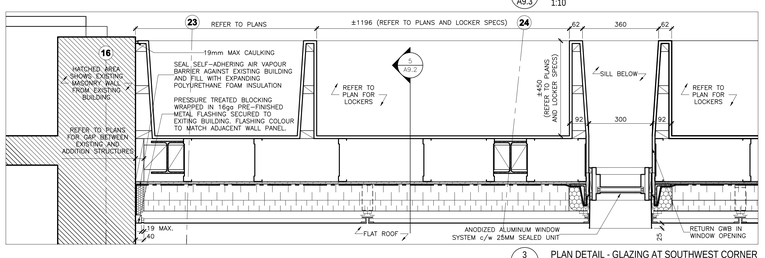
6 A9.3 PLAN DETAIL - GLAZING AT SOUTHWEST CORNER 1:10



2 A9.3 PLAN DETAIL - GLAZING AT SOUTHWEST CORNER 1:10



1 A9.3 PLAN DETAIL - GLAZING AT SOUTHWEST CORNER 1:10



3 A9.3 PLAN DETAIL - GLAZING AT SOUTHWEST CORNER 1:10

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION PROJECT#R121

397 Balsam Street North
Timmins, Ontario

Northeastern Catholic District School Board

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1M8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REV	DESCRIPTION	DATE
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.05.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24

ONTARIO ASSOCIATION OF ARCHITECTS
TANIA BORTOLOTTO
LICENCE
5374

BORTOLOTTO

PROJECT NUMBER
PP1701 (#R121)

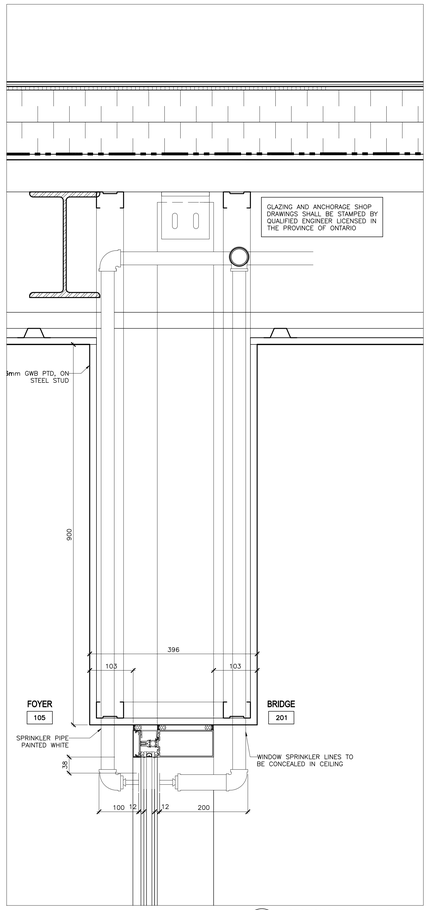
DATE
17.05.17

SCALE
AS NOTED

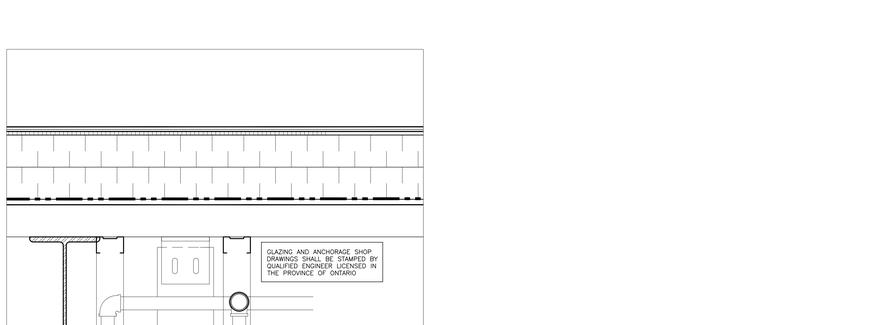
DRAWN BY
IT

ENVELOPE PLAN DETAILS

A9.3



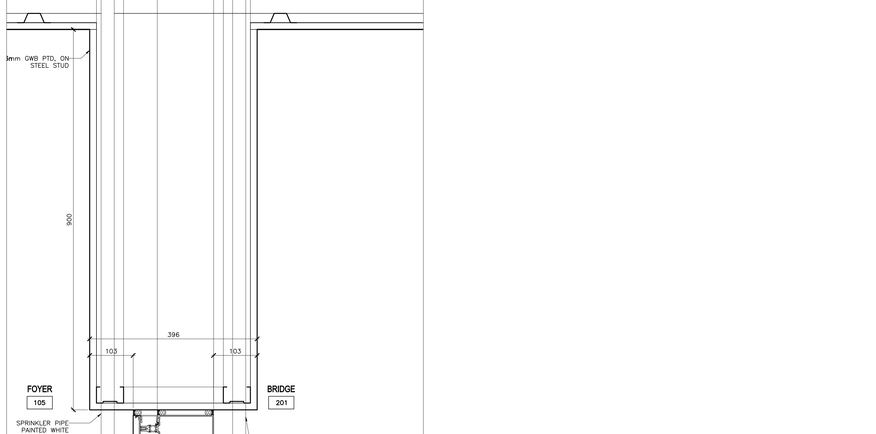
10 A10.1 SECTION DETAIL - BRIDGE
1:5



8 A10.1 SECTION DETAIL - BRIDGE
1:5

7 A10.1 SECTION DETAIL - STAIR AT ATRIUM
1:5

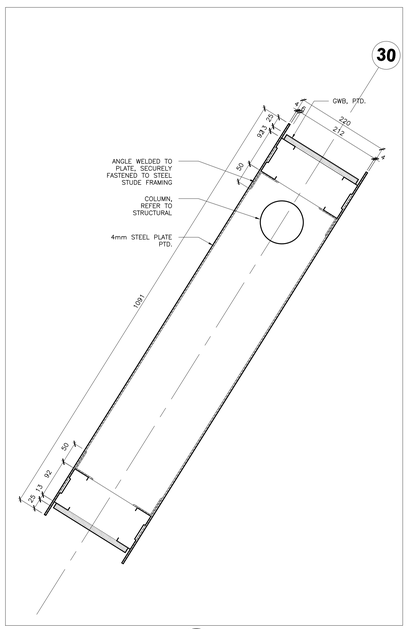
6 A10.1 PLAN DETAIL - STAIR 122
1:50



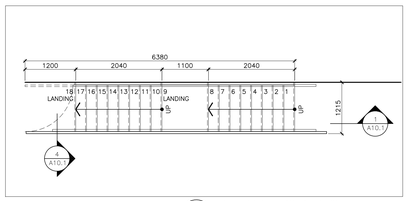
4 A10.1 SECTION DETAIL - STAIR LANDING
1:10

3 A10.1 SECTION DETAIL - STAIR AT ATRIUM
1:5

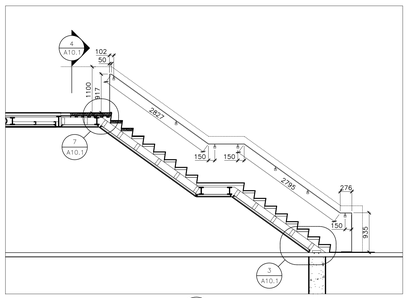
2 A10.1 SECTION DETAIL - STAIR 122
1:50



9 A10.1 PLAN DETAIL - FOYER COLUMN TYP.
1:5



5 A10.1 PLAN DETAIL - STAIR AT ATRIUM
1:50



1 A10.1 SECTION DETAIL - STAIR AT ATRIUM
1:50

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

Northeastern Catholic District SCHOOL BOARD

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1M8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REV	DESCRIPTION	DATE
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.05.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24

ONTARIO ASSOCIATION OF ARCHITECTS
TANIA BORTOLOTTO
LICENCE
5374

BORTOLOTTO

PROJECT NUMBER
PR1701 (PR121)

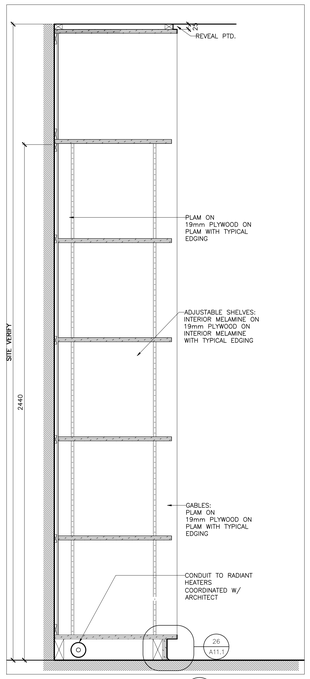
DATE
17.05.17

SCALE
AS NOTED

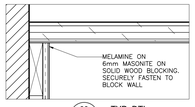
DRAWN BY
BM

INTERIOR DETAILS

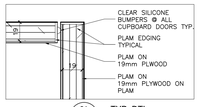
A10.1



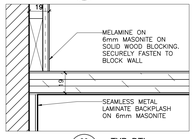
23 A11.1 M18: SECTION 1:10



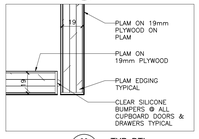
32 A11.1 TYP. DTL. 1:2



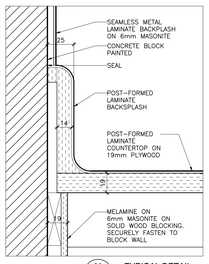
31 A11.1 TYP. DTL. 1:2



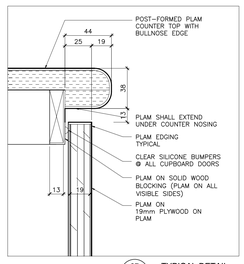
30 A11.1 TYP. DTL. 1:2



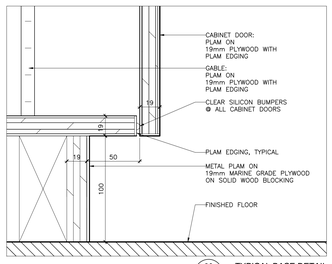
29 A11.1 TYP. DTL. 1:2



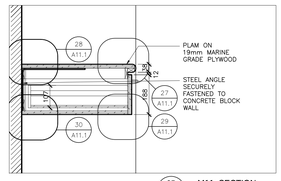
28 A11.1 TYPICAL DETAIL 1:2



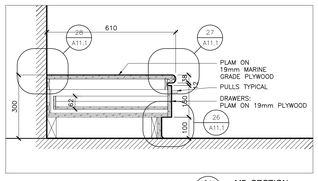
27 A11.1 TYPICAL DETAIL 1:2



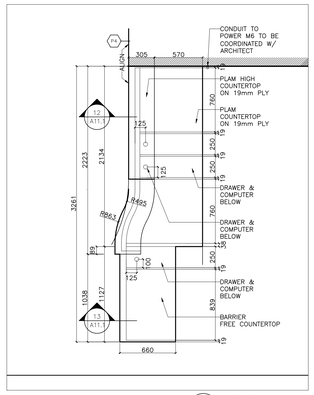
26 A11.1 TYPICAL BASE DETAIL 1:2



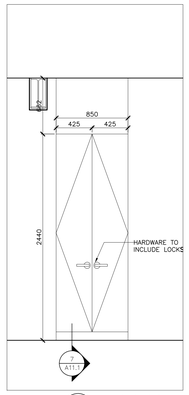
25 A11.1 M11: SECTION 1:10



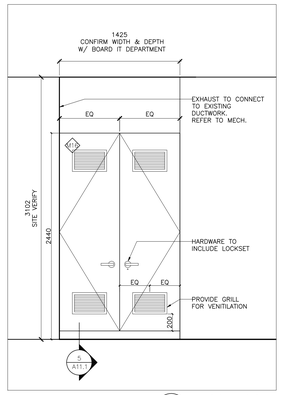
24 A11.1 M5: SECTION 1:10



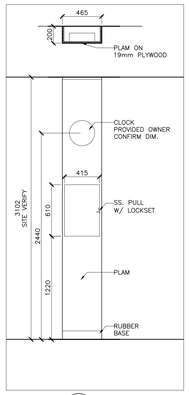
22 A11.1 M6: PLAN 1:10



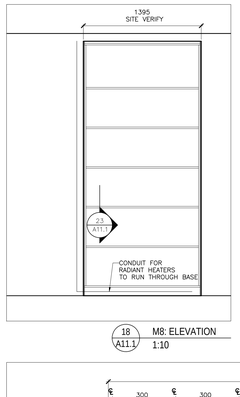
21 A11.1 M7: ELEVATION 1:10



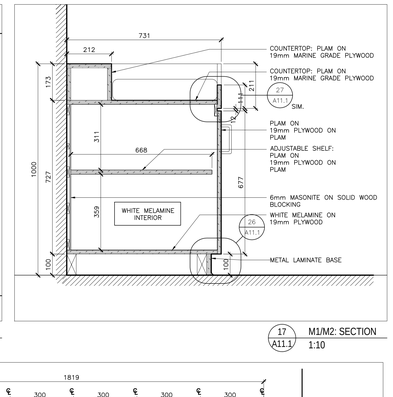
20 A11.1 M16: ELEVATION 1:10



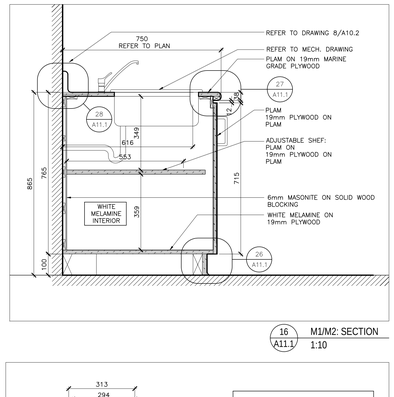
19 A11.1 M19: ELEVATION 1:10



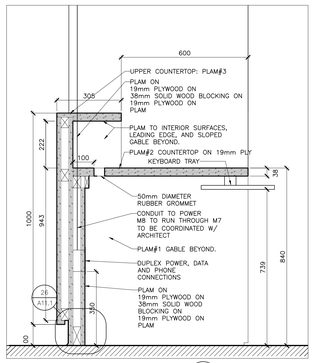
18 A11.1 M8: ELEVATION 1:10



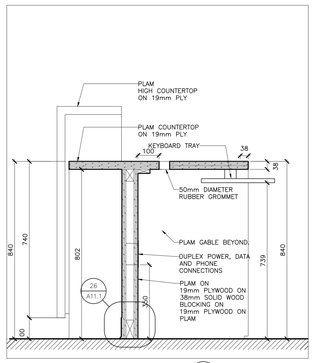
17 A11.1 M1/M2: SECTION 1:10



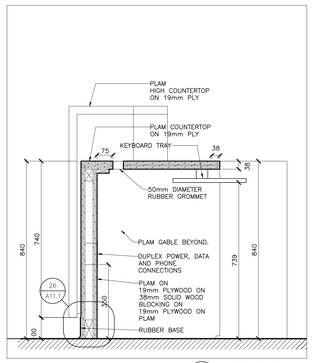
16 A11.1 M1/M2: SECTION 1:10



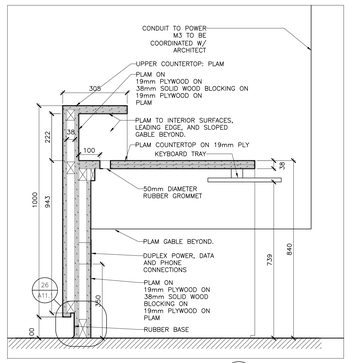
15 A11.1 M8: SECTION 1:10



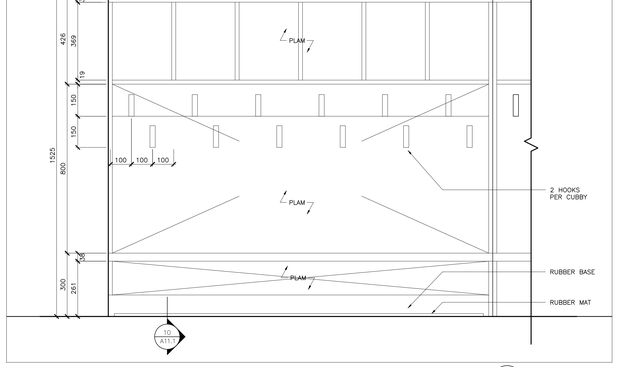
14 A11.1 M8: SECTION 1:10



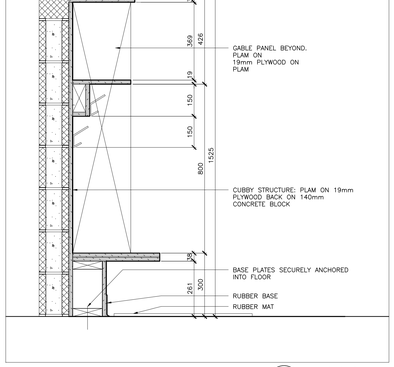
13 A11.1 M6: SECTION 1:10



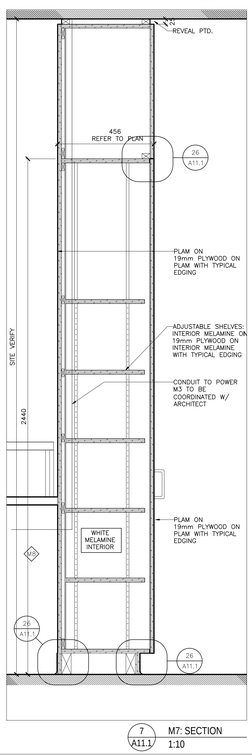
12 A11.1 M6: SECTION 1:10



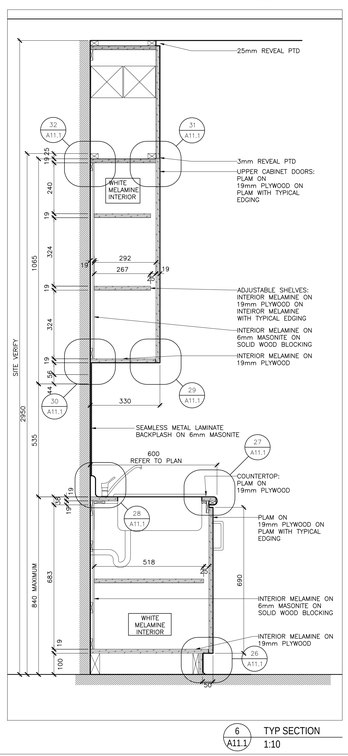
11 A11.1 M4: ELEVATION 1:10



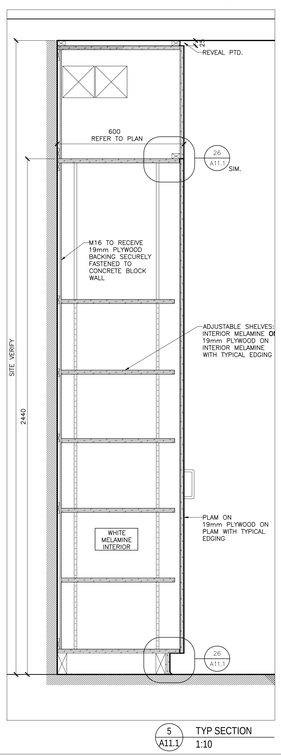
10 A11.1 M4: SECTION 1:10



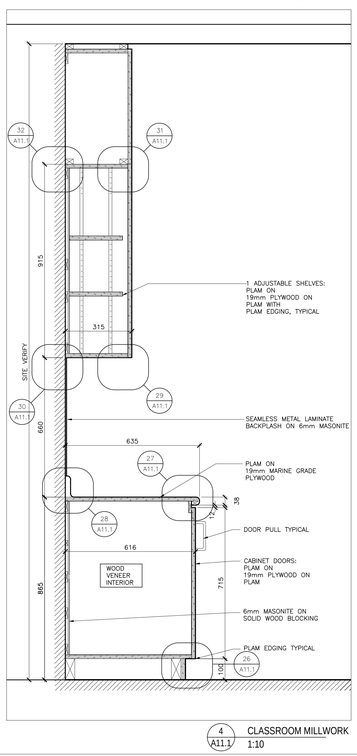
7 A11.1 M7: SECTION 1:10



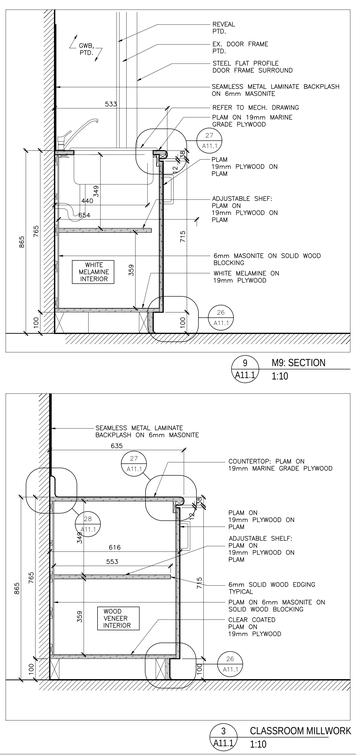
6 A11.1 TYP SECTION 1:10



5 A11.1 TYP SECTION 1:10

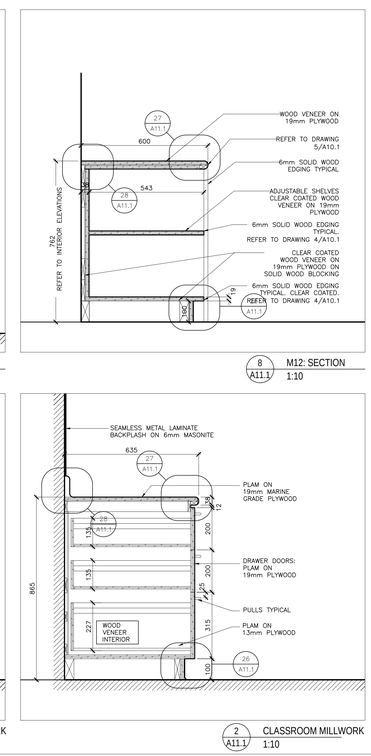


4 A11.1 CLASSROOM MILLWORK 1:10



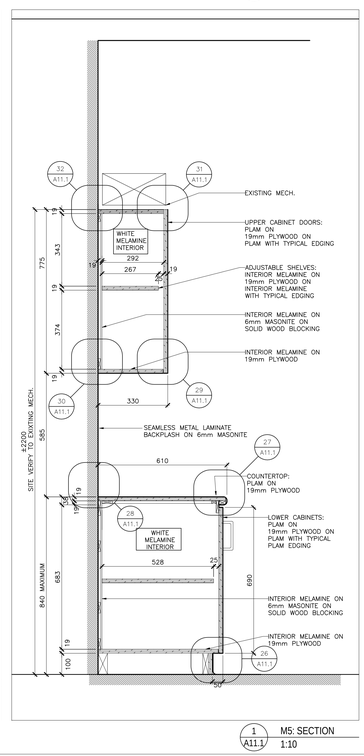
9 A11.1 M9: SECTION 1:10

3 A11.1 CLASSROOM MILLWORK 1:10



8 A11.1 M12: SECTION 1:10

2 A11.1 CLASSROOM MILLWORK 1:10



1 A11.1 M5: SECTION 1:10

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION PROJECT#R121

387 Balsam Street North
Timmins, Ontario

Northeastern Catholic District School Board

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

CIVIL ENGINEER
COUNTERPOINT ENGINEERING INC.
8395 Jane Street, Suite 100
Vaughan ON Canada L4K 5Y2
Tel 905 326 3172
counterpointeng.com

REV	DESCRIPTION	DATE
5	ISSUED FOR PERMIT & TENDER	17.05.17
4	ISSUED FOR CLIENT REVIEW	17.05.05
3	ISSUED FOR CLASS A COST	17.05.01
2	ISSUED FOR CLASS B COST	17.04.24
1	ISSUED FOR CLASS C COST	17.03.24

ONTARIO ASSOCIATION OF ARCHITECTS
TARALEE BORTOLOTTO LICENCE 8374

BORTOLOTTO

PROJECT NUMBER
PP1701 (#R121)

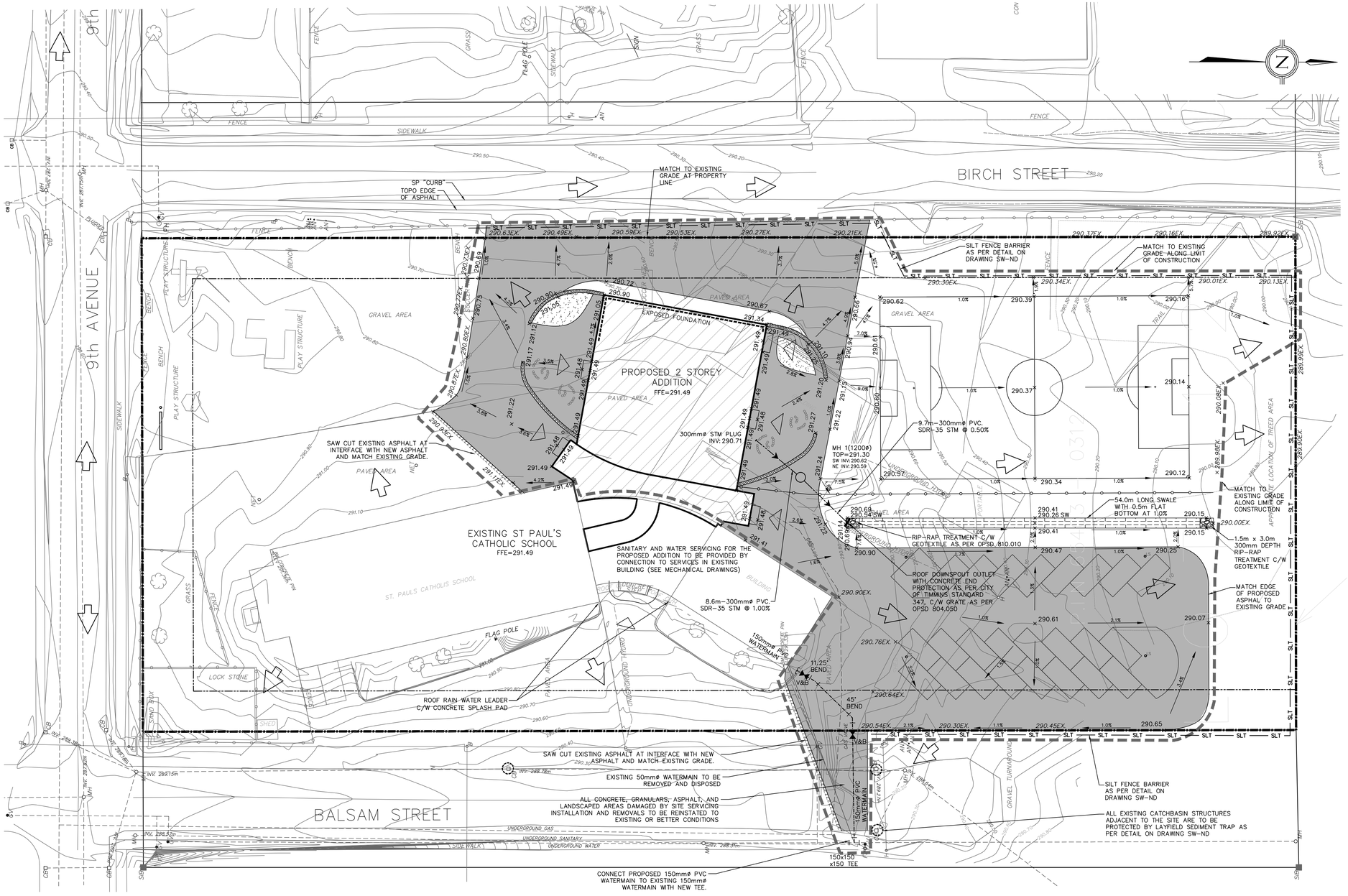
DATE
17.05.17

SCALE
AS NOTED

DRAWN BY
BM

MILLWORK

A11.1



LEGAL & TOPOGRAPHY

PROVIDED BY: PELTO CONSULTING

BENCHMARK

EXISTING ST PATRICK SCHOOL – NE AND SW CORNER, ACCESS CENTER EAST SIDE ENTRANCE AND SW CORNER.

NOTE: ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE DERIVED FROM LEICA SMARTNET GPS RTK NETWORK.

Project Name: Pope Francis Elementary School Addition
Municipality: City of Timmins
Project No.: 17005
Date: 25-Apr-17

Prepared by: C.B.
Checked by:
Last Revised: 25-Apr-17

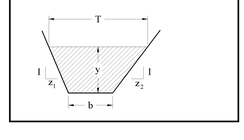
Input Parameters:

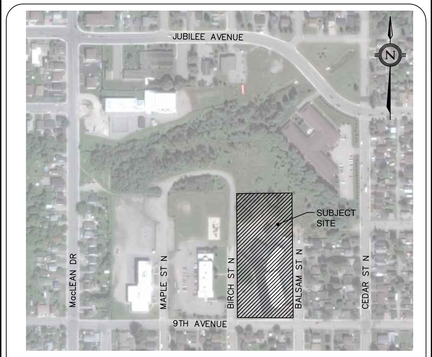
Side Slope, z_1	**3.0**	:1
Side Slope, z_2	**3.0**	:1
Flow Depth, y	**0.15**	m
Bottom Width, b:	**0.50**	m
Manning Roughness, n	**0.025**	
Overland Route Slope, S	**0.0100**	m/m

Computed Values:

Top Width, T	1.40	m
Channel Area, A	0.14	m^2
Channel Wetted Perimeter, P	1.449	m
Hydraulic Radius, R	0.098	m
Velocity, V	0.9	m/s
Capacity, Q	**121**	L/s
Target Flow (10 year storm)	**19**	L/s

$$Q = VA \qquad A = \frac{y}{2}(b + T)$$
$$V = \frac{1}{n} R^{2/3} S^{1/2} \qquad T = b + y(z_1 + z_2)$$
$$R = \frac{A}{P} \qquad P = b + y\left(\sqrt{1 + z_1^2} + \sqrt{1 + z_2^2}\right)$$





KEY PLAN

DRAWINGS BASED ON SITE PLAN A1.1 PREPARED BY BORTOLOTTO DESIGN ARCHITECTURE. REFER TO ARCHITECTURAL DRAWINGS PREPARED BY BORTOLOTTO FOR DIMENSIONING OF BUILDINGS, SIDEWALKS, SITE LAYOUT DETAILS, LINE PAINTING, DRIVEWAYS, PARKING AREAS, SETBACKS, AND CURBING.

REFER TO LANDSCAPE DRAWINGS PREPARED BY OTHERS FOR SURFACE TREATMENT AND FENCING LAYOUT AND DETAILS.

THE LOCATION OF ALL UNDERGROUND AND ABOVEGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE LOCATION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

THIS DRAWING INDICATES SITE SERVICING AND GRADING INFORMATION ONLY.

FOR NOTES, DETAILS, AND PROJECT REQUIREMENTS RELATED TO CIVIL SCOPE OF WORK, REFER TO NOTES & DETAILS SHEET PREPARED BY COUNTERPOINT ENGINEERING.

LEGEND

- ×289.90EX. EXISTING ELEVATION
- 290.00 EXISTING CONTOUR
- ×290.34 PROPOSED ELEVATION
- EMERGENCY OVERLAND FLOW
- EXISTING FIRE HYDRANT
- EXISTING STORM MANHOLE
- EXISTING SANITARY MANHOLE
- V&B PROPOSED VALVE AND BOX
- WATERMAIN
- STORM SEWER
- PAVED ASPHALT
- SAND PLAY AREA
- STEP JOINT
- SEDIMENT TRAP
- SLT SILT FENCE BARRIER
- PROPERTY LINE
- LIMIT OF CONSTRUCTION

No.	REVISIONS/ISSUED	DATE	BY	CITY
3.	ISSUED FOR TENDER	MAY 17 2017	CB	
2.	ISSUED FOR REVIEW	APR 25 2017	CB	
1.	ISSUED FOR SITE PLAN CONTROL	MAR 22 2017	CB	

counterpoint ENGINEERING
COUNTERPOINT ENGINEERING INC.
8395 Jane St., Suite 100, Vaughan, ON L4K 5Y2 Phone 905.326.1404 Fax 905.326.1405

LICENSED PROFESSIONAL ENGINEER C. A. BUSH 100168880 MAY 15/17 PROVINCE OF ONTARIO
ENGINEER'S STAMP

APPLICANT:
NORTHEASTERN CATHOLIC DISTRICT SCHOOL BOARD
383 BIRCH STREET NORTH
TIMMINS, ONTARIO

SITE LOCATION:
POPE FRANCIS ELEMENTARY SCHOOL ADDITION & RENNOVATION
387 BALSAM STREET NORTH
TIMMINS, ONTARIO

SERVICING AND GRADING PLAN

DESIGNED BY: CB	CHECKED BY: PT	DATE: MARCH 2017
DRAWING BY: ECM	CHECKED BY: CB	PROJECT NO. 17005
SWM BY: ECM	CHECKED BY: CB	
SCALE: 1: 300m (0m 5m 10m 15m)		DRAWING NO. SW-SG

GENERAL NOTES

1. ALL WORK SHALL BE CARRIED OUT IN STRICT ACCORDANCE WITH THE APPLICABLE HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.
2. ALL WORK, MATERIAL AND CONSTRUCTION METHODS TO CONFORM WITH THE LATEST SPECIFICATIONS, POLICIES, REGULATIONS, GUIDELINES AND LAWS FOR THE CITY OF TIMMINS, ONTARIO BUILDING CODE (OBC), MINISTRY OF THE ENVIRONMENT (MOE), ONTARIO PROVINCIAL STANDARD DRAWINGS AND SPECIFICATIONS (OPSD AND OPSS), THE ENVIRONMENTAL PROTECTION ACT AND THE WATER RESOURCES ACT. WHERE A CITY STANDARD EXISTS, IT SHALL BE USED IN PLACE OF THE OPSD/OPSS STANDARDS.
3. THE INFORMATION SHOWN FOR EXISTING INFRASTRUCTURE IS FOR GENERAL INFORMATION ONLY AND THE ACCURACY OR COMPLETENESS OF THE PROVIDED INFORMATION HAS NOT BEEN CONFIRMED BY COUNTERPOINT ENGINEERING INC. ALL EXISTING UTILITIES MUST BE LOCATED AND VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORK. ANY VARIANCE IS TO BE IMMEDIATELY REPORTED TO THE ENGINEER. LOST TIME DUE TO FAILURE OF THE CONTRACTOR TO CONFIRM UTILITY LOCATIONS AND NOTIFY THE ENGINEER OF POSSIBLE CONFLICTS PRIOR TO CONSTRUCTION WILL BE AT THE CONTRACTOR'S EXPENSE.
4. THIS PLAN SHOULD BE READ IN CONJUNCTION WITH ALL OTHER CONSULTANT'S PLANS. ANY DISCREPANCIES SHALL BE CLARIFIED PRIOR TO CONSTRUCTION. INFORMATION RELATED TO DIMENSIONS FOR PRIVATE ROAD, PARKING CURBING, BUILDING LOCATIONS AND SETBACKS SHALL BE TAKEN FROM THE SITE PLAN.
5. ALL DIMENSIONS AND ELEVATIONS TO BE VERIFIED PRIOR TO CONSTRUCTION AND ANY DISCREPANCIES FOUND PRIOR TO OR DURING CONSTRUCTION SHALL BE CLARIFIED WITH THE ENGINEER.
6. ALL WORK IN THE CITY OF TIMMINS RIGHT OF WAY SHALL BE COMPLETED BY A CONTRACTOR APPROVED BY THE CITY OF TIMMINS PRIOR TO THE START OF ANY WORK; AND COMPLETED AS PER CITY OF TIMMINS STANDARDS.
7. INSPECTIONS:
   ALL WORK ON THE RIGHT OF WAY AND EASEMENTS AND ANY WORK RELATING TO WATERMAINS AND SEWERS TO BE INSPECTED BY THE TFN PRIOR TO BACKFILLING.
8. A STREET OCCUPANCY PERMIT IS REQUIRED FOR ANY WORK THAT WILL TAKE PLACE IN THE RIGHT OF WAY. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL PERMITS RELATED TO THE PROPOSED WORKS.
10. ANY DAMAGE MUNICIPAL INFRASTRUCTURE SHALL BE REPAIRED TO APPROVED MUNICIPAL STANDARDS (i.e. PAVING STONE SIDEWALK, ROAD, CURBS, ETC.). ALL WORK MUST BE COMPLETED BY AN APPROVED CONTRACTOR AND SHALL BE COMPLETED AS PER THE CITY OF TIMMINS MANUAL OF ENGINEERING AND DEVELOPMENT STANDARDS, INCLUDING QC REQUIREMENTS.
11. ALL EXISTING LANDSCAPING AND SOD DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER.
12. ALL SURPLUS MATERIAL GENERATED FROM EXCAVATIONS AND SITE WORKS SHALL BE DISPOSED OF OFF-SITE.
8. FOR DETAILED SPECIFICATIONS REGARDING COMPACTION REQUIREMENTS, IMPORT MATERIALS, AND PAVEMENT DESIGN REFER TO GEOTECHNICAL REPORT.
9. CONTRACTOR TO INSTALL SEDIMENT CONTROL FENCE, TO THE SATISFACTION OF THE ENGINEER, PRIOR TO COMMENCEMENT OF WORK, AND SHALL BE RESPONSIBLE FOR MAINTAINING FENCING FOR THE DURATION OF THE CONTRACT.

WATERMAIN

1. ALL MATERIALS AND CONSTRUCTION METHODS MUST CORRESPOND TO THE CURRENT OBC AND CITY OF TIMMINS ENGINEERING AND DEVELOPMENT STANDARDS AND SPECIFICATIONS. WHERE THESE CONFLICT, CLARIFICATION IS TO BE RECEIVED FROM THE ENGINEERING DEPARTMENT OF THE CITY OF TIMMINS.
2. ANY PRIVATE MAIN SYSTEMS BEING CONNECTED TO A CITY OF TIMMINS MAIN MUST MEET ALL AWWA STANDARDS AND CITY OF TIMMINS STANDARDS FOR NEW MAINS, UNLESS OTHERWISE APPROVED BY THE MANAGER OF ENGINEERING.
3. PVC PIPE SHALL BE AS FOLLOWS:
   - DESIGNED TO ACCOMMODATE THE OPERATING PRESSURE PLUS SURGE PRESSURE
   - CERTIFIED BY THE CSA TO CSA B137.3
   - MANUFACTURED BY IPEX, ROYAL PIPE CO. OR OTHER APPROVED EQUIVALENT BY THE CITY OF TIMMINS
   - THE PIPE SHALL BE DR 18
   - EACH END OF PIPE LENGTH SHALL BE FACTORY SEALED
4. GASKETS SHALL BE MADE OF SBR. GASKETS SHALL BE REMOVABLE FROM THE PIPE GASKET FACE IN ORDER TO AID CLEANING THE BELL AND SPIGOT PRIOR TO ASSEMBLY.
5. FITTINGS SHALL BE OF CAST IRON OR DUCTILE IRON (CEMENT LINED) WITH MECHANICAL JOINTS AND BE SUITABLE FOR A PRESSURE RAISING OF 800 KPA. THE FITTINGS SHALL CONFORM TO CSA OR 8131. 10, ASA A21. 10 (AWWA C110) SPECIFICATIONS. THE MECHANICAL JOINT SHALL BE MANUFACTURED IN ACCORDANCE WITH CSA B131. 0, ASA A22. 11 AWWA, CIII).
6. GATE VALVES SHALL CONFORM TO AWWA SPECIFICATION C500 OR TO RESILIENT SEAT GATE VALVE C507. THE VALVES SHALL BE SOLID WEDGE WITH NON – RISING STEMS AND SHALL TURN COUNTERCLOCKWISE TO OPEN.
7. VALVES SHALL BE EITHER NO. 55 AS MANUFACTURED BY CANADA VALVE AND HYDRANT COMPANY LIMITED, WITH NON – RISING SPINDLE OR MUELLER GATE VALVE DESIGNATION A– 2380 –21. VALVE BOXES SHALL BE MVB POLYMER BOTTOM SECTION COMPLETE WITH CAST IRON LID AND 300MM DUCTILE IRON ADJUSTABLE TAPERED TOP, SUITABLE FOR A TRENCH DEPTH OF 2.4M AS MANUFACTURED BY MUELLER OR APPROVED EQUIVALENT. JENKINS VALVES IN SIZES 100MM TO 300MM ARE ALSO ACCEPTABLE. ABK VALVES ARE ALSO APPROVED AND MAY BE USED. TESTING OF CONDUCTIVITY SHALL BE CONDUCTED FOR ENTIRE LENGTH OF WATERMAIN.
8. MECHANICAL JOINT RESTRAINTS SHALL BE SIGMA (PV LOK), ROMAC GRIP RING & STAR 3500 SERIES AND SHALL CONFORM TO ASTM F1674 –96 AND MANUFACTURER'S SPECIFICATION. RESTRAINING COLLARS SHALL BE ATTACHED TO THE FITTING BELL BEHIND THE GASKET FACE. TIE RODS SHALL RUN FROM THE COLLAR BEHIND THE BELL TO A SUITABLE COLLAR ON THE CONNECTING PIPE.
9. CONCRETE THRUST BLOCKS SHALL CONFORM TO OPSS MUNI 1350 WITH COMPRESSIVE STRENGTH OF 20 MPA. THRUST BLOCKS SHALL BE CONSTRUCTED AS PER OPSD 1103.010 AND OPSD 1103.020. PVC PRESSURE PIPE
10. CATHODIC PROTECTION FOR PVC WATER SYSTEMS AS PER OPSD 1109.11
11. WATERMAINS AND/OR WATER SERVICES ARE TO HAVE A MINIMUM HORIZONTAL SPACING OF 2.5M FROM SAN/STM SEWERS.
12. WATERMAINS MUST HAVE A MINIMUM VERTICAL CLEARANCE OF 0.50M OVER / UNDER SEWERS AND ALL OTHER UTILITIES WHEN CROSSING.
13. WATERMAINS SHALL BE INSTALLED AT A MINIMUM COVER OF 2.4M FROM PROPOSED GROUND AND MUST BE MAINTAINED AT ALL TIMES.
14. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A DETAILED DISINFECTION PROCEDURE, SEALED BY A PROFESSIONAL ENGINEER LICENSED IN ONTARIO, FOR APPROVAL THAT MEETS THE REQUIREMENTS OUTLINED IN THE 400 SERIES–SPECIAL PROVISION WAT–11. IF A CONFLICT OR DISCREPENCY BETWEEN THE AWWA STANDARD C651 AND THE SPECIAL PROVISION WAT–11, THE MOST STRINGENT REQUIREMENT SHALL APPLY.
15. PRIOT TO CONNECTION TO EXISTING, NEW WATERMAIN TO BE CHLORINATED, TESTED AND INSPECTED TO THE SATISFACTION OF THE ENGINEER.
16. ALL WATERMAINS MUST SUCCESSFULLY PASS THE PRESSURE AND LEAKAGE TESTS TO BE CONDUCTED BY THE PROPONENT UNDER THE DIRECTION OF THE CONSULTANT AND THE CITY. THE CITY OF TIMMINS WATERMAIN HYDROSTATIC TEST REPORT (OPSS 441 LATEST REVISION) MUST BE COMPLETED BY THE CONSULTANT AND SIGNED BY THE CITY REPRESENTATIVE ON THE SITE.

CONSTRUCTION CONFORMANCE REQUIREMENTS

1. THE FOLLOWING ITEMS ARE TO BE PROVIDED TO COUNTERPOINT NO LESS THAN 10 WORKING DAYS PRIOR TO THE REQUEST FOR A LETTER OF GENERAL CONFORMANCE/FINAL CERTIFICATION. THE DOCUMENTS MUST INDICATE THAT THE SITE HAS BEEN CONSTRUCTED IN GENERAL CONFORMANCE WITH THE APPROVED DESIGN;
2. AS–CONSTRUCTED TOPOGRAPHIC/UNDERGROUND SURVEY COMPLETED BY A REGISTERED LAND SURVEYOR AS PER THE SPECIFICATIONS OUTLINED WITHIN THE CONTRACT DOCUMENT;
3. GEOTECHNICAL ENGINEER CERTIFICATION LETTER, WHICH INCLUDES SUB–GRADE COMPACTION RESULTS, BEDDING AND BACKFILL COMPACTION AND MATERIAL ACCEPTANCE, GRANULAR, ASPHALT, SITE CONCRETE MATERIAL ACCEPTANCE AND COMPACTION RESULTS;
4. SHOULD THE SUBMITTED MATERIALS INDICATE NON–CONFORMANCE OR DEFICIENCIES, THEY MUST BE ADDRESSED TO COUNTERPOINT'S SATISFACTION WITH AN UPDATED SUBMITTAL PRIOR TO ISSUANCE OF A LETTER OF GENERAL CONFORMANCE/FINAL CERTIFICATION;
5. COUNTERPOINT MUST ALSO COMPLETE ALL NECESSARY SITE INSPECTIONS AS OUTLINED IN THE APPROVED SERVICE PROGRAM, WITH ALL DEFICIENCIES ADDRESSED TO COUNTERPOINT'S SATISFACTION.

LEGAL & TOPOGRAPHY

PROVIDED BY: PELTO CONSULTING

BENCHMARK

EXISTING ST PATRICK SCHOOL – NE AND SW CORNER, ACCESS CENTER EAST SIDE ENTRANCE AND SW CORNER.

NOTE: ELEVATIONS SHOWN HEREON ARE GEODETIC AND ARE DERIVED FROM LEICA SMARTNET GPS RTK NETWORK.

STORM SEWER NOTES

1. CONSTRUCTION OF STORM SEWERS AND APPURTENANCES SHALL BE CARRIED OUT IN CONFORMANCE WITH THE CITY OF TIMMINS STANDARD SPECIFICATIONS FOR STORM SEWERS.
2. STORM SEWERS UP TO 600mm DIAMETER SHALL BE PVC ULTRA RIB (UNLESS OTHERWISE NOTED) CONFORMING TO C.S.A. SPECIFICATION B182.4–M1990 AND B182.4–M1992 OR LATEST REVISION THEREOF.
3. PIPE JOINTS SHALL BE BY MEANS OF APPROVED RUBBER GASKETS CONFORMING TO C.S.A. SPECIFICATION A257.3–M1982 OR LATEST REVISION THEREOF..
4. SEWERS SHALL BE CONSTRUCTED WITH BEDDING AS PER CITY OF TIMMINS DESIGN STANDARDS. MINIMUM BEDDING REQUIREMENTS SHALL BE CLASS B TYPE AS PER CITY STANDARD DRAWING 341 UNLESS OTHERWISE NOTED BY THE MANAGER OF ENGINEERING.
5. TRENCH BACKFILL SHOULD BE PLACED IN 200mm LIFTS AND COMPACTED TO 100% SPMDD UNLESS OTHERWISE DIRECTED BY THE GEOTECHNICAL ENGINEER.
6. ALL STORM SEWER MANHOLES TO BE BENCHED IN ACCORDANCE WITH OPSD 701.021.
7. ALL STORM MANHOLES SHALL BE AS PER OPSD 701.010 TO 701.014 (SIZE AS SHOWN) WITH FRAME AND COVER AS PER OPSD 401.010, TYPE 'B'. MANHOLE TOPS ARE TO BE SET TO BASE COURSE ASPHALT GRADE AND THEN ADJUSTED TO FINAL GRADE. GRADE AND CROSSFALL ADJUSTMENT SHALL BE MADE USING PRODUCTS SPECIFICALLY MANUFACTURED FOR THAT PURPOSE. CONCRETE MODULAR ADJUSTMENT RINGS ARE TO BE USED TO ADJUST THE MANHOLE TO FINAL GRADE UNLESS SPECIFIED OTHERWISE.
8. CATCHBASINS MUST BE OF THE PRECAST TYPE AS SHOWN ON THE OPSD DRAWINGS 705.010 OR 705.020.
9. THE FRAME AND GRATE FOR CATCHBASINS SHALL BE OPSD 400.020. CATCHBASIN GRATES ARE TO BE RAMPED USING HOT–MIX ASPHALT. CATCHBASINS AT LOW POINTS SHALL BE SET TO BASE ASPHALT AND ADJUSTED TO SURFACE COURSE.
10. WHERE CATCHBASINS ARE CONNECTED DIRECTLY TO SEWERS, PRE–MANUFACTURED TEES SHALL BE USED.
11. ALL STORM SERVICES TO THE BUILDING TO BE TERMINATED 1.5m FROM BUILDING FACE. BUILDING CONTRACTOR IS RESPONSIBLE FOR FINAL CONNECTIONS.

GRADING NOTES

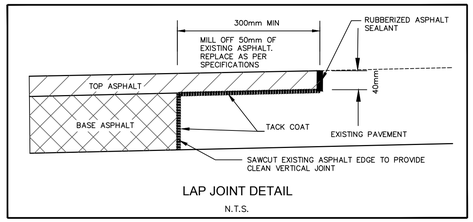
1. EXCEPT WHERE INDICATED, ALL DIFFERENCES IN GRADE BETWEEN THIS SITE AND ADJOINING LANDS ARE TO BE TAKEN UP WITH A MAXIMUM SLOPE OF ONE (1) VERTICAL AND THREE (3) HORIZONTAL, SODDED AND/OR PAVED, AND/OR RETAINING WALLS UNLESS OTHERWISE SPECIFIED.
2. INSPECTION OF SUB–GRADE REQUIRED BY ENGINEER/GEOTECHNICAL CONSULTANT PRIOR TO PLACEMENT OF PAVEMENT STRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF INSPECTIONS WITH ENGINEER/GEOTECHNICAL CONSULTANT.
3. ALL IMPORT FILL MATERIAL MUST BE REVIEWED, TESTED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT ON THE SITE. ALL IMPORT MATERIALS USED TO ACHIEVE DESIGN GRADE IN PARKING LOT AREA SHALL CONFORM TO RECOMMENDATIONS FROM THE GEOTECHNICAL ENGINEER. ALL FILL MATERIAL SHALL BE PLACED IN 300mm LIFTS AS PER GEOTECHNICAL RECOMMENDATIONS.
4. ALL DISTURBED GRASSED AREAS OUTSIDE OF PROPERTY LIMITS SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER. ALL TREE AND SHRUB RELOCATION SHALL BE SUBJECT TO APPROVAL BY THE LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL BEAR ALL COSTS FOR REPLACEMENT OF ALL TREES WHICH ARE DAMAGED OR DESTROYED UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS.
5. EARTHWORKS AND COMPACTION OF ALL MATERIALS TO CONFORM WITH RECOMMENDATIONS IN THE GEOTECHNICAL REPORT AND APPLICABLE ADDENDUMS.
6. LIGHT AND HEAVY DUTY ASPHALT PAVEMENT TO BE CONSTRUCTED AS PER GEOTECHNICAL REPORT AND AS PER CITY OF TIMMINS SPECIFICATIONS.
7. ALL PAVEMENT MARKING, LINE PAINTING, DIRECTIONAL LINES/ARROWS ETC. SHALL BE PLACED IN ACCORDANCE WITH THE SITE PLAN. LINE PAINTING AND DIRECTIONAL SYMBOLS SHALL BE APPLIED WITH A MINIMUM OF TWO COATS OF ORGANIC SOLVENT BASED PAINT AS PER DIVISION 2 SPECIFICATIONS.
8. ALL DISTURBED AREAS SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER. ANY REMOVAL OR RELOCATION OF TREES SHALL BE SUBJECT TO APPROVAL OF LANDSCAPE ARCHITECT.
9. STEP JOINTS TO BE USED WHERE PROPOSED ASPHALT MEETS EXISTING ASPHALT.
10. REFER TO LANDSCAPE DRAWINGS AND THE ARCHITECTURAL SITE PLAN FOR THE LOCATION AND TYPE OF ALL HARD LANDSCAPE SURFACES INCLUDING CONCRETE SIDEWALKS, CONCRETE ISLANDS, PAVING STONES, COLORED CONCRETE, AND LINE PAINTING/ LINES. IN THE EVENT OF DISCREPANCY, THE CONTRACTOR SHALL INFORM THE ENGINEER.
11. CONTRACTOR SHALL INSTALL TEMPORARY SAFETY FENCE, BARRICADES, SIGNAGE DETOUR ROUTES ETC. AS REQUIRED TO ENSURE PUBLIC SAFETY (FOR BOTH VEHICULAR TRAFFIC AND PEDESTRIANS) IN ACCORDANCE WITH ALL THE REGULATIONS.
12. SILT FENCE(S) TO BE INSTALLED AND MAINTAINED TO PREVENT SILT FLOWING ONTO ADJACENT LANDS UNTIL THE COMPLETION OF SODDING ACTIVITIES.
13. CONSTRUCTION ACCESS SHALL BE CONSTRUCTED WITH MINIMUM DEPTH OF 450mm CRUSHED STONE BASE FROM MUNICIPAL CURB OR EDGE OF PAVEMENT TO THE PROPERTY LINE, TO THE SATISFACTION OF THE CITY.

EROSION AND SEDIMENT CONTROL NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER INSTALLATION AND MAINTENANCE OF ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES, INCLUDING REMOVAL UPON COMPLETION OF THE PROJECT.
2. THE LOCATION OF ALL EROSION AND SEDIMENT CONTROL MEASURES ARE SHOWN SCHEMATICALLY.
3. TEMPORARY MUD MATS, SILT FENCE AND SEDIMENT TRAPS ON CATCHBASIN STRUCTURES ARE TO BE INSTALLED PRIOR TO STRIPPING TOPSOIL AND TO BE MAINTAINED UNTIL CONSTRUCTION IS COMPLETE.
4. GRANULAR DYKES/SILT FENCE BARRIERS TO BE INSTALLED AS REQUIRED AND TO BE MAINTAINED UNTIL ALL CONSTRUCTION IS COMPLETE AND SUB–SURFACES ARE STABILIZED.
5. ALL DISTURBED AREAS TO BE REINSTATED WITH 150mm TOPSOIL AND SOD IMMEDIATELY UPON COMPLETION OF WORKS. NURSERY SOD OR HYDRO SEEDING AS DIRECTED BY THE ENGINEER.
6. DURING GRADING OPERATIONS, ALL STORM RUNOFF SHALL BE CONTROLLED TO PREVENT SURFACE RUNOFF FROM LEAVING THE SITE UNTREATED.
7. VEHICLE REFUELING AND SOIL STOCKPILING SHALL BE UNDERTAKEN AWAY FROM AND VALLEY OR WATERCOURSE.
8. ADDITIONAL EROSION AND SEDIMENT CONTROL MATERIALS (i.e. SILT FENCE, STRAW BALES, CLEAR STONE, ETC.) ARE TO BE KEPT ON SITE FOR EMERGENCIES AND REPAIRS.
9. EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE CONTINUOUSLY EVALUATED AND REPLACED/MAINTAINED AS REQUIRED TO ENSURE THEIR EFFECTIVENESS. THE ESC MEASURES ARE TO BE INSPECTED ON A WEEKLY BASIS, AFTER ANY RAIN OR SNOW MELT EVENT, AND ANY MAINTENANCE/REPAIR/REPLACEMENT REQUIRED IS TO BE DONE WITHIN 48 HOURS. DURING EXTENDED RAIN/SNOWMELT PERIODS, THE ESC MEASURES ARE TO BE INSPECTED DAILY.
10. ALL CATCHBASINS/CATCHBASIN MANHOLES ARE TO BE PROTECTED PER DETAIL IMMEDIATELY AFTER INSTALLATION. EXISTING CATCHBASINS/CATCHBASIN MANHOLES AND ARE TO BE PROTECTED AT START OF CONSTRUCTION. PROTECTION IS TO BE MAINTAINED UNTIL ALL CONSTRUCTION IS COMPLETE.
11. ALL TOPSOIL STOCKPILES INTENDED TO REMAIN IN PLACE FOR MORE THAN 30 DAYS ARE REQUIRED TO BE SEEDED TO PREVENT WIND EROSION. HEIGHT OF TOPSOIL STOCKPILES SHOULD NOT EXCEED 2m.
12. THE CONTRACTOR SHALL UNDERTAKE MEASURES TO CONTROL DUST DURING CONSTRUCTION, RELATED SOIL EXCAVATION OR DURING SOIL REMENDIATION/EXCAVATION ACTIVITIES, AND SHOULD INCLUDE THE FOLLOWING AS APPLICABLE:

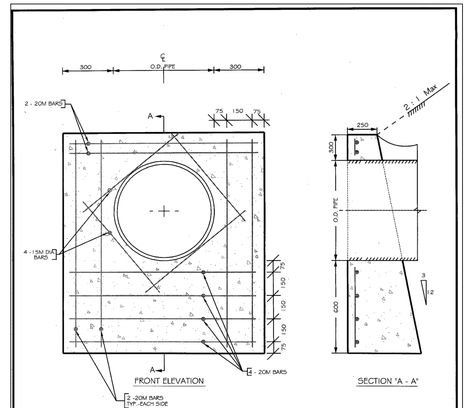
    A) THE DAILY, OR MORE FREQUENTLY IF REQUIRED, WETTING OF ALL SOFT AND HARD SURFACES AND ANY EXCAVATION FACE ON THE SITE, WITH THE ADDITION OF CALCIUM CHLORIDE OR OTHER RECOGNIZED MATERIALS AS A DUST SUPPRESSANT, IF REQUIRED;

    B) THE DAILY CLEANING OF THE ROAD PAVEMENT AND SIDEWALKS FOR THE ENTIRE FRONTAGE(S) OF THE PROPERTY TO A DISTANCE OF TWENTY–FIVE (25) METRES FROM THE PROPERTY LINE.
13. SINCE THE LOCATION AND TYPE OF EROSION AND SEDIMENT CONTROL MEASURES WILL BE MODIFIED AS THE CONSTRUCTION OF THE SITE PROCEEDS, PLANS ARE DYNAMIC AND ADJUSTMENTS TO THE LOCATION AND TYPE OF ESC MEASURES WILL BE REQUIRED TO REDUCE THE AMOUNT OF SEDIMENT LEAVING THE SITE AND ONTO ADJACENT AREAS.
14. AMOUNT OF BARE SOIL EXPOSED AT ONE TIME IS TO BE MINIMIZED. DISTURBED SOILS ARE TO THE STABILIZED AS QUICKLY AS PRACTICAL. ALL STRIPPED AND BARE SOIL TO BE STABILIZED WITHIN 30 DAYS OF INACTIVITY.



LAP JOINT DETAIL

N.T.S.



Notes:
I) IF STEEL GRATE IS REQUIRED, 4 - ANCHOR BOLTS TO BE SET AS PER OPSD #604.05A 4 INTO THE CONCRETE AS PER BOLT LAYOUT SHOWN ON FORM 373 AND 374.
A) CLASS OF CONCRETE 30 MPA
B) REINFORCING BARS TO HAVE 75mm MINIMUM COVER
C) ALL DIMENSIONS ARE IN MILLIMETERS OR METERS UNLESS OTHERWISE SPECIFIED
D) AIR ENTRAINMENT 7% (+ I .5% OR - I .5%)

ENGINEERING DEPARTMENT — APPROVED BY: P. SEGUIN, P. Eng

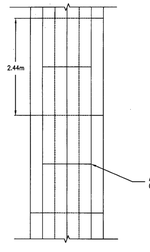
CONCRETE END PROTECTION DETAIL

NO.	DATE	DESCRIPTION

SCALE: N.T.S. | DRAWN BY: G.H. | CHECK BY: C.M.

DATE: JULY 2013 | DRAWING NO: 347

STYROFOAM H.I. 40 – DOW CHEMICAL INDIVIDUAL STYROFOAM SIZES ARE 600mm X 2440mm



NOTES:
1) 100mm STYROFOAM INSULATION TWO 50mm LAYERS.
2) 50mm STYROFOAM INSULATION TWO 25mm LAYERS.

ENGINEERING DEPARTMENT — APPROVED BY: P. SEGUIN, P. Eng

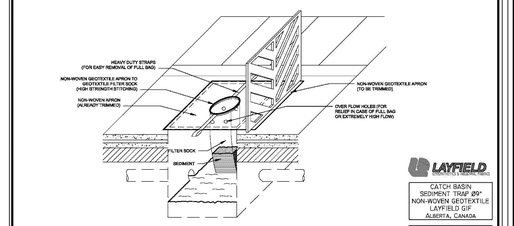
STYROFOAM INSULATION

NO.	DATE	DESCRIPTION

SCALE: N.T.S. | DRAWN BY: S.G. | CHECK BY: C.M.

DATE: JULY 2013 | DRAWING NO: 380

NO.	REVISIONS	DATE (MM/DD/YY)	BY



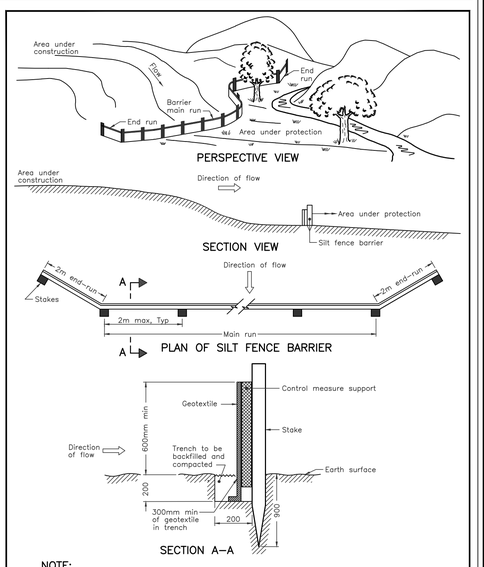
LAYFIELD

CATCH BASIN SEDIMENT TRAP Ø9" NON-WOVEN GEOTEXTILE LAYFIELD GP ALBERTA, CANADA

Date No. | Page No.

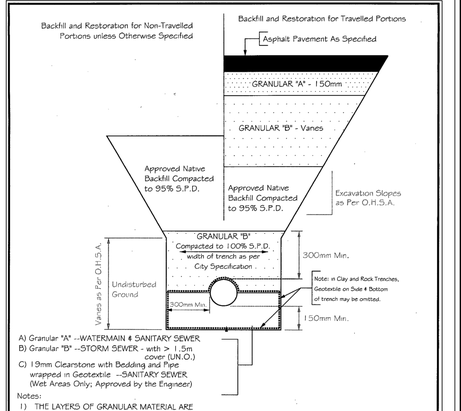
ENG. I OF I SCALE: 1:25
DRN. AP CHK. AP APP.
DATE: 02/05/07 DWG No.

ITEM	PART NAME	DESCRIPTION
1	CATCH BASIN SEDIMENT TRAP	APRON 36"x39" FILTER SOCK Ø9"x58" LONG



NOTE:
A All dimensions are in millimetres or metres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	1996 02 01	Rev
HEAVY DUTY SILT FENCE BARRIER	Date	
	OPSD – 219.130	



A) Granular "A" –WATERMAIN & SANITARY SEWER
B) Granular "B" –STORM SEWER - with > 1.5m cover (UN.O.)
C) 19mm Clearstone with Bedding and Pipe wrapped in Geotextile –SANITARY SEWER (Wet Areas Only; Approved by the Engineer)

Notes:
1) THE LAYERS OF GRANULAR MATERIAL ARE TO BE COMPACTED TO 100% S.P.D.
2) ALL GRANULAR MATERIAL IS TO MEET CITY SPECIFICATIONS.
3) TRENCH EXCAVATION MUST CONFORM TO THE CONSTRUCTION SAFETY ACT (LATEST EDITION).

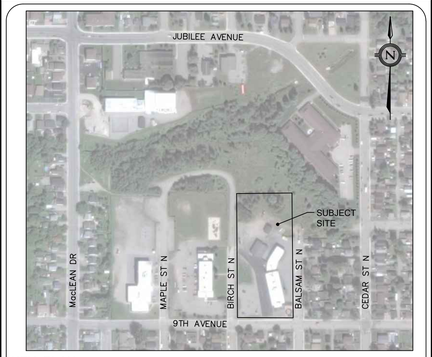
ENGINEERING DEPARTMENT — APPROVED BY: P. SEGUIN, P. Eng

SEPARATE TRENCH SEWERS & WATERMAIN

NO.	DATE	DESCRIPTION

SCALE: N.T.S. | DRAWN BY: D.S. | CHECK BY: C.M.

DATE: JULY 2013 | DRAWING NO: 341



KEY PLAN

LEGEND

No.				
3.	ISSUED FOR TENDER	MAY 17 2017	CB	
2.	ISSUED FOR REVIEW	APR 25 2017	CB	
1.	ISSUED FOR SITE PLAN CONTROL	MAR 22 2017	CB	
No.	REVISIONS/ISSUED	DATE	BY	CITY

counterpoint ENGINEERING

COUNTERPOINT ENGINEERING INC.
8395 Jane St., Suite 100, Vaughan, ON L4K 5Y2 Phone 905.326.1404 Fax 905.326.1405

LICENSED PROFESSIONAL ENGINEER C. A. BUSH 100163880 MAY 15/17 PROVINCE OF ONTARIO

ENGINEER'S STAMP

APPLICANT:
NORTHEASTERN CATHOLIC DISTRICT SCHOOL BOARD
383 BIRCH STREET NORTH
TIMMINS, ONTARIO

SITE LOCATION:
POPE FRANCIS ELEMENTARY SCHOOL ADDITION & RENNOVATION
387 BALSAM STREET NORTH
TIMMINS, ONTARIO

NOTES & DETAILS PLAN

DESIGNED BY: CB	CHECKED BY: PT	DATE: MARCH 2017
DRAWING BY: ECM	CHECKED BY: CB	PROJECT NO. 17005
SWM BY: ECM	CHECKED BY: CB	
SCALE: 1: 300m (0m 5m 10m 15m)		DRAWING NO. SW-ND

GENERAL NOTES

1.0 GENERAL NOTES

1.1 CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF ONTARIO REGULATION 332/12 (THE BUILDING CODE), AS AMENDED, AND ANY APPLICABLE ACTS OF AUTHORITY HAVING JURISDICTION.

1.2 READ STRUCTURAL DRAWINGS IN CONJUNCTION WITH THE SPECIFICATIONS AND ALL OTHER CONTRACT DOCUMENTS.

1.3 BEFORE PROCEEDING WITH THE WORK THE CONTRACTOR SHALL CHECK ALL DIMENSIONS SHOWN ON THE STRUCTURAL DRAWINGS WITH THE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS, AND AGAINST EXISTING SITE CONDITIONS. REPORT ANY DISCREPANCIES TO THE CONSULTANT(S). PRIOR TO PROCEEDING WITH ANY WORK.

1.4 STRUCTURAL DRAWINGS MUST NOT BE SCALED.

1.5 REFER TO THE ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR THE SIZE AND LOCATION OF ALL TRENCHES, PITS, SUMPS, SLOPES, EQUIPMENT, DEPRESSIONS, GROOVES AND CHAMFERS NOT INDICATED ON THE STRUCTURAL DRAWINGS. WHERE SHOWN ON THE STRUCTURAL DRAWINGS ALL ABOVE LISTED ITEMS ARE ONLY APPROXIMATELY NOTED IN TERMS OF SIZE AND LOCATIONS AND MUST BE CO-ORDINATED WITH THE ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS.

1.6 REFER TO THE ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR THE SIZE AND LOCATION OF ALL OPENINGS AND SLEEVES NOT SHOWN ON THE STRUCTURAL DRAWINGS. HOWEVER, OBTAIN APPROVAL FROM THE STRUCTURAL CONSULTANT PRIOR TO CUTTING/ INSTALLING ANY OPENINGS, SLEEVES, ETC, WHICH ARE NOT SHOWN ON THE STRUCTURAL DRAWINGS.

1.7 TYPICAL STRUCTURAL DETAILS, NOTES UNDER PLANS, AND SCHEDULES ON THE STRUCTURAL DRAWINGS GOVERN THE WORK. IF DETAILS, NOTES, ETC. DIFFER ON THE DRAWINGS THE MOST STRINGENT SHALL GOVERN.

1.8 THE CONTRACTOR SHALL PROVIDE ALL LABOUR, MATERIALS, TOOLS, AND EQUIPMENT REQUIRED TO CARRY OUT THE WORK.

1.9 IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL TEMPORARY WORKS, INCLUDING, BUT NOT LIMITED TO SHORING AND BRACING, REQUIRED TO COMPLETE THE WORK. IT SHALL ALSO BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL NECESSARY BRACING, SHORING, SHEET PILING OR OTHER TEMPORARY SUPPORTS REQUIRED TO SAFEGUARD WORKERS, THE GENERAL PUBLIC, AND ALL EXISTING OR ADJACENT STRUCTURES AFFECTED BY THE WORK.

2.0 FOUNDATIONS

2.1 A COPY OF THE SOILS REPORT, PREPARED BY EXP SERVICES LTD, IN THEIR REPORT NUMBER SUD-000146596-AG AND DATED APRIL 21, 2017, IS AVAILABLE FROM THE CONSULTANT(S). READ AND BECOME THOROUGHLY FAMILIAR WITH THE REPORT AND ITS FINDINGS.

2.2 FOUND ALL FOOTINGS AND UNDERPINNING ON UNDISTURBED SOIL CAPABLE OF SUSTAINING AN ULTIMATE LIMIT STATE / SERVICE LIMIT STATE BEARING VALUE (ULS/ SLS) OF 125 KPA / 75 KPA. SOIL AT THE UNDERSIDE OF THE FOOTINGS AND UNDERPINNING IS TO BE INSPECTED AND APPROVED BY A REPRESENTATIVE OF THE GEOTECHNICAL CONSULTANT BEFORE PLACING CONCRETE.

2.3 FOUND ALL END-BEARING STEEL PILES ON SOUND, UNDISTURBED BEDROCK.

2.4 ALL EXTERIOR GRADE BEAMS AND FOOTINGS AND ANY OTHER FOOTINGS EXPOSED TO FREEZING IN THE FINISHED BUILDING SHALL BE FOUNDED AT A MINIMUM OF 200 MM BELOW FINISHED GRADE, UNLESS OTHERWISE NOTED. GRADE BEAMS AND FOOTINGS EXPOSED TO FROST ACTION DURING CONSTRUCTION SHALL BE PROTECTED BY A MINIMUM OF 2000 MM OF EARTH OR ITS EQUIVALENT TO PREVENT FREEZING.

2.5 THE LINE OF SLOPE BETWEEN ADJACENT EXCAVATIONS FOR FOOTINGS OR ALONG STEPPED FOOTINGS SHALL NOT EXCEED A RISE OF 7 IN A RUN OF 10. A MAXIMUM STEP OF 600 MM IS PERMITTED FOR STEPPED FOOTINGS.

2.6 DO NOT PLACE BACKFILL AGAINST WALLS RETAINING EARTH (OTHER THAN CANTILEVER WALLS) UNTIL THE FLOOR CONSTRUCTION AT THE TOP AND BOTTOM OF THE WALLS IS POURED AND HAS ATTAINED 70% OF ITS SPECIFIED 28-DAY STRENGTH.

2.7 CARRY OUT BACKFILLING AGAINST FOUNDATION WALLS WHERE THERE IS GRADE ON BOTH SIDES IN A MANNER SUCH THAT THE LEVEL OF BACKFILLING ON ONE SIDE OF THE WALL IS NEVER MORE THAN 500 MM DIFFERENT FROM THE LEVEL ON THE OTHER SIDE OF THE WALL.

2.8 KEEP EXCAVATIONS CONTINUOUSLY DRY BEFORE CONCRETE IS PLACE. IF THE SOIL IS SOFTENED BY WATER OR FOOT TRAFFIC, THE EXCAVATION SHALL BE EXTENDED BELOW THE SOFTENED MATERIAL AND THE BOTTOM OF THE FOOTINGS LOWERED TO SUIT.

2.9 PROVIDE FOOTINGS BELOW ALL LOAD BEARING MASONRY WALLS AND ALL NON-LOAD BEARING MASONRY WALLS THICKER THAN 190 MM AS PER TYPICAL DETAILS. ALL NON-LOAD BEARING MASONRY WALLS 190 MM THICK OR LESS SHALL BE SUPPORTED ON A THICKENING OF THE SLAB-ON-GRADE AS PER TYPICAL DETAILS.

3.0 END-BEARING STEEL PILES

3.1 STRUCTURAL STEEL DESIGN DETAILS AND CONNECTIONS SHALL CONFORM TO CSA S16 AND SHALL BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER EXPERIENCED IN THIS TYPE OF WORK.

3.2 WELDING SHALL CONFORM TO CSA W59 AND BE PERFORMED BY A FABRICATOR CERTIFIED TO CSA W47.1.

3.3 MATERIALS

3.3.1 HP SHAPES - CONFORM TO THE REQUIREMENTS OF CSA G40.21 GRADE 350W

3.3.2 ALL OTHER - CONFORM TO THE REQUIREMENTS OF CSA G40.21 GRADE 300W

3.4 DESIGN AND EXECTION

3.4.1 REFER TO SPECIFICATIONS 31 62 00.

4.0 SLAB-ON-GRADE

4.1 PLACE SLAB-ON-GRADE ON SUB GRADE MATERIAL CAPABLE OF SUSTAINING A MINIMUM SERVICE LIMIT STATE (SLS) BEARING CAPACITY OF 25 KPA WITHOUT SETTLEMENT RELATIVE TO THE BUILDING FOOTINGS.

4.2 PRIOR TO PLACING SLAB-ON-GRADE PLACE 200 MM OF 20 MM MAXIMUM SIZE CLEAR CRUSHED STONE OVER THE SUB-GRADE. THOROUGHLY ROLL AND CONSOLIDATE TO THE LINES AND LEVELS REQUIRED.

5.0 CONCRETE

5.1 MATERIALS

5.1.1 CONCRETE

i) CONFORM TO THE REQUIREMENTS OF CSA STANDARD A23.1 AND THE FOLLOWING FOR STRENGTH, SLUMP, WATER-TO-CEMENTING MATERIALS CONTENT AND AIR CONTENT.

ii) NOMINAL MAXIMUM SIZE OF AGGREGATE SHALL BE 20 MM (3/4"). USE SMALLER AGGREGATES AS APPROPRIATE IN AREAS OF CONGESTED REINFORCING STEEL OR TO IMPROVE WORKABILITY. MODIFY MIX DESIGNS TO SUIT.

STRUCTURAL ELEMENT AND EXPOSURE	EXPOSURE CLASS PER CSA A23.1	CONCRETE STRENGTH f'c (MPa)	SLUMP (mm)	MAX W/C RATIO	AIR CONTENT
FOOTINGS AND CAPS		25	80		
GRADE BEAMS FOUNDATION WALLS ADJACENT TO PAVING	C-1	35	80	0.40	5%-8%
SLABS-ON-GRADE NOT EXPOSED TO CHLORIDES OR FREEZING		25	40*	0.45	
FRAMED SLABS AND BEAMS		30	80		
FRAMED SLABS AND BEAMS EXPOSED TO DE-ICING CHEMICALS	C-1	35	80	0.40	5%-8%
INTERIOR WALLS		30	80		
TOPPINGS ON CONCRETE		25	40*		
SLAB ON METAL DECK		25	60		
EXTERIOR PAVING	C-2	32	60	0.45	5%-8%
SLAB ON GRADE IN PARKING GARAGE	C-4	25	60	0.55	4%-7%

TOLERANCE FOR SLUMP SHALL BE +/-20MM FOR SPECIFIED SLUMP LESS THAN 80MM AND +/- 30MM FOR SPECIFIED SLUMP BETWEEN 80MM AND 170MM

* SPECIAL CONCRETE HANDLING AND PLACING METHODS OR THE USE OF A SUPER PLASTICIZER WILL BE REQUIRED TO PLACE THIS CONCRETE. FINAL PLASTICIZED SLUMP SHALL BE +/- 125MM.

** WHERE AGGREGATES SMALLER THAN 14MM ARE USED, INCREASE AIR CONTENT BY 1%

*** CONCRETE EXPOSED TO DE-ICING CHEMICALS SHALL HAVE DCI CORROSION INHIBITOR @ 11L/M^3 DOSAGE OR APPROVED EQUIVALENT.

5.1.2 REINFORCEMENT

i) CONFORM TO THE REQUIREMENTS OF CSA G30 SERIES.

ii) REINFORCING BARS SHALL HAVE A MINIMUM YIELD STRENGTH FY = 400 MPA.

iii) WELDED WIRE FABRIC SHALL HAVE A MINIMUM YIELD STRENGTH FY = 386 MPA. SUPPLY IN FLAT SHEETS.

5.2 EXECUTION

5.2.1 CONCRETE MIXING, TRANSPORTATION, HANDLING AND PLACING SHALL CONFORM TO CSA A23.1.

5.2.2 DOWELS

i) PROVIDE DOWELS TO WALLS AND COLUMNS SIMILAR IN NUMBER, SIZE, AND SPACING TO THE VERTICAL STEEL IN THE WALL OR COLUMN EXCEPT WHERE NOTED OTHERWISE.

ii) ALL DOWELS SHALL HAVE A MINIMUM EMBEDMENT EQUIVALENT TO THE STRAIGHT TENSION EMBEDMENT LENGTH CORRESPONDING TO THE SIZE OF BAR. DOWELS FROM WALLS TO SLABS SHALL HAVE A MINIMUM EMBEDMENT OF 600 MM INTO WALLS AND SLABS UNLESS OTHERWISE NOTED OR SHOWN.

5.2.3 CONSTRUCTION JOINTS

i) HORIZONTAL CONSTRUCTION JOINTS SHALL NOT BE MADE IN BEAMS OR JOISTS UNLESS SHOWN OR REVIEWED BY THE CONSULTANT(S).

ii) VERTICAL CONSTRUCTION JOINTS MAY BE MADE ONLY AT MID-SPAN OF BEAMS, JOISTS, AND SLABS UNLESS OTHERWISE SHOWN OR DIRECTED AND SHALL BE CLEAR OF SUPPORTS AND POINT LOADS. ALL SUCH JOINTS SHALL BE REVIEWED BY THE CONSULTANT(S) PRIOR TO CONCRETING.

iii) PROVIDE 38 X 89 KEYS AT CONSTRUCTION JOINTS UNLESS OTHERWISE NOTED.

iv) CONSTRUCTION JOINTS FOR WALLS ARE BASED UPON VERTICAL JOINTS AT A MAXIMUM SPACING OF 10000MM.

5.2.4 OPENINGS, SLEEVES, EMBEDDED SERVICES, INSERTS

i) DO NOT PLACE SLEEVES OR OPENINGS THROUGH STRUCTURAL ELEMENTS WITHOUT APPROVAL BY THE CONSULTANT(S).

ii) NO OPENINGS SHALL BE PLACED VERTICALLY OR HORIZONTALLY THROUGH BEAMS UNLESS REVIEWED AND APPROVED BY THE CONSULT0709TANT(S).

iii) NO OPENINGS SHALL BE MADE IN FLAT SLAB OR FLAT PLATE COLUMN STRIPS UNLESS SHOWN OR TYPICAL DETAILS OR PLANS OR UNLESS REVIEWED BY THE CONSULTANT(S).

iv) INSERTS, FRAME-OUTS, SLEEVES, BRACKETS, CONDUITS AND FASTENING DEVISES SHALL BE INSTALLED AS REQUIRED BY THE DRAWINGS AND SPECIFICATIONS IN A MANNER THAT SHALL NOT IMPAIR THE STRUCTURAL STRENGTH OF THE SYSTEM. INSTALL ITEMS SUCH THAT THEY SHALL NOT REQUIRE THE CUTTING, BENDING OR DISPLACEMENT OF THE REINFORCING OTHER THAN AS SHOWN ON THE TYPICAL DETAILS.

v) ELECTRICAL CONDUIT SHALL NOT PASS THROUGH A COLUMN NOR SHALL IT PASS HORIZONTALLY IN A CONCRETE WALL. CONDUIT SHALL NOT BE LARGER IN OUTSIDE DIAMETER THAN 1/3 OF THE THICKNESS OF THE SLAB, WALL, OR BEAM IN WHICH IT IS EMBEDDED. IT SHALL NOT BE SPACED CLOSER THAN 3 DIAMETERS ON CENTRE UNLESS APPROVED BY THE CONSULTANT. ALL CONDUIT SHALL HAVE A MINIMUM CONCRETE COVER OF 25 MM (1") UNLESS APPROVED BY THE CONSULTANT.

5.2.5 MINIMUM CONCRETE COVER TO REINFORCEMENT: CONFORM TO THE REQUIREMENTS OF CSA STANDARD A23.1 AND THE FOLLOWING FOR COVER TO REINFORCING. ALL COVER VALUES ARE IN MM.

i) NOT EXPOSED (N) AND FOR FIRE RATING

	FIRE RATING (HOURS)				
LOCATION AND STRUCTURAL ELEMENT	UP TO 1	1.5	2	3	4
BEAMS, GIRDERS, PILES (PRINCIPAL REINFORCING) 35M AND SMALLER	40	40	40	40	50
SLABS 25M AND SMALLER	25	25	25	35	40
30M	30	30	30	35	40
COLUMNS (VERTICAL REINFORCING) 35M AND SMALLER	40	40	50	50	63
WALLS 25M AND SMALLER	25	40	50	50	63
30M	30	40	50	50	63
STIRRUPS AND TIES	30				

ADDITIONAL CONCRETE COVER REQUIREMENTS AS APPLICABLE. THE CONDITION WITH THE GREATER COVER REQUIREMENT SHALL GOVERN.

ii) ALL CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH OR ROCK:

(1) 35M BARS AND SMALLER = 75MM

(2) 45M BARS AND LARGER = 2X THE NOMINAL BAR DIAMETER

iii) CONCRETE EXPOSED TO CHLORIDES (C-1, C-3):

(1) 30M BARS AND SMALLER = 60MM

(2) 35M BARS AND LARGER = 2X THE NOMINAL BAR DIAMETER

iv) EXPOSED TO EARTH AND WEATHER (F-1, F-2)

(1) 25M BARS AND SMALLER = 40MM

(2) 30M BARS AND LARGER = 1.5X THE NOMINAL BAR DIAMETER

5.2.6 FINISHING

i) REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR THE REQUIRED FINISH TO EXPOSED CONCRETE. ALL HONEYCOMBING SHALL BE CUT OUT AND FILLED. FLOOR FINISHES SHALL BE AS REQUIRED BY THE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS AND SHALL CONFORM TO CSA A23.1 (CLASS A FINISH UNLESS NOTED OTHERWISE).

5.2.7 WHERE ONE-WAY SLABS ARE PARALLEL TO AND INTEGRAL WITH BEAMS OR WALLS, PROVIDE 10M AT 250 MM C/C TOP REINFORCING PERPENDICULAR TO THE SPAN OF THE BEAM OR WALL UNLESS NOTED OTHERWISE ON PLAN. THIS TOP REINFORCEMENT IS TO PROJECT 0.30 TIMES THE CLEAR SPAN OF THE ONE-WAY SLAB OR A MINIMUM OF 900 MM BEYOND BOTH SIDES OF THE BEAM OR WALL. AT A DISCONTINUOUS EDGE OF SLAB, HOOK TOP REINFORCEMENT DOWN INTO OUTER FACE OF BEAM OR WALL.

5.2.8 IN HOUSEKEEPING PADS AND FLOATING SLABS PROVIDE 10M AT 250 MM C/C MIDDLE EACH WAY UNLESS OTHERWISE NOTED ON PLAN OR TYPICAL DETAILS. SEE ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATION AND SIZE OF PADS.

5.2.9 PROVIDE CAMBER TO SLABS AND BEAMS AS NOTED ON PLANS AND/OR DETAILS. CAMBER BOTH UNDERSIDE AND TOP OF CONCRETE TO MAINTAIN THE SLAB AND BEAM DEPTH SHOWN ON THE DRAWINGS UNLESS SHOWN AND NOTED OTHERWISE.

5.2.10 PROVIDE INSERTS AND ANCHOR BOLTS IN ELEVATOR PITS AND SHAFTS AS REQUIRED.

6.0 PRECAST CONCRETE DECK

6.1 MATERIALS

6.1.1 CONFORM TO THE ONTARIO BUILDING CODE REGULATION 419, CSA A251M, AND CAN-A23.4M.

6.1.2 CONFORM TO THE OTHER REQUIREMENTS OF THESE GENERAL NOTES, INCLUDING CONCRETE AND REINFORCING.

6.2 DESIGN AND EXECUTION

6.2.1 DESIGN DECK, INCLUDING REINFORCING, STRAND, OPENINGS, JOINT CONNECTIONS, SUPPORT CONNECTIONS, CONCRETE, GROUT AND THE LIKE IN ACCORDANCE WITH THE ONTARIO BUILDING CODE 2006, FOR THE FORCES SHOWN ON THE DRAWINGS.

6.2.2 CONFORM TO THE OTHER REQUIREMENTS OF THESE GENERAL NOTES, INCLUDING CONCRETE AND REINFORCING.

6.2.3 DESIGN DECK FOR THE NET UPLIFT SHOWN BUT NOT LESS THAN 1.0 KPA.

6.2.4 DESIGN DECK FOR THE DIAPHRAGM SHEAR SHOWN BUT NOT LESS THAN 7.0 KN/M.

6.2.5 INDICATE OPENINGS AND REINFORCEMENT FOR OPENINGS ON THE SHOP DRAWINGS. COOPERATE WITH OTHER TRADES IN ORDER TO OBTAIN ALL INFORMATION NECESSARY TO LOCATE OPENINGS EITHER SHOWN OR IMPLIED.

6.2.6 MAINTAIN A SET OF PLANT RECORDS, AND PROVIDE COPIES TO THE CONSULTANT.

6.2.7 PROVIDE MINIMUM 90MM FULL BEARING ON SUPPORTS.

6.2.8 PROVIDE LATERAL SUPPORT TO THE TOPS OF SUPPORTING BEAMS.

6.2.9 PREPARE THE DECK TOP SURFACE AS APPROPRIATE FOR THE INTENDED FINAL FINISH OR TREATMENT. SEE ARCHITECTURAL DRAWINGS FOR FINISHES.

6.2.10 EXERCISE PARTICULAR CARE WHERE DECK IS EXPOSED TO VIEW IN THE FINISHED BUILDING, SO THAT THE EXPOSED SURFACE IS LEFT CLEAN WITHOUT DEFECTS.

7.0 STRUCTURAL STEEL

7.1 STRUCTURAL STEEL DESIGN DETAILS AND CONNECTIONS SHALL CONFORM TO CSA S16 AND SHALL BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER EXPERIENCED IN THIS TYPE OF WORK.

7.2 WELDING SHALL CONFORM TO CSA W59 AND BE PERFORMED BY A FABRICATOR CERTIFIED TO CSA W47.1.

7.3 MATERIALS

7.3.1 WIDE FLANGE SHAPES - CONFORM TO THE REQUIREMENTS OF CSA G40.21 GRADE 350W

7.3.2 HSS MEMBERS - CONFORM TO THE REQUIREMENTS OF CSA G40.21 GRADE 350W, CLASS C.

7.3.3 BOLTS, NUTS AND WASHERS - ASTM A490.

7.3.4 ANCHOR RODS - CONFORM TO THE REQUIREMENTS OF ASTM A490.

7.3.5 ALL OTHER - CONFORM TO THE REQUIREMENTS OF CSA G40.21 GRADE 300W

7.3.6 STEEL DECK - CONFORM TO THE REQUIREMENTS OF CAN/CSA-S136

7.4 EXECUTION

7.4.1 FABRICATION, HANDLING AND ERECTION SHALL CONFORM TO CSA S16.

7.4.2 CO-ORDINATE WITH MECHANICAL AND ELECTRICAL CONSULTANTS AND SUB-TRADES WHOSE WORK MAY AFFECT DETAILING, FABRICATION, AND ERECTION OF THE STEEL STRUCTURE.

7.4.3 PROVIDE A MINIMUM BEARING OF 200 MM FOR ALL STEEL BEAM BEARING ON MASONRY AND A MINIMUM OF 100 MM ON STRUCTURAL STEEL, UNLESS NOTED OTHERWISE.

7.4.4 CENTRE BEARING PLATES UNDER BEAMS, OR AS NOTED.

7.4.5 BEARING PLATE DIMENSION GIVEN FIRST INDICATES SIDE PARALLEL TO BEAM WEB.

7.4.6 WALL PLATE DIMENSION GIVEN FIRST INDICATES THE VERTICAL DIMENSION OF THE PLATE.

7.4.7 NO STRUCTURAL STEEL SHALL BE CUT WITHOUT THE PERMISSION OF THE CONSULTANT.

7.4.8 WHERE MOMENT CONNECTIONS ARE REQUIRED, BUT DESIGN VALUES ARE NOT NOTED, DESIGN CONNECTIONS FOR THE FULL MOMENT CAPACITY OF THE SMALLEST MEMBER.

7.4.9 SPLICES SHALL BE DESIGNED TO DEVELOP THE FULL CAPACITY OF THE MEMBERS AT THE POINT OF THE SPLICE. MEMBERS SHALL NOT BE SPLICED AT POINTS OF MAXIMUM STRESS OR IN THE VICINITY OF POINT LOADS. NO SPLICES SHALL BE MADE UNLESS SHOWN ON THE DRAWINGS OR REVIEWED AND APPROVED BY THE CONSULTANT(S).

7.4.10 ALL STRUCTURAL STEEL EXPOSED TO THE ELEMENTS SHALL BE FULLY GALVANIZED IN ACCORDANCE WITH CSA G164 TO A MINIMUM ZINC COATING OF 600G/SQ.M.

7.4.11 WHERE COLUMNS ARE STABILIZED BY WALLS PROVIDE COLUMN ANCHORS AT ABUTTING WALLS. PROVIDE TEMPORARY BRACING UNTIL WALLS ARE BUILT TIGHT TO COLUMNS.

7.4.12 PROVIDE FRAMING AROUND ALL OPENINGS IN STEEL DECK AS SPECIFIED. REFER TO TYPICAL DETAIL FOR DETAILS. SEE ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR OPENINGS NOT SHOWN ON THE STRUCTURAL DRAWINGS.

7.4.13 PROVIDE FULL HEIGHT WEB STIFFENERS AT ALL BEAMS BEARING ON COLUMNS AND ALL BEAMS SUPPORTING COLUMNS. WEB STIFFENERS SHALL BE OF THE SAME SIZE AND THICKNESS AS THE COLUMN FLANGES AND SHALL ALIGN WITH THE FLANGES OF THE SUPPORTING COLUMN.

7.4.14 COORDINATE THE SHAPE AND SIZE OF GUSSET PLATES TO ENSURE THAT THEY DO NOT INTERFERE WITH ARCHITECTURAL FINISHES, MECHANICAL SERVICES, AND THE LIKE.

7.4.15 PROVIDE ANCHOR BOLTS AND CAST-IN-PLATES WITH ANCHORS AND ANCHORS REQUIRED TO CONNECT STRUCTURAL STEEL TO CAST-IN-PLACE CONCRETE.

7.4.16 LENGTH OF ANCHOR BOLTS AND SIMILAR DEVICES IS GIVEN FOR THE STRAIGHT LENGTH WITHOUT HOOK. PROVIDE A WELDED 64X64X13 (THICK) PLATE WITH WASHER AND NUT AT BOTTOM OF ALL ANCHOR BOLTS UNLESS NOTED OTHERWISE.

7.4.17 CONNECT ALL COLUMNS TO THE BASE PLATES FOR THE LARGER OF THE FOLLOWING FORCES IN ADDITION TO ANY OTHER FORCES SHOWN:

i) AT BRACING FOR THE FACTORED HORIZONTAL COMPONENTS FROM THE BRACE.

ii) FOR 3% OF THE FACTORED VERTICAL COLUMN LOAD APPLIED HORIZONTALLY.

8.0 STEEL DECK

8.1 MATERIALS

8.1.1 ALL STEEL DECK SHALL BE AS PER PLAN AND SHALL CONFORM TO CAN/CSA-S136 AND THE FOLLOWING:

i) CSSBI 10M FOR ROOF DECKING.

ii) CSSBI 12M FOR FLOOR DECKING

8.1.2 THE COMPOSITE FLOOR STRUCTURE DESIGN HAS BEEN BASED ON THE FOLLOWING PROPERTIES OF COMPOSITE STEEL DECK;

i) 38 MM DECK = HB 938INV BY VICWEST STEEL INC

j) 76 MM DECK = HB 308INV BY VICWEST STEEL INC

8.1.3 THE ROOF STRUCTURE DESIGN HAS BEEN BASED ON THE FOLLOWING PROPERTIES OF COMPOSITE STEEL DECK;

i) 38 MM DECK = RD 938 BY VICWEST STEEL INC

j) 76 MM DECK = RD 308 BY VICWEST STEEL INC

8.1.4 ALTERNATE TYPES OF STEEL DECK, WITH SIMILAR PROPERTIES, MAY BE ACCEPTABLE, SUBJECT TO REVIEW BY THE CONSULTANT(S).

8.1.5 PROVIDE COMPOSITE DECK IN ALL ROOF OR FLOOR AREAS WHICH WILL RECEIVE A CONCRETE TOPPING.

8.1.6 MINIMUM ZINC COATING OF Z275 FOR EXTERIOR DECKING AND DECKING EXPOSED TO VIEW.

8.1.7 MINIMUM ZINC COATING OF ZF75 FOR INTERIOR DECKING NOT EXPOSED TO VIEW.

8.1.8 MINIMUM 1.22MM STEEL CONFORMING TO ABOVE STANDARDS FOR COVER PLATES, CELL CLOSURES, WEB STIFFENERS, EDGE STRIPS, AND FLASHING.

8.1.9 FORM ROOF DECK WITH INTEGRAL RIBS OF A SHAPE TO MATCH EXISTING DECK WHERE REPAIR/REPLACEMENT OF EXISTING DECK IS REQUIRED.

8.2 EXECUTION

8.2.1 STEEL DECK DESIGN DETAILS AND CONNECTIONS SHALL CONFORM TO THE REQUIREMENTS OF ONTARIO REGULATION 322/12, (THE BUILDING CODE), AS AMENDED, AND SHALL BE DESIGNED BY A LICENSED PROFESSIONAL ENGINEER EXPERIENCED IN THIS TYPE OF WORK.

8.2.2 REFER TO PLANS FOR DESIGN LOADS ON STEEL DECK.

8.2.3 DESIGN, PROVIDE, AND CONNECT METAL EDGE AND CLOSURE STRIPS, METAL SCREEDS, FLASHINGS AND THE LIKE.

8.2.4 DESIGN FRAMING FOR 450MM OR SMALLER OPENINGS IN ROOF DECK, AND 300MM OR SMALLER OPENINGS IN FLOOR DECK. FOR ROOF OPENINGS GREATER THAN 450MM AND FLOOR OPENINGS GREATER THAN 300MM INSTALL REINFORCING IN ACCORDANCE WITH THE STRUCTURAL FRAMING DETAILS SHOWN ON PLANS OR TYPICAL DETAILS.

8.2.5 WHENEVER STRUCTURAL FRAMING PERMITS ALL STEEL DECK SHALL BE DESIGNED AND FABRICATED TO SPAN CONTINUOUSLY OVER AT LEAST 4 SUPPORTS (3 SPANS). PROVIDE AN ADEQUATE INCREASE IN THICKNESS OF METAL TO COMPENSATE FOR CONTINUITY WHENEVER FEWER SUPPORTS OCCUR.

8.2.6 LAP ENDS OF NON-COMPOSITE DECK UNITS A MINIMUM OF 50MM AND ONLY OVER SUPPORTING MEMBERS.

8.2.7 SUPPLY AND INSTALL STEEL PACKING AS REQUIRED TO PRODUCE AN EVEN BEARING PRESSURE AT SUPPORTS.

8.2.8 MAKE FUSION WELDS TO SUPPORTING MEMBERS WELL WITHIN BEARING WIDTH OF SUPPORT MEMBERS.

8.2.9 AS A MINIMUM, WELD DECK TO SUPPORTS AND PERIMETER ELEMENTS WITH HILTI X-EDN19 SCREWS IN A 36/4 PATTERN.

8.2.10 AS A MINIMUM, FASTEN SIDE JOINTS OF DECK UNITS BETWEEN SUPPORTS BY CLINCHING AT 600MM INTERVALS OR WITH #10 SCREWS T 300MM INTERVALS.

8.2.11 PAINT WELDS AND REPAIR DAMAGED COATING WITH GALVACON COATING.

8.2.12 DO THE FOLLOWING WHERE DECKING IS EXPOSED TO VIEW;

i) LAP ENDS OF DECK UNITS ONLY OVER SUPPORTING MEMBERS. NO SEAMS ARE PERMITTED WITHIN SPANS.

ii) KEEP DECK FREE OF DIRT, SCALE, FOREIGN MATTER, DENTS OR DEFORMATIONS.

iii) KEEP FUSION WELDS WELL WITHIN THE BEARING WIDTH OF SUPPORTING MEMBERS.

iv) AVOID WELD DAMAGE TO THE DECK OR ITS SUPPORTS.

8.2.13 THE SUSPENSION OF ELEMENTS INCLUDING, BUT NOT LIMITED TO: ARCHITECTURAL FINISHES, MECHANICAL AND ELECTRICAL PIPING, DUCTWORK, CONDUIT, ETC. FROM ROOF DECK IS NOT PERMITTED.

9.0 LIGHT GAUGE STEEL

9.1 MATERIALS

9.1.1 ALL COLD FORMED STEEL STUDS/SILLS/FRAMING SHALL CONFORM TO CAN/CSA-S136-01, CAN/CSA S304.1-04 & CAN/CSA-A370-04 AND ARE BASED UPON MEMBERS PRODUCED BY BAILEY METAL PRODUCTS OR APPROVED EQUIVALENT.

9.1.2 STEEL SHALL MEET THE REQUIREMENTS OF ASTM A653 STANDARD SPECIFICATION FOR SHEET METAL, ZINC COATED (GALVANIZED) BY THE HOT-DIP PROCESS, STRUCTURAL (PHYSICAL) QUALITY, MINIMUM GRADES ARE:

i) GRADE A 228 MPA MINIMUM YIELD FOR 1.146MM MATERIAL AND THINNER

ii) GRADE D 345 MPA MINIMUM YIELD FOR 1.438MM MATERIAL AND THICKER.

9.1.3 SECTION PROPERTIES SHALL BE COMPUTED ON THE BASIS OF THE BLACK METAL THICKNESS' SHOWN, THE UNDERRUN IN THICKNESS PERMITTED BY ASTM A653 IS NOT ACCOUNTED FOR IN THE DESIGN CALCULATIONS.

9.1.4 ERECTION TOLERANCES:

i) PLUMB: NOT TO EXCEED L/500TH OF MEMBER LENGTH.

ii) CAMBER: NOT TO EXCEED L/1000TH OF MEMBER LENGTH.

iii) SPACING: NOT MORE THAN 3.175MM FROM DESIGN SPACING.

iv) GAP BETWEEN END OF STUD AND TRACK WEB: NOT MORE THAN 4.8MM.

9.1.5 DEFLECTION:

i) LIVE LOAD DEFLECTION BASED UPON L/360

9.2 EXECUTION

9.2.1 REFER TO ARCHITECTURAL DRAWINGS FOR EXACT OPENING LOCATIONS AND DIMENSIONS.

9.2.2 ALL SHEET METAL SCREWS (SMS) ARE TO BE SELF-DRILLING, SELF-TAPPING NO. 10-16 BY BUILDEX TEKS UNLESS OTHERWISE NOTED.

9.2.3 TEMPORARY BRACING SHALL BE PROVIDED UNTIL THE WORK IS PERMANENTLY SECURED.

9.2.4 SPLICING OF STUDS/JOISTS IS NOT PERMITED (EXCEPT TOP AND BOTTOM TRACKS).

9.2.5 ALL FRAMING, BRIDGING, NAILING, PROTECTION, HARDWARE AND OTHER FRAMING DETAILS ARE TO BE IN ACCORDANCE WITH PART 9 OF THE ONTARIO BUILDING CODE, LATTEST EDITION.

9.2.6 WIND LOADS SHALL BE IN ACCORADNCE WITH THE ONTARIO BUILDING CODE. PROVIDE FRAMING ANCHORS TO RESIST UPLIFT AT EACH END OF EACH ROOF JOIST. ANCHORS TO HAVE A WORKING CAPACITY OF 0.5 KN.

9.2.7 UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS. THE CONTRACTOR SHALL PROVIDE STANDARD SIMPSON STRONG TIE HARDWARE OR APPROVED EQUIVALENT FOR ALL JOIST HANGERS, BEAM HANGERS, BEAM SEATS, POST ANCHORS, ETC.

9.2.8 MAKE ADEQUATE PROVISIONS FOR ERECTION STRESSES AND FOR SUFFICIENT TEMPORARY BRACING TO KEEP THE STRUCTURAL FRAME PLUMB AND IN TRUE ALIGNMENT UNTIL THE COMPLETION OF THE ENTIRE FRAMING INCLUDING INSTALLATION OF THE FLOOR AND WALL SHEATHING.

9.2.9 PROVIDE SOLID BLOCKING, MATCHING JOIST MEMBER SIZE, UNDER ALL LOADBEARING WALLS OFFSET FROM THE SUPPORTS BELOW FOR FLOOR JOISTS SPANNING PERPENDICULAR TO THE WALL.

9.2.10 PROVIDE MINIMUM BEARING OF 75 MM FOR ALL JOISTS.

9.2.11 PROVIDE MINIMUM BEARING OF 100 MM FOR ALL BEAMS.

10.0 MASONRY

10.1 MATERIALS

10.1.1 ALL MASONRY UNITS SHALL COMPLY WITH THE REQUIREMENTS OF CSA STANDARD A371-04, MINIMUM NET AREA COMPRESSIVE STRENGTH, 15 MPA (ALL OF SECOND FLOOR), 20 MPa (ALL OF GROUND FLOOR U/N), 25 MPa (ALONG GRID LINE G).

10.1.2 GROUT FILL - MINIMUM 28-DAY COMPRESSIVE STRENGTH, 15 MPA (ALL OF SECOND FLOOR), 20 MPa (ALL OF GROUND FLOOR U/N), 25 MPa (ALONG GRID LINE G).

10.1.3 MORTAR - CONFORM TO THE REQUIREMENTS OF CSA STANDARD A179-04, TYPE N.

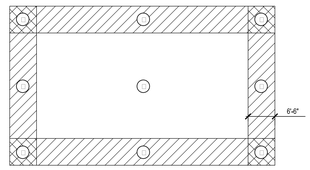
10.2 EXECUTION

10.2.1 COMPLY WITH MORTAR MANUFACTURER'S WRITTEN RECOMMENDATIONS, INCLUDING PRODUCT TECHNICAL BULLETINS, DATASHEETS, HANDLING, STORAGE, AND INSTALLATION INS

STRUCTURAL ABBREVIATIONS — TD-G01

A BOLT	ANCHOR BOLT	E-W	EAST WEST	NTS	NOT TO SCALE
ADJ	ADJUSTABLE	EW	EACH WAY	OF	OUTSIDE FACE
AESS	ARCHITECTURAL EXPOSED STRUCTURAL STEEL	EXT	EXTERIOR	OPEN	OPENING
		f'c	28 DAYS CONCRETE COMPRESSIVE STRENGTH	OWSJ	OPEN WEB STEEL JOIST
AFF	ABOVE FINISHED FLOOR			PI	AXIAL FORCE (FACTORED)
AFB	ASPHALT IMPREGNATED FIBREBOARD	FDN	FOUNDATION	PC	PRECAST
		FF	FAR FACE	PL	PLATE
ALT	ALTERNATE	FIN	FINISHED	PLF	POUNDS PER LINEAR FOOT
ARCH	ARCHITECTURAL	FL	FLOOR	PROJ	PROJECTION
ASL	ADDITIONAL ACCUMULATED SNOW LOAD	ft	FOOT, FEET	PSF	POUNDS PER SQUARE FOOT
		FTG	FOOTING	PT	PRESSURE TREATED
@	AT	Fy	YIELD STRENGTH	RD	ROOF DRAIN
B_BOTT	BOTTOM	GA	GAUGE	RI	REACTION (FACTORED)
B/B	BACK TO BACK	GALV	GALVANIZED	RAD	RADIUS
BEW	BOTTOM EACH WAY	GEN	GENERAL	REINF	REINFORCED, REINFORCEMENT
BH	BOREHOLE	HEF	HORIZONTAL EACH FACE	REF	REFERENCE
BLL	BOTTOM LOWER LAYER	Hf	HORIZONTAL FORCE (FACTORED)	RE	RIGHT END
BLDG	BUILDING	HH	HOOK EACH END	REQ'D	REQUIRED
BM	BEAM	HIF	HORIZONTAL INSIDE FACE	REV	REVISION, REVISED
BPL	BEARING/BASE PLATE	HOF	HORIZONTAL OUTSIDE FACE	RW	REINFORCED WITH
BRDG	BRIDGING	H, HORZ	HORIZONTAL	SDF	STEP DOWN FOOTING
BUL	BOTTOM UPPER LAYER	HSC	HORIZONTALLY SLOTTED CONNECTION	SECT	SECTION
c	CAMBER	HSS	HOLLOW STEEL SECTION	SIM	SIMILAR
C	EPOXY COATED	IF	INSIDE FACE	SL	SLAB
c/, c/c	CENTRE TO CENTRE	IN	INCH(ES)	SOG	SLAB ON GRADE
CA, CB	COLUMN ABOVE, COLUMN BELOW	INT	INTERIOR	SPDO	STANDARD PROCTOR DRY DENSITY
CANT	CANTILEVER	J	JOINT	ST	STRAIGHT
Cf	COMPRESSIVE FORCE (FACTORED)	K	KIP, 1000 LBS	STIFF	STIFFENER
CJ	CONTROL JOINT	K-ft	KIP FEET	STIR	STIRRUP
CL	CLEAR	kg	KILOGRAM(S)	STRUCT	STRUCTURAL
CL, ℄	CENTRELINE	KLF	KIPS PER LINEAR FOOT	STD	STANDARD
COL	COLUMN	kN	KILONEWTON	SQ	SQUARE
COMP	COMPOSITE	kN•m	KILONEWTON PER METRE	T	TOP
CONC	CONCRETE	kPa	KILOPASCAL	TEMP	TEMPORARY, TEMPERATURE
CONT	CONTINUOUS	KSF	KIPS PER SQUARED FOOT	TEW	TOP EACH WAY
C/W	COMPLETE WITH	KSI	KIPS PER SQUARED INCH	TJ	TIE JOIST
DEMO	DEMOLITION	L	SINGLE ANGLE	TLL	TOP LOWER LAYER
DET	DETAIL	LE	LEFT END	TM	TORSIONAL MOMENT (FACTORED)
DIA, Ø	DIAMETER	LG	LONG	TOD	TOP OF DECK
DIAG	DIAGONAL	LL	LIVE LOAD, LOWER LAYER	TOS	TOP OF STEEL, SLAB
DIM	DIMENSION	LLH	LONG LEG HORIZONTAL	TRANS	TRANSVERSE
DL	DEAD LOAD	LLV	LONG LEG VERTICAL	TUL	TOP UPPER LAYER
DP	DEEP	m	METRE	TYP	TYPICAL
DWG(S)	DRAWING(S)	MC ▶	MOMENT CONNECTION (FULL MOMENT UNLESS NOTED)	UL	UPPER LAYER
DW(LS)	DOWEL(S)			UNI	UNLESS NOTED OTHERWISE
DN	DOWN	MECH	MECHANICAL	U/S	UNDERSIDE
EA	EACH	Mf	MOMENT (FACTORED)	V, VERT	VERTICAL
EE	EACH END	ML	MIDDLE LAYER	Vf	VERTICAL SHEAR FORCE (FACTORED)
EF	EACH FACE	mm	MILLIMETRE	VBF	VERTICAL BRACED FRAME
ELEC	ELECTRICAL	MPa	MEGAPASCAL	VEF	VERTICAL EACH FACE
EL	ELEVATION	Mxf	BENDING MOMENT ABOUT x-x AXIS (FACTORED)	VIF	VERTICAL INSIDE FACE
ELEV	ELEVATOR	Myf	BENDING MOMENT ABOUT y-y AXIS (FACTORED)	VOF	VERTICAL OUTSIDE FACE
EMBED	EMBEDMENT			VSC	VERTICALLY SLOTTED CONNECTION
EQ	EQUAL			W	WIDE FLANGE BEAM
ES	EACH SIDE	NF	NEAR FACE	WT	WEIGHT, STRUCTURAL TEE
EX, EXIST	EXISTING	NIC	NOT IN CONTRACT	WWF	WELDED WIRE FABRIC (IF WELDED WIRE FABRIC IS USED)
EJ, EXP JT	EXPANSION JOINT	N-S	NORTH-SOUTH	W.P.	WORKING POINT

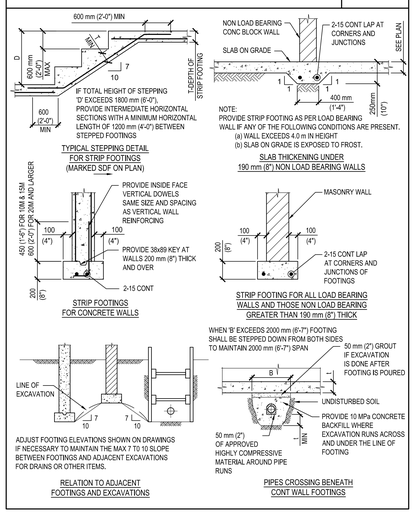
ROOF UPLIFT DIAGRAM — TD-G02



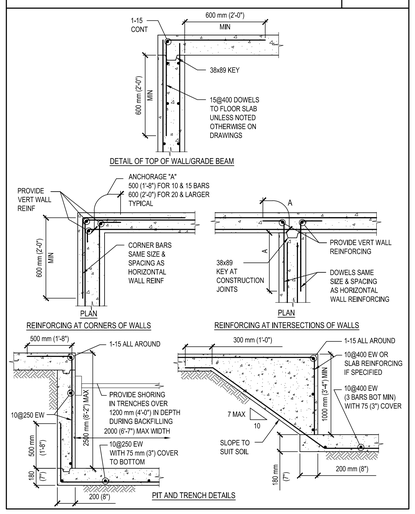
UPLIFT DESIGN REQUIREMENTS

ZONE	PREENGINEERED TIMBER TRUSSES	
	GENERAL	CANOPY CONDITION
1	32 PSF	5 PSF
2	32 PSF	5 PSF
3	32 PSF	5 PSF

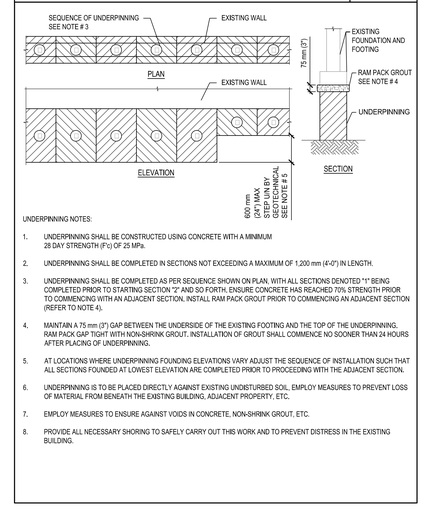
WALL FOOTINGS — TD-C01



CONCRETE WALLS, PITS AND TRENCHES — TD-C02



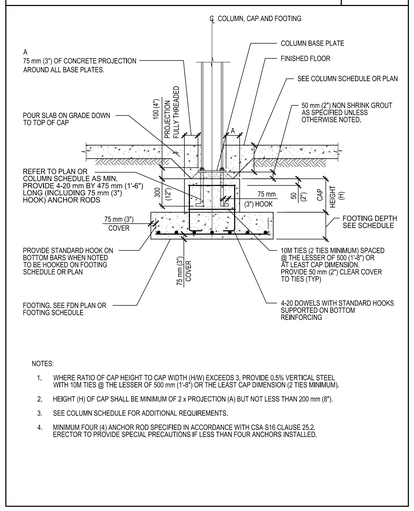
UNDERPINNING — TD-C03



UNDERPINNING NOTES:

1. UNDERPINNING SHALL BE CONSTRUCTED USING CONCRETE WITH A MINIMUM 28 DAY STRENGTH (F'c) OF 25 MPa.
2. UNDERPINNING SHALL BE COMPLETED IN SECTIONS NOT EXCEEDING A MAXIMUM OF 1,200 mm (4'-0") IN LENGTH.
3. UNDERPINNING SHALL BE COMPLETED AS PER SEQUENCE SHOWN ON PLAN. WITH ALL SECTIONS DENOTED "1" BEING COMPLETED PRIOR TO STARTING SECTION "2" AND SO FORTH. ENSURE CONCRETE HAS REACHED 70% STRENGTH PRIOR TO COMMENCING WITH AN ADJACENT SECTION. INSTALL RAM PACK GROUT PRIOR TO COMMENCING AN ADJACENT SECTION (REFER TO NOTE 4).
4. MAINTAIN A 75 mm (3") GAP BETWEEN THE UNDERSIDE OF THE EXISTING FOOTING AND THE TOP OF THE UNDERPINNING. RAM PACK GAP TIGHT WITH NON-SHRINK GROUT. INSTALLATION OF GROUT SHALL COMMENCE NO SOONER THAN 24 HOURS AFTER PLACING OF UNDERPINNING.
5. AT LOCATIONS WHERE UNDERPINNING FOUNDING ELEVATIONS VARY ADJUST THE SEQUENCE OF INSTALLATION SUCH THAT ALL SECTIONS FOUNDED AT LOWEST ELEVATION ARE COMPLETED PRIOR TO PROCEEDING WITH THE ADJACENT SECTION.
6. UNDERPINNING IS TO BE PLACED DIRECTLY AGAINST EXISTING UNDISTURBED SOIL. EMPLOY MEASURES TO PREVENT LOSS OF MATERIAL FROM BENEATH THE EXISTING BUILDING, ADJACENT PROPERTY, ETC.
7. EMPLOY MEASURES TO ENSURE AGAINST VOIDS IN CONCRETE, NON-SHRINK GROUT, ETC.
8. PROVIDE ALL NECESSARY SHORING TO SAFELY CARRY OUT THIS WORK AND TO PREVENT DISTRESS IN THE EXISTING BUILDING.

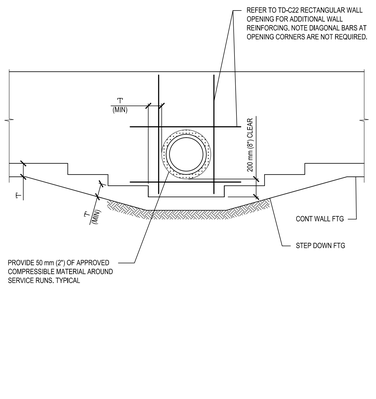
FOOTINGS AND BASES FOR STEEL COLUMNS — TD-C05



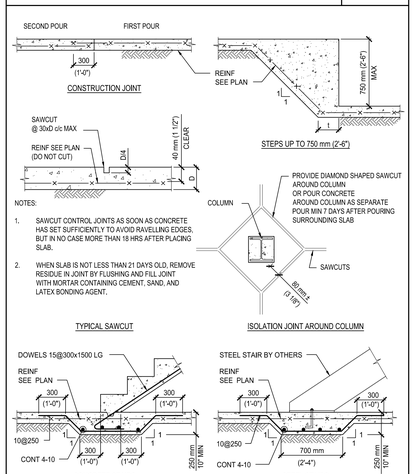
NOTES:

1. WHERE RATIO OF CAP HEIGHT TO CAP WIDTH (H/W) EXCEEDS 3, PROVIDE 0.5% VERTICAL STEEL WITH 10M TIES @ THE LESSER OF 500 mm (1'-8") OR THE LEAST CAP DIMENSION (2 TIES MINIMUM).
2. HEIGHT (H) OF CAP SHALL BE MINIMUM OF 2 x PROJECTION (A) BUT NOT LESS THAN 200 mm (8").
3. SEE COLUMN SCHEDULE FOR ADDITIONAL REQUIREMENTS.
4. MINIMUM FOUR (4) ANCHOR ROD SPECIFIED IN ACCORDANCE WITH CSA S16 CLAUSE 25.2. ERECTOR TO PROVIDE SPECIAL PRECAUTIONS IF LESS THAN FOUR ANCHORS INSTALLED.

TYPICAL DETAIL OF SERVICES THRU FOUNDATION WALL — TD-C07



SLAB ON GRADE, JOINTS, STEPS, SAWCUTS AND STAIRS — TD-C10



REINFORCEMENT DEVELOPMENT LENGTHS — TD-C11

TABLE 1 TENSION DEVELOPMENT LENGTH (mm)

BAR SIZE	f'c				
	20 MPa	25 MPa	30 MPa	35 MPa	40 MPa
10	320	300	300	300	300
15	480	430	390	370	340
20	640	580	530	490	460
25	1010	900	820	760	710
30	1210	1080	990	910	850
35	1410	1260	1150	1060	1000
45	1820	1620	1480	1370	1290
55	2220	1980	1810	1680	1570

TABLE 2 TENSION LAP SPLICE (CLASS B) LENGTH (mm)

BAR SIZE	f'c				
	20 MPa	25 MPa	30 MPa	35 MPa	40 MPa
10	420	380	340	315	300
15	630	560	510	485	445
20	840	755	690	840	840
25	1315	1315	1315	1315	1315
30	1575	1575	1575	1575	1575
35	1840	1840	1840	1840	1840
45	LAP SPLICES NOT PERMITTED				
55					

TABLE 3 DEVELOPMENT LENGTH (mm) FOR STANDARD HOOKS

BAR SIZE	f'c				
	20 MPa	25 MPa	30 MPa	35 MPa	40 MPa
10	155	150	150	150	150
15	240	210	190	175	170
20	315	280	260	240	225
25	390	350	320	295	280
30	470	420	385	360	330
35	550	430	450	415	385
45	977	874	798	739	691
55	1261	1128	1030	953	892

TABLE 4 COMPRESSION DEVELOPMENT LENGTH (mm)

BAR SIZE	f'c		
	f'c= 20 MPa	f'c= 25 MPa	f'c > 30 MPa
10	210	200	200
15	320	290	260
20	430	380	350
25	540	480	440
30	640	580	530
35	750	670	620
45	970	860	790
55	1180	1060	970

TABLE 5 COMPRESSION LAP SPLICE LENGTH (mm)

BAR SIZE	USUAL CONFINEMENT
10	300
15	440
20	580
25	730
30	880
35	1020

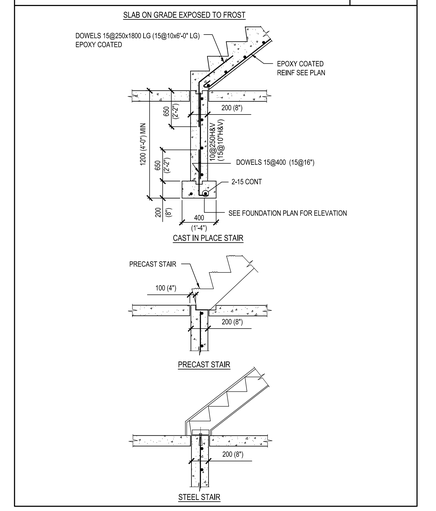
NOTE: 45M AND 55M BARS SHALL BE SPLICED WITH MECHANICAL CONNECTORS.

TABLE 6 STANDARD HOOK DIMENSION FOR BLACK REINFORCING

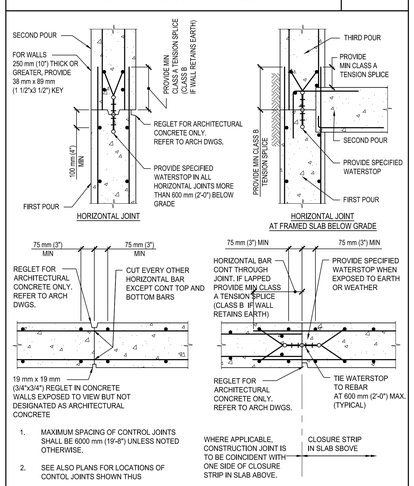
BAR SIZE	400R OR 500R		400W OR 500W	
	90° HOOK (mm)	180° HOOK (mm)	90° HOOK (mm)	180° HOOK (mm)
10	180	140	180	130
15	260	180	250	170
20	310	220	300	200
25	400	280	400	280
30	510	400	490	350
35	610	480	590	430
45	790	680	770	620
55	1030	900	1010	830

REFER TO REINFORCING STEEL MANUAL OF STANDARD PRICTICE FOR MORE INFORMATION.

SUPPORT OF STAIRS AT SLAB ON GRADE — TD–C13



CONSTRUCTION JOINTS IN WALLS — TD-C21



1. MAXIMUM SPACING OF CONTROL JOINTS SHALL BE 6000 mm (19'-8") UNLESS NOTED OTHERWISE.
2. SEE ALSO PLANS FOR LOCATIONS OF CONTOL JOINTS SHOWN THUS

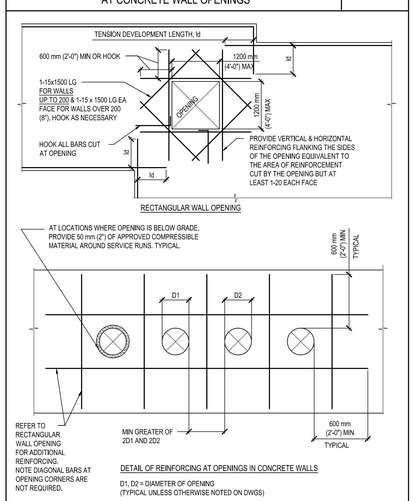
CONTROL JOINT

WHERE APPLICABLE, CONSTRUCTION JOINT IS TO BE COINCIDENT WITH ONE SIDE OF CLOSURE STRIP IN SLAB ABOVE.

CLOSURE STRIP IN SLAB SBOVE

CONSTRUCTION JOINT

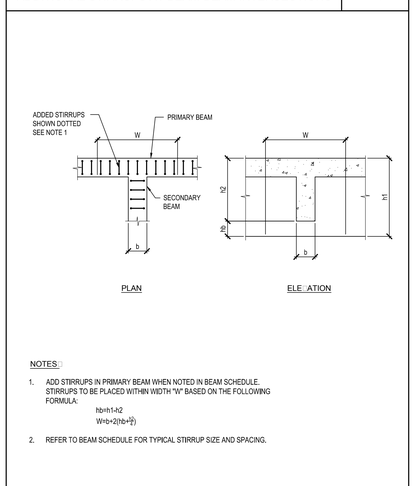
TYPICAL DETAIL OF ADDITIONAL REINFORCEMENT AT CONCRETE WALL OPENINGS — TD-C22



DETAIL OF REINFORCING AT OPENINGS IN CONCRETE WALLS

D1, D2 = DIAMETER OF OPENING
(TYPICAL UNLESS OTHERWISE NOTED ON DWGS)

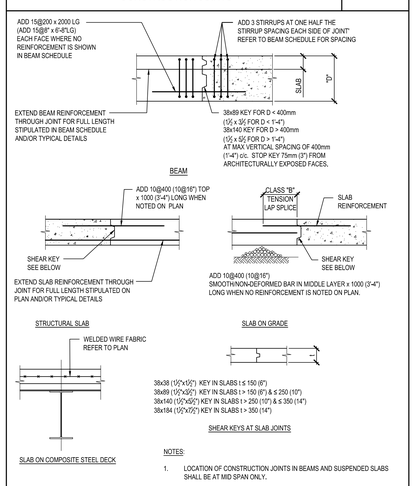
ADDITIONAL STIRRUPS AT BEAM-BEAM INTERSECTIONS — TD□C□□



NOTES□

1. ADD STIRRUPS IN PRIMARY BEAM WHEN NOTED IN BEAM SCHEDULE.. STIRRUPS TO BE PLACED WITHIN WIDTH "W" BASED ON THE FOLLOWING FORMULA:
   h/s+h1+h2
   W=b+2(hb+h3/2)
2. REFER TO BEAM SCHEDULE FOR TYPICAL STIRRUP SIZE AND SPACING.

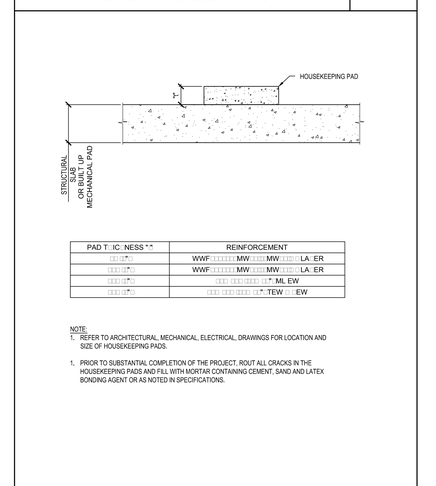
CONSTRUCTION JOINTS — TD-C27



NOTES:

1. LOCATION OF CONSTRUCTION JOINTS IN BEAMS AND SUSPENDED SLABS SHALL BE AT MID SPAN ONLY.
2. ALL CONSTRUCTION JOINT LOCATIONS MUST BE APPROVED BY THE ENGINEER.

DETAILS FOR HOUSEKEEPING PADS — TD-C30



PAD T□IC□NESS "□"	REINFORCEMENT
□□□"□	WWF□□□□□ MW□□□ MW□□□ LA□ER
□□□"□	WWF□□□□□ MW□□□ MW□□□ LA□ER
□□□"□	□□□ □□□□□□ □"□ ML EW
□□□"□	□□□ □□□□□□ □"□ TEW □□ EW

NOTE:

1. REFER TO ARCHITECTURAL, MECHANICAL, ELECTRICAL, DRAWINGS FOR LOCATION AND SIZE OF HOUSEKEEPING PADS.
1. PRIOR TO SUBSTANTIAL COMPLETION OF THE PROJECT, ROUT ALL CRACKS IN THE HOUSEKEEPING PADS AND FILL WITH MORTAR CONTAINING CEMENT, SAND AND LATEX BONDING AGENT OR AS NOTED IN SPECIFICATIONS.

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION
PROJECT#121

387 Balsam Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

REV	DESCRIPTION	DATE
2	ISSUED FOR TENDER	2017.05.16
1	100% REVIEW	2017.05.10

BORTOLOTTO

PROJECT NUMBER
PP1701

DATE
□□□□□□

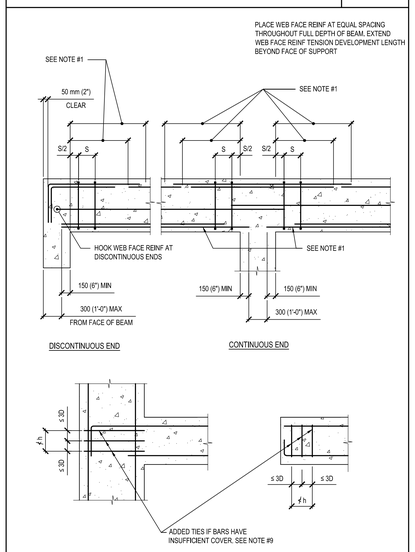
SCALE
AS NOTED

DRAWN BY
KOONAZ

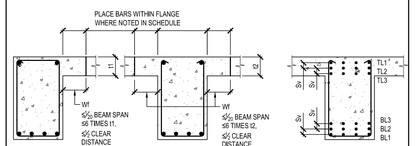
TYPICAL DETAILS

S1.2

PLACEMENT OF REINF. IN CONCRETE BEAMS — TD-C23



LONGITUDINAL BARS ENDING IN A HOOK



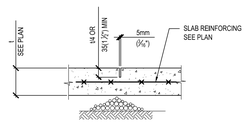
EDGE BEAM — INTERIOR BEAM — LAYERING OF FLEXURAL REINF.

NOTES:

1. REFER TO BEAM SCHEDULE FOR DETAILING OF TOP AND BOTTOM BARS.
2. S = SPACING OF STIRRUPS, REFER TO BEAM SCHEDULE.
3. Sv = CLEAR VERTICAL SPACING BETWEEN LAYERS OF FLEXURAL REINFORCEMENT.
4. d = DIAMETER OF HOOKED BAR.
5. h = HOOK BEND DIAMETER.
6. LEFT AND RIGHT SUPPORT OF BEAM DETERMINED FROM THE ORIENTATION OF THE BEAM MARK ON PLAN.
7. BARS IN TOP FIRST LAYER NOTED TL1
   BARS IN TOP SECOND LAYER NOTED TL2 ETC.
8. BARS IN BOTTOM FIRST LAYER NOTED BL1
   BARS IN BOTTOM SECOND LAYER NOTED BL2 ETC.
9. FOR BARS BEING DEVELOPED BY A STANDARD HOOK AT THE ENDS OF MEMBERS, WHERE BOTH SIDE COVER AND THE TOP (OR BOTTOM) COVER OVER THE HOOK ARE LESS THEN 60 mm, THE HOOK SHALL BE ENCLOSED WITHIN AT LEAST THREE COLUMN TIES OR TYPE "T1" CLOSED STIRRUPS AS SHOWN ABOVE.
10. WHERE NOTED "BARS IN FLANGE" IN BEAM SCHEDULE, PLACE TOP REINF IN SLAB, OUTSIDE BEAM WIDTH, AS NOTED BELOW.

BAR SIZE	Sv (mm) (inches)
15	30 (1-1/4")
20	30 (1-1/4")
25	35 (1-3/8")
30	40 (1-5/8")
35	50 (2")

SAW CUTS IN SLAB ON GRADE — TD-C28

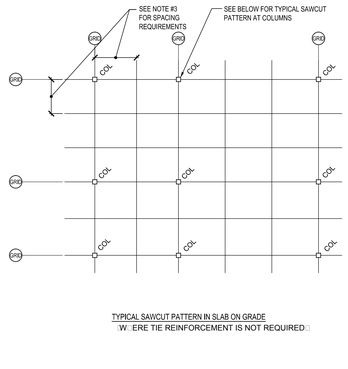


NOTES:

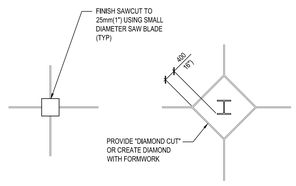
1. SAW CUTTING SHALL BE WITHIN 4 TO 12 HOURS OF PLACING CONCRETE.
2. FOR SLABS REINFORCED WITH STEEL FIBERS INCREASE SAWCUT DEPTH TO t/3.
3. AFTER THE SLAB IS A MINIMUM 60 DAYS, REMOVE ALL DEBRIS FROM THE SAW CUTS AND FILL WITH MORTAR CONTAINING CEMENT, SAND, AND LATEX BONDING AGENT, OR AS NOTED IN SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT CONSTRUCTION ACTIVITIES WILL NOT REDUCE QUALITY OR DURABILITY OF FILLED JOINTS.
4. MAXIMUM SPACING OF SAW CUTS IN SLAB SHALL NOT EXCEED THE FOLLOWING, UNLESS NOTED OTHERWISE'

SLAB THICKNESS	MAX. SPACING U/N
100 (4") - 150 (6")	3600 (12'-0")
150 (6") OR GREATER	4500 (15'-0")

5. COORDINATE EXACT LOCATIONS OF SAW CUTS WITH ARCHITECTURAL FLOOR FINISHES.
6. SAWCUT SLAB ON GRADE AT LOCATIONS SHOWN ON PLAN BELOW. ALTERNATE DETAILS SHALL BE SUBMITTED TO ENGINEER FOR REVIEW WELL IN ADVANCE OF POURING ON GRADE.
7. PRIOR TO SUBSTANTIAL COMPLETION OF THE PROJECT, ROUT ALL CRACKS IN SLAB IN SLAB ON GRADE AND FILL WITH MORTAR CONTAINING CEMENT, SAND, AND LATEX BONDING AGENT OR AS NOTED IN SPECIFICATIONS.
8. IF SLAB REINFORCEMENT IS SHOWN ON PLAN, ENSURE THAT REINFORCEMENT IS PLACED AT MID DEPTH OF SLAB ON GRADE AND IS NOT SAWCUT.

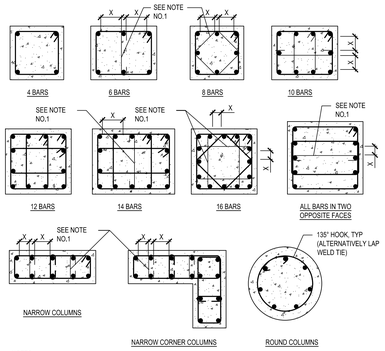


TYPICAL SAWCUT PATTERN IN SLAB ON GRADE
(WHERE TIE REINFORCEMENT IS NOT REQUIRED)



CONCRETE COLUMN (OR HOLLOW STEEL COLUMN) — STEEL COLUMN

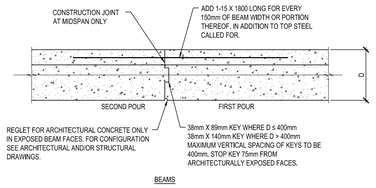
ARRANGEMENT OF REINFORCING IN COLUMNS — TD-C31



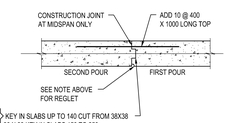
NOTES

1. TIE VERTICALS WITH TIES SHOWN DASHED WHEN "X" IS OVER 150 mm.
2. MINIMUM CLEAR DISTANCE BETWEEN VERTICAL BARS:
   a. 1.4 TIMES VERTICAL BAR DIAMETER.
   b. 1.4 TIMES THE MAX SIZE OF COURSE AGGREGATE.
   c. 30 mm
3. SEE DRAWINGS FOR OTHER TIE ARRANGEMENTS.
4. WHEN SEISMIC HAZARD INDEX, IeFaSa(0.2), IS LESS THAN 0.35 SINGLE TIES WITH ONE 90° AND ONE 135° HOOK MAY BE USED PROVIDED THE 90° HOOK IS MIN 100 mm LONG AND SUCCESSIVE TIES ENGAGING THE SAME BARS ARE ALTERNATED END FOR END.

CONSTRUCTION JOINTS IN SLA□S AND □EAMS — TD-C75



BEAMS

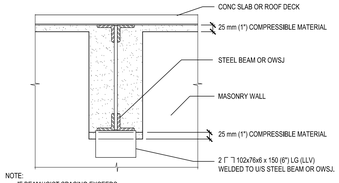


STRUCTURAL SLABS

NOTES:

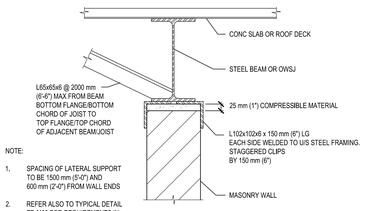
1. EXTEND NORMAL TOP AND BOTTOM REINFORCEMENT THROUGH JOINT FOR FULL LENGTH AS SHOWN ON DRAWINGS, SCHEDULES AND TYPICAL DETAILS.
2. LOCATION OF CONSTRUCTION JOINTS MUST BE APPROVED BY THE CONSULTANT.

LATERAL SUPPORT FOR TOP OF MASONRY WALL AT UNDERSIDE OF STEEL FRAMING — TD-M01



NOTE:
IF BEAM/JOIST SPACING EXCEEDS 1500 mm (5'-0") c/c, PROVIDE ADDITIONAL LATERAL SUPPORT AS PER TD-M02 FOR CONCRETE SLAB OR TD-M03 FOR STEEL DECK

AT PARTITION PERPENDICULAR TO JOIST OR BEAM



NOTE:

1. SPACING OF LATERAL SUPPORT TO BE 1500 mm (5'-0") AND 600 mm (2'-0") FROM WALL ENDS
2. REFER ALSO TO TYPICAL DETAIL TD-M03 FOR REQUIREMENTS IN HIGH SEISMIC ZONES.

AT PARTITION BELOW BEAM OR OWSJ AND PARALLEL TO BEAM OR OWSJ SPAN

LATERAL SUPPORT FOR TOP OF MASONRY WALL AT UNDERSIDE OF CONCRETE FRAMING — TD-M02

NOTES:

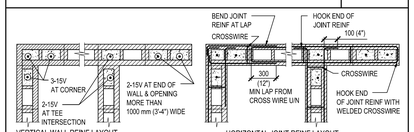
1. SPACING OF LATERAL SUPPORT TO BE 1500 mm (5'-0") c/c MAX AND 600 mm (2'-0") FROM WALL ENDS.
2. WHERE SEISMIC HAZARD INDEX [IeFaSa(0.2)] < 0.35 PROVIDE LATERAL SUPPORT AT TOP OF WALL AS INDICATED ABOVE WHERE SPACING BETWEEN RETURN WALLS EXCEEDS 20 TIMES NOMINAL WALL THICKNESSES (t) FOR EXTERIOR WALLS AND 36t FOR INTERIOR PARTITION WALLS, OR WHERE LENGTH OF RETURN WALL IS LESS THAN 10t.
3. WHERE SEISMIC HAZARD INDEX IS > 0.35 PROVIDE LATERAL SUPPORT AT TOP OF ALL WALL AS INDICATED ABOVE.
4. REFER TO GENERAL NOTES FOR SEISMIC HAZARD INDEX VALUE.
5. SCAN OR X-RAY EXISTING SLAB PRIOR TO DRILLING TO LOCATE REINFORCING AND EMBEDDED CONDUIT

LATERAL SUPPORT FOR TOP OF MASONRY WALL AT UNDERSIDE OF STEEL ROOF DECK — TD-M03

NOTES:

1. SPACING OF LATERAL SUPPORT TO BE 1500 mm (5'-0") c/c MAX AND 600 mm (2'-0") FROM WALL ENDS.
2. WHERE SEISMIC HAZARD INDEX [IeFaSa(0.2)] < 0.35 PROVIDE LATERAL SUPPORT AT TOP OF WALL AS INDICATED ABOVE WHERE SPACING BETWEEN RETURN WALLS EXCEEDS 20 TIMES NOMINAL WALL THICKNESSES (t) FOR EXTERIOR WALLS AND 36t FOR INTERIOR PARTITION WALLS, OR WHERE LENGTH OF RETURN WALL IS LESS THAN 10t.
3. WHERE SEISMIC HAZARD INDEX IS > 0.35 PROVIDE LATERAL SUPPORT AT TOP OF ALL WALL AS INDICATED ABOVE.
4. REFER TO THE GENERAL NOTES FOR SEISMIC HAZARD INDEX VALUE.

REINFORCED MASONRY WALLS — TD-M05



VERTICAL WALL REINF LAYOUT (SINGLE LAYER) — HORIZONTAL JOINT REINF LAYOUT

TABLE 1 - MINIMUM LAP LENGTH

BAR SIZE	MINIMUM LAP
10	450mm (1'-6")
15	600mm (2'-0")
20	900mm (3'-0")

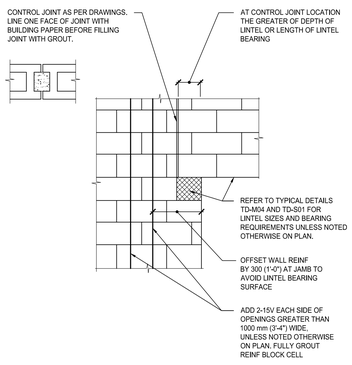
TABLE 2 - MINIMUM REINFORCEMENT FOR REINFORCED WALLS

WALL THICKNESS	VERTICAL REINF	HORIZONTAL REINF
SEISMIC HAZARD INDEX, IeFaSa(0.2) ≤ 0.35		
140 (5-1/2")	15 @ 1200 (4'-0")	9 GAUGE JOINT REINF @ 400 (1'-4")
190 (7-1/2")	15 @ 1200 (4'-0")	9 GAUGE JOINT REINF @ 400 (1'-4")
240 (9-1/2")	20 @ 1200 (4'-0")	9 GAUGE JOINT REINF @ 400 (1'-4")
290 (11-1/2")	2-15 @ 1000 (3'-4") (ONE EACH FACE)	9 GAUGE JOINT REINF @ 400 (1'-4")
SEISMIC HAZARD INDEX, IeFaSa(0.2) ≥ 0.35		
140 (5-1/2")	15 @ 800 (2'-8")	STANDARD 9 GAUGE (3.6mm) JOINT REINF @ 200 (8")
190 (7-1/2")	15 @ 800 (2'-8")	HEAVY DUTY (4.76mm SIDE WIRE) LADDER TYPE JOINT REINF @ 200 (8")
240 (9-1/2")	20 @ 1000 (3'-4")	HEAVY DUTY (4.76mm SIDE WIRE) LADDER TYPE JOINT REINF @ 200 (8") AND 102@1200 (4'-0")
290 (11-1/2")	2-15 @ 1000 (3'-4") (ONE EACH FACE)	STANDARD 9 GAUGE (3.6mm) JOINT REINF @ 400 (16") & 2-15 IN BOND BEAM @ 2400 (8'-0")

NOTES:

1. PROVIDE MINIMUM REINF AS NOTED IN TABLE 2, UNLESS SHOWN OTHERWISE ON DRAWINGS.
2. FULL FILL ALL REINFORCED BLOCK CELLS WITH FLOWABLE MASONRY GROUT IN ACCORDANCE WITH CSA STANDARD REQUIREMENTS.
3. REINFORCEMENT TO BE SUPPORTED TO PREVENT DISPLACEMENT DURING PLACEMENT OF GROUT OR MORTAR, AS A MINIMUM PROVIDE WIRE POSITIONERS OR SIMILAR DEVICE AT THE TOP AND BOTTOM, ENDS AND AT INTERVALS NOT EXCEEDING 200 (8") BAR DIAMETERS.
4. AT INTERSECTION, BOND WALLS TOGETHER BY INTERLOCKING ALTERNATE COURSES (RUNNING BOND), UNLESS NOTED OTHERWISE.
5. REFER TO GENERAL NOTES FOR SEISMIC HAZARD INDEX VALUE.
6. FOR REINFORCEMENT AT OPENINGS, REFER TO TYPICAL DETAIL TD-M06.
7. REFER TO TYPICAL DETAIL TD-M11 FOR REINFORCING OF NON LOAD BEARING WALLS.

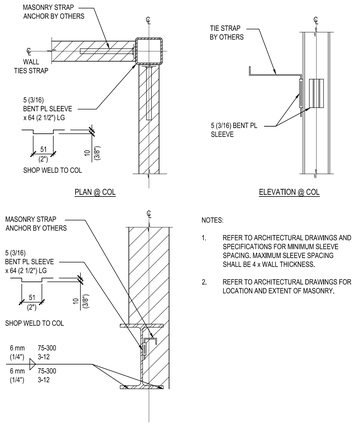
OPENINGS THROUGH LOAD BEARING WALLS — TD-M06



NOTES:

1. FULLY GROUT ALL PIERS 800 mm (2'-8") OR LESS IN WIDTH.

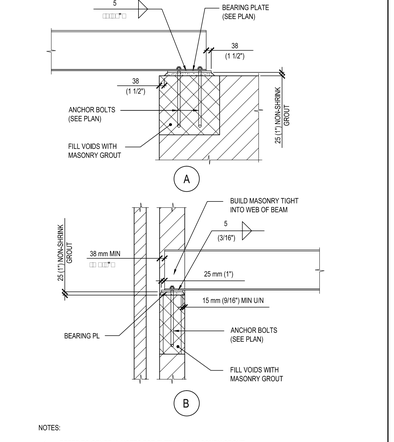
ANCHORAGE OF MASONRY ABUTTING STEEL COLUMN — TD-M07



NOTES:

1. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR MINIMUM SLEEVE SPACING. MAXIMUM SLEEVE SPACING SHALL BE 4 x WALL THICKNESS.
2. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION AND EXTENT OF MASONRY.

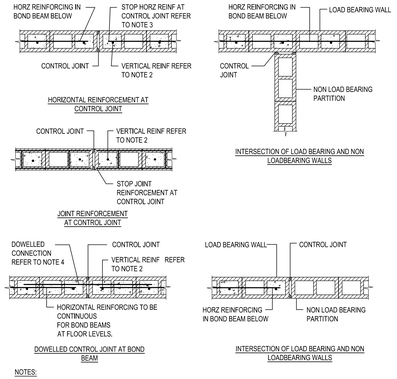
BEARING OF BEAM ON END OF MASONRY WALL — TD-MO8



NOTES:

1. REFER TO GENERAL NOTES FOR EXTENT OF MASONRY GROUT.
2. REFER TO PLANS FOR SIZE OF BEARING PLATE AND SIZE/NUMBER OF ANCHOR BOLTS.

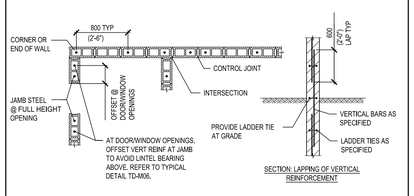
CONTROL JOINTS IN WALLS — TD-M10



NOTES:

1. REFER TO ARCHITECTURAL DRAWINGS FOR CONTROL JOINT LOCATIONS.
2. FOR REINFORCED WALLS PROVIDE 1-15V EACH SIDE OF ALL CONTROL JOINTS UNLESS NOTED OTHERWISE.
3. TERMINATE ALL REINFORCEMENT 50 mm (2") FROM CONTROL JOINTS, UNLESS SHOWN OTHERWISE.
4. FOR DOWELED CONTROL JOINTS PROVIDE 1200 mm (4'-0") LONG SMOOTH DOWELS ACROSS THE JOINT. PREVENT BOND BETWEEN BAR AND GROUT WITH GREASE OR A PLASTIC SLEEVE. CAP ALL DOWELS TO ALLOW 25 mm (1") OF MOVEMENT.

REINFORCING IN NON LOAD BEARING MASONRY WALLS — TD-M11



NOTES:

1. FULLY FILL ALL BLOCK CELLS CONTAINING BARS AND ALL BED JOINTS WITH FLOWABLE MASONRY GROUT IN ACCORDANCE WITH CSA STANDARD REQUIREMENTS.
2. REFER TO GENERAL NOTES (DESIGN NOTES) FOR SEISMIC INDEX HAZARD.

MINIMUM SEISMIC REINFORCING

NON-LOAD BEARING WALL WHERE SEISMIC HAZARD INDEX, IeFaSa(0.2)<0.75

WALL THICKNESS	VERTICAL	HORIZONTAL(LADDER-TYPE JOINT REINFORCING)
140	10M@800 c/c	2-3.66Ø @ 400 c/c
190	10M@800 c/c	2-4.76Ø @ 400 c/c
240	15M@800 c/c	2-4.76Ø @ 400 c/c
290	15M@800 c/c	3-4.76Ø @ 400 c/c

NON-LOAD BEARING WALL WHERE SEISMIC HAZARD INDEX 0.35<IeFaSa(0.2)<0.75

WALL THICKNESS	VERTICAL	HORIZONTAL(LADDER-TYPE JOINT REINFORCING)
140	10M@800 c/c	2-3.66Ø @ 400 c/c
190	10M@800 c/c	2-3.66Ø @ 400 c/c
240	10M@800 c/c	2-3.66Ø @ 400 c/c
290	10M@800 c/c	3-4.76Ø @ 400 c/c

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

REV	DESCRIPTION	DATE
2	ISSUED FOR TENDER	2017.05.16
1	100% REVIEW	2017.05.10

BORTOLOTTO

PROJECT NUMBER PP-1701

DATE

SCALE AS NOTED

DRAWN BY KOO/NAZ

TYPICAL DETAILS

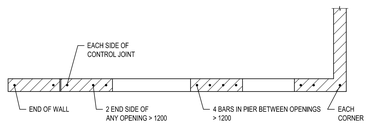
S1.3

MASONRY WALL REINFORCING — TD-M13

PROVIDE REINFORCING IN ALL LOAD BEARING WALLS AS FOLLOWS:
(UNLESS NOTED OTHERWISE ON THE PLANS) UNLESS SHOWN OTHERWISE REINF SHOW ON ANY PLAN SHALL EXTEND FROM FOUNDATION TO ROOF.

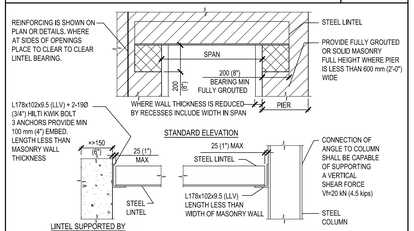
1. REINFORCE ADJACENT TO EACH OPENING GREATER THAN 1200 IN WIDTH WITH 2-20V IN THE FIRST TWO BLOCK CORES ADJACENT TO THE OPENING.
2. IN ADDITION PROVIDE 1-15 AT EACH CORNER OR END OF ANY WALL, AT EACH SIDE OF EACH CONTROL JOINT AND AS SHOWN ON PLAN.
3. LOCATE REINFORCING AT THE CENTRE LINE OF THE WALL OR IN CENTRE OF SPECIAL CORE FOR REBAR IN ACOUSTIC BLOCK.
4. GROUT REINFORCING TIGHT INTO THE BLOCK CORES FOR THE FULL HEIGHT. DO NOT GROUT MORE THAN 3 COURSES AT A TIME.
5. PROVIDE FOLLOWING WALL REINFORCING, UNLESS OTHERWISE NOTED ON PLAN.

190 EXTERIOR LOAD BEARING WALLS	-	15@1200 c/c V
240 INTERIOR LOAD BEARING WALLS	-	20@1400 c/c V AT GROUND FLOOR.
240 INTERIOR LOAD BEARING WALLS	-	20@2000 c/c V AT SECOND FLOOR.
290 EXTERIOR LOAD BEARING WALLS	-	2-20@2000 c/c V (2 EACH GROUTED CELL, ONE EACH FACE @ 180 c/c)



KEY PLAN OF WALL REINFORCING REQUIREMENTS

STEEL LINTELS FOR NON-LOAD BEARING MASONRY WALLS — TD-S01



LINTEL SUPPORTED BY POURED CONCRETE ELEMENT

LINTEL SUPPORTED BY STEEL COLUMN

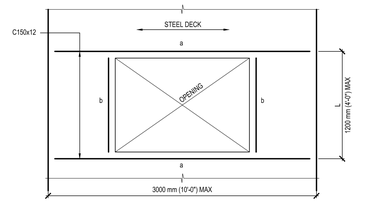
CLEAR SPAN	WALL THICKNESS				
	90 (3 1/2") VENEER	140 (5 1/2")	190 (7 1/2")	240 (9 1/2")	290 (11 1/2")
UP TO 1200 (4'-0")	L89x89x6.4	2-L64x64x6.4	2-L76x89x6.4 (LLH)	L76x102x6.4 + L76x127x6.4 (LLH)	3-L76x89x6.4 (LLH)
1200 (4'-0") TO 1800 (6'-0")	L127x89x6.4 (LLV)	2-L89x64x6.4 (LLV)	2-L89x89x6.4	L102x102x6.4 + L76x127x6.4 (LLH)	3-L89x89x6.4
1800 (6'-0") TO 2400 (8'-0")	L127x89x6.4 (LLV)	2-L89x64x7.9 (LLV)	2-L102x89x7.9 (LLV)	L102x102x9.5 + L89x127x7.9 (LLH)	3-L102x89x6.4 (LLV)
2400 (8'-0") TO 3000 (10'-0")	L127x89x9.5 (LLV)	2-L89x64x9.5 (LLV)	2-L152x89x7.9 (LLV)	L152x102x7.9 (LLV) + L127x127x7.9	3-L127x89x6.4 (LLV)
DETAIL					

NOTES:

1. CONNECT BACK TO BACK DOUBLE ANGLE LINTELS USING 16 mm (5/8") Ø BOLTS AT 450 mm (18") c/c MAX OR BY WELDING AT TOP AND BOTTOM USING 6 mm (1/4") WELDS x 50 mm (2") LONG AT 450 mm (18") c/c MAX. FIRST BOLT OR WELD TO BE A MAX OF 75 mm (3") FROM END OF LINTEL
2. FULLY PACK LINTEL ENDS WITH STEEL SHIMS TO ENSURE EVEN BEARING.
3. LINTELS AS COVERED UNDER THIS DETAIL ARE NOT NECESSARILY SHOWN ON THE STRUCTURAL DRAWINGS. REFER TO ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR OPENING LOCATIONS AND SIZES.

FRAMING AT OPENINGS IN STEEL ROOF DECK — TD-S02

	SPAN L	a	b
EXISTING ROOF DECK	150 mm (6") < L < 450 mm (18")	C150x12	L65x65x6
	450 mm (18") < L < 1200 mm (4'-0")	C150x12	C100x8
NEW ROOF DECK	150 mm (6") < L < 450 mm (18")	BY DECK SUPPLIER	BY DECK SUPPLIER
	450 mm (18") < L < 1200 mm (4'-0")	C150x12	C100x8

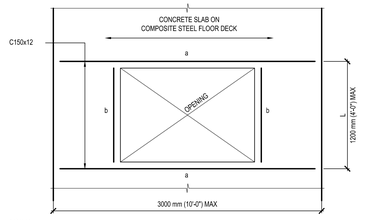


NOTES:

1. REINFORCING IS NOT REQUIRED AT OPENING LESS THAN 150 mm (6") SQUARE OR IN DIAMETER.
2. TOP OF OPENING TRIMMING STEEL TO BE TIGHT TO U/S OF STEEL DECK.
3. STANDARD OPENING TRIMMING STEEL IS NOT NECESSARILY SHOWN ON STRUCTURAL DRAWINGS. REFER TO ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR OPENING SIZES AND LOCATIONS, AS WELL AS EXACT NUMBER OF OPENINGS.
4. IF OPENING DIMENSIONS "L" EXCEEDS 1200 mm (4'-0") SEE PLAN FOR TRIMMER FRAMING.

FRAMING AT OPENINGS IN COMPOSITE STEEL FLOOR DECK — TD-S03

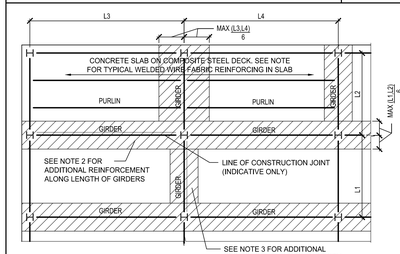
	SPAN L	a	b
EXISTING FLOOR DECK	150 mm (6") < L < 300 mm (12")	C150x12	L65x65x6
	300 mm (12") < L < 1200 mm (4'-0")	C150x12	C100x8
NEW FLOOR DECK	150 mm (6") < L < 300 mm (12")	BY DECK SUPPLIER	BY DECK SUPPLIER
	300 mm (12") < L < 1200 mm (4'-0")	C150x12	C100x8



NOTES:

1. REINFORCING IS NOT REQUIRED AT OPENING LESS THAN 150 mm (6") SQUARE OR IN DIAMETER.
2. TOP OF OPENING TRIMMING STEEL TO BE TIGHT TO U/S OF STEEL DECK.
3. STANDARD OPENING TRIMMING STEEL IS NOT NECESSARILY SHOWN ON STRUCTURAL DRAWINGS. REFER TO ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR OPENING SIZES AND LOCATIONS, AS WELL AS EXACT NUMBER OF OPENINGS.
4. IF OPENING DIMENSIONS "L" EXCEEDS 1200 mm (4'-0") SEE PLAN FOR TRIMMER FRAMING.

SLAB REINFORCEMENT FOR CONCRETE ON COMPOSITE STEEL DECK (NON-COMPOSITE BEAMS) — TD-S08



TYPICAL PLAN

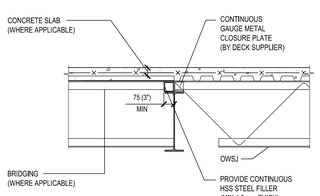
NOTES:

1. UNLESS NOTED OTHERWISE ON PLANS OR SPECIFICATIONS, PROVIDE WELDED WIRE FABRIC (WWF) REINFORCING IN SLAB AS FOLLOWS:

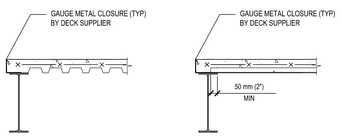
CONCRETE COVER SLAB THICKNESS, tc	REINFORCEMENT
65 mm (2 1/2") < tc < 89 mm (3 1/2")	1 LAYER 152x152 MW13.3xMW13.3
89 mm (3 1/2") < tc < 102 mm (4")	1 LAYER 152x152 MW18.7xMW18.7
102 mm (4") < tc < 127 mm (5")	1 LAYER 102x102 MW25.8xMW25.8

2. PROVIDE ONE ADDITIONAL LAYER OF WELDED WIRE FABRIC, SAME AS WWF IN REMAINDER OF SLAB OVER GIRDERS, REFER TO PLAN FOR EXTENT OF ADDITIONAL REINFORCEMENT.
3. ALONG LENGTH OF CONSTRUCTION JOINT PROVIDE ONE ADDITIONAL LAYER OF WELDED FABRIC, SAME AS WWF IN REMAINDER OF SLAB, CENTRED ON BEAM AND EXTENDING MIN 900 (3'-0") BEYOND CENTRE LINE OF BEAM EACH SIDE. WHERE A LAYER OF ADDITIONAL WWF HAS ALREADY BEEN PROVIDED AS PER NOTE 2 ABOVE, THE REQUIREMENT OF THIS CLAUSE NEED NOT APPLY.
4. PROVIDE 25 mm (1") COVER FROM TOP OF SLAB FOR WWF. PROVIDE CHAIRS OR CHAIRING BARS TO ENSURE PROPER COVER IS MAINTAINED.

CONCRETE ON STEEL DECK DETAILS — TD-S11



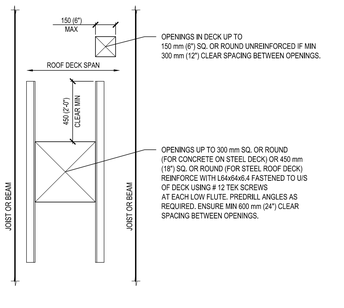
DECK SUPPORT AT CHANGE OF SPAN DIRECTION



DECK SPANNING PARALLEL TO BEAM

DECK SPANNING PERPENDICULAR TO BEAM

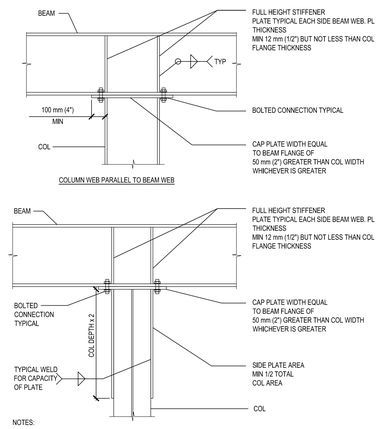
TYPICAL OPENINGS THROUGH EXISTING ROOF DECK — TD-S14



NOTE:

1. ALL LARGER OPENINGS SPACED CLOSER THAN SPECIFIED ABOVE TO BE FRAMED BY STRUCTURAL STEEL, SEE DRAWING NOTES.

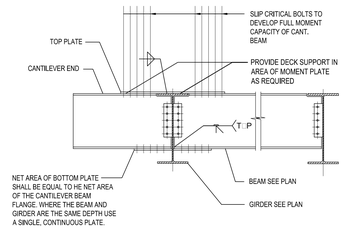
STEEL BEAM BEARING ON STEEL COLUMN — TD-S15



NOTES:

1. DETAILS SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE STRUCTURAL STEEL CONTRACTOR IS RESPONSIBLE FOR DESIGN OF THE FINAL CONFIGURATION.
2. IF ANY ALTERATIONS TO THE BASIC CONFIGURATION ARE PROPOSED DETAILED DESIGN CALCULATIONS ARE TO BE SUBMITTED IN ADVANCE OF THE DETAILED SHOP DRAWING.

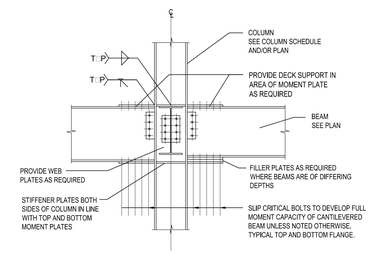
MOMENT CONNECTION AT GIRDER SUPPORT — TD-S18



NOTE:

DETAIL IS FOR ILLUSTRATED PURPOSE ONLY. THE STRUCTURAL STEEL CONTRACTOR IS RESPONSIBLE FOR THE FINAL CONNECTION CONFIGURATION AND DESIGN. THE CONTRACTOR SHALL SUBMIT DETAILED DESIGN CALCULATIONS WELL IN ADVANCE OF THE DETAILED SHOP DRAWINGS.

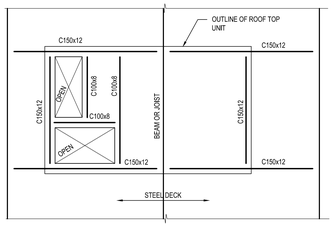
MOMENT CONNECTION AT COLUMN SUPPORT — TD-S19



NOTE:

DETAIL IS FOR ILLUSTRATED PURPOSE ONLY. THE STRUCTURAL STEEL CONTRACTOR IS RESPONSIBLE FOR THE FINAL CONNECTION CONFIGURATION AND DESIGN. THE CONTRACTOR SHALL SUBMIT DETAILED DESIGN CALCULATIONS WELL IN ADVANCE OF THE DETAILED SHOP DRAWINGS.

FRAMING FOR ROOF TOP UNITS AND OPENINGS IN STEEL ROOF DECK — TD-S28

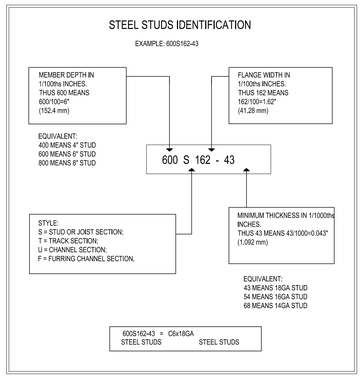


FRAMING FOR ROOF TOP MECHANICAL UNITS

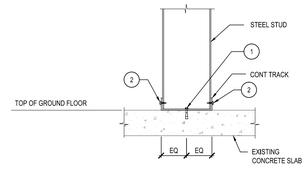
NOTES:

1. UNLESS SHOWN OTHERWISE ON PLAN, PROVIDE C150x12 SPANNING BETWEEN BEAMS OR JOISTS EACH SIDE OF ROOF TOP UNIT, AS WELL AS AT EACH END, IN THE MANNER INDICATED ABOVE. CHANNELS TO BE LOCATED DIRECTLY UNDER CURBS SUPPORTING UNIT. OMIT CHANNEL IF CURB IS DIRECTLY OVER A BEAM OR JOIST.
2. PROVIDE C100x8 TO SUPPORT EDGES OF DECK AT OPENINGS IN THE MANNER INDICATED ABOVE. IF THE DECK UNDER THE ENTIRE UNIT IS TO BE OMITTED, THE C100x8 FRAMING CAN BE DELETED.
3. CONNECT C150x12 TO SUPPORTING BEAMS OR JOISTS FOR A MINIMUM WORKING LOAD OF 9 kN OR 1/4 OF THE WEIGHT OF THE UNIT PLUS 5 kN, WHICHEVER IS MORE, CONNECT WITHOUT DAMAGING THE SUPPORTING STEEL.
4. CONNECT C100x8 TO SUPPORTS FOR A MINIMUM WORKING LOAD OF 5 kN.
5. COORDINATE LOCATION AND SIZE OF UNIT AND OPENINGS, AND LOCATION OF STEEL FRAMING WITH THE MECHANICAL CONSULTANT AND/OR MECHANICAL CONTRACTOR AND THE STRUCTURAL CONSULTANT.
6. THIS DETAIL APPLIES TO NEW CONSTRUCTION ONLY.

STEEL STUDS IDENTIFICATION — TD□LS□



CONNECTION OF CONT TRACK TO CONCRETE SLAB — TD-LS2

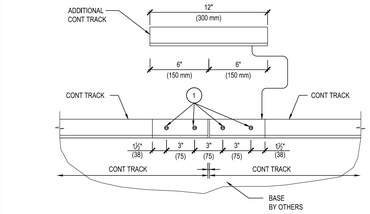


CONNECTION OF CONT TRACK TO CONCRETE SLAB TYPICAL DETAIL

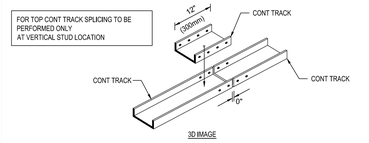
FASTENERS

MARK	CONNECTION	TYPE OF SCREW OR ANCHOR	NUMBER AND SPACING	SPECIAL REQUIREMENTS
1	TRACK TO CONCRETE	HILTI KWIK BOLT 3 12 mmØ x 2 1/2" EMBEDMENT	16" O/C	FIRST ANCHOR MAX 3" FROM TRACK END
2	TRACK TO STUD	TEKS #10-16	1 SCREW PER EACH LEG	-

TYPICAL CONT TRACK SPLICING DETAIL — TD-LS3



TYPICAL CONT TRACK SPLICING DETAIL

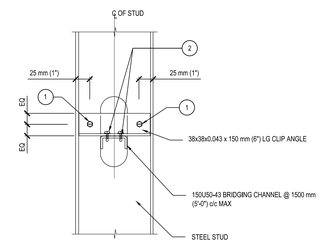


3D IMAGE

FASTENERS

MARK	CONNECTION	TYPE OF SCREW	NUMBER AND SPACING	SPECIAL REQUIREMENTS
1	TRACK TO TRACK	TEKS #10-16	4 PER EACH FLANGE (8 PER CONNECTION)	-

HORIZONTAL BRIDGING TO STUD CONNECTION — TD-LS4



HORIZONTAL BRIDGING TO STUD CONNECTION TYPICAL DETAIL

FASTENERS

MARK	CONNECTION	TYPE OF SCREW OR ANCHOR	NUMBER AND SPACING	SPECIAL REQUIREMENTS
1	CLIP ANGLE TO STUD	TEKS #10-16	2 PER CONNECTION	-
2	CLIP ANGLE TO BRIDGING	TEKS #10-16	2 PER CONNECTION (STAGGERED)	-

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION
PROJECT#R121
387 Balsam Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

REV	DESCRIPTION	DATE
2	ISSUED FOR TENDER	2017.05.16
1	100% REVIEW	2017.05.10

BORTOLOTTO

PROJECT NUMBER
PF1701

DATE
□□□□□□□

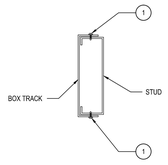
SCALE
AS NOTED

DRAWN BY
KOC/NAZ

TYPICAL DETAILS

S1.4

BUILT-UP STUD POST — TD-LS5

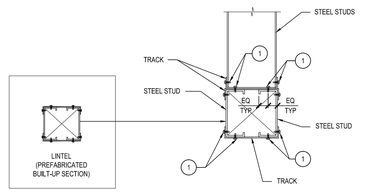


DOUBLE STUD BOX-POST TYPICAL DETAIL

FASTENERS

MARK	CONNECTION	TYPE OF SCREW	NUMBER AND SPACING	SPECIAL REQUIREMENTS
1	STUD TO STUD	TEKS #10-16	@ 400 mm (16") c/c	PROVIDE SCREW AT 3" FROM EACH END

BUILT-UP STUD BEAM — TD-LS6

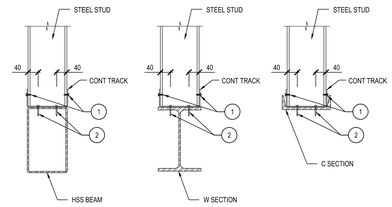


DOUBLE STUD BOX BEAM (LINTEL)

FASTENERS

MARK	CONNECTION	TYPE OF SCREW	NUMBER AND SPACING	SPECIAL REQUIREMENTS
1	TRACK TO STUD	TEKS #10-16	@ 300 mm (12") c/c	PROVIDE SCREW AT 3" FROM EACH END

CONNECTION OF CONT TRACK TO STEEL BEAM — TD-LS7

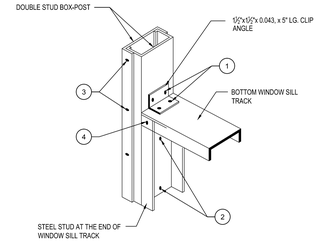


CONNECTION OF CONT TRACK TO STEEL BEAM TYPICAL DETAIL

FASTENERS

MARK	CONNECTION	TYPE OF SCREW	NUMBER AND SPACING	SPECIAL REQUIREMENTS
1	TRACK TO STUD	TEKS #10-16	1 PER EACH FLANGE	-
2	TRACK TO BEAM	TEKS #10-16	@ 400 mm (16") c/c (STAGGERED)	-

CONNECTION OF BOTTOM WINDOW SILL TRACK TO STUD POST TYPICAL DETAIL — TD-LS8

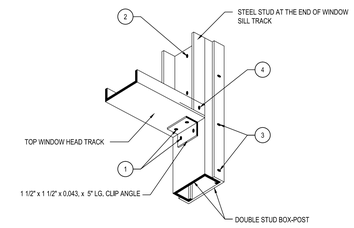


CONNECTION OF BOTTOM WINDOW SILL TRACK TO STUD POST - TYPICAL DETAIL

FASTENERS

MARK	CONNECTION	TYPE OF SCREW	NUMBER AND SPACING	SPECIAL REQUIREMENTS
-	TRACK TO STUD	TEKS #10-16	4 PER EACH FLANGE	-
-	TRACK TO BEAM	TEKS #10-16	@ 400 mm (16") c/c (STAGGERED)	-
-	STUD TO STUD	TEKS #10-16	@ 400 mm (16") c/c	INSTALL LAST SCREW 3" FROM EACH END
-	STUD TO TRACK	TEKS #10-16	1 PER EACH FLANGE	-

CONNECTION OF TOP WINDOW HEAD TRACK TO STUD POST - TYPICAL DETAIL — TD-LS9

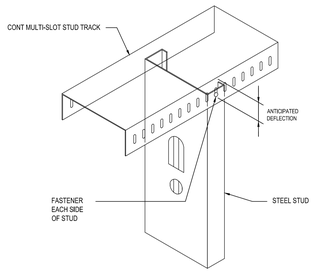


CONNECTION OF TOP WINDOW HEAD TRACK TO STUD POST - TYPICAL DETAIL

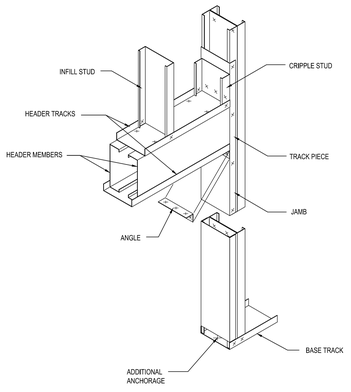
FASTENERS

MARK	CONNECTION	TYPE OF SCREW	NUMBER AND SPACING	SPECIAL REQUIREMENTS
1	TRACK TO STUD	TEKS #10-16	4 PER CONNECTION	-
2	STUD TO JAMB	TEKS #10-16	@ 400 mm (16") c/c	-
3	STUD TO STUD	TEKS #10-16	@ 400 mm (16") c/c	INSTALL LAST SCREW 3" FROM EACH END
4	STUD TO TRACK	TEKS #10-16	1 PER EACH FLANGE	-

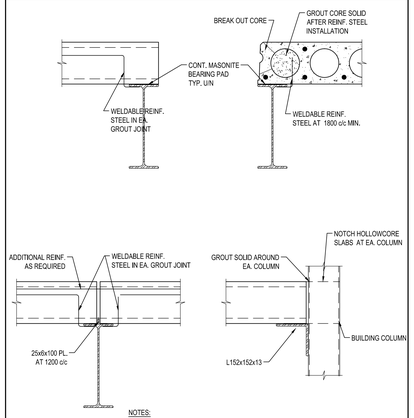
MOVEMENT TRACK AT TOP OF STUD WALL — TD-LS10



DOOR-LOAD BEARING BOXED HEADER BACK TO BACK JAMB — TD-LS11



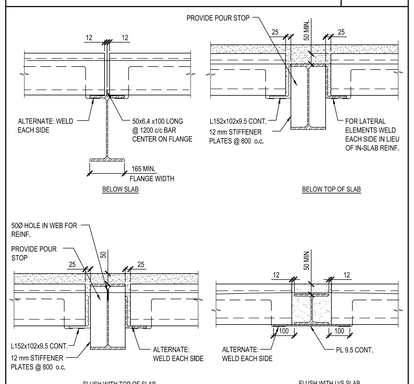
HOLLOWCORE SLABS SUPPORTED ON STEEL — TD-HC01



NOTES:

1. REINFORCING STEEL SHALL DE DESIGNED BY PRECAST SUPPLIER, REFER TO SHEAR FORCE DIAGRAM FOR DESIGN LOADS.
2. MINIMUM BEARING ON STEEL IS 75mm

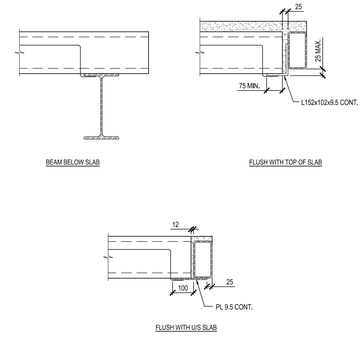
HOLLOWCORE ON STEEL — TD-HC02



NOTES:

1. 75 mm MINIMUM BEARING ON STEEL.
2. PLACE REINFORCEMENT IN EACH GROUT JOINT.
3. USE WELDABLE REINFORCEMENT WHERE CONNECTED TO STEEL.
4. THE SLAB SUPPLIER DESIGNS, PROVIDES AND INSTALLS ALL REINFORCEMENT EMBEDDED IN SLAB, INCLUDING WELDING TO STEEL.
5. DESIGN THE DIAPHRAGM, INCLUDING REINFORCING. REFER TO PLAN FOR DESIGN LOADS.
6. CONNECT REINFORCING DIRECTLY TO EACH SIDE OF THE STEEL BEAM IF IT IS A DIAPHRAGM/LATERAL ELEMENT.

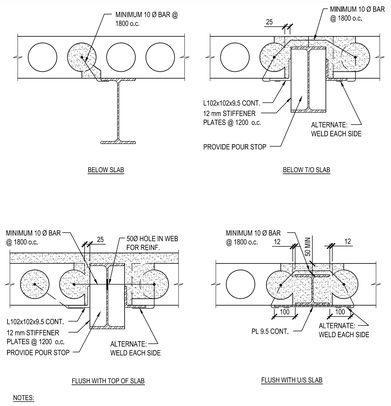
HOLLOWCORE ON STEEL — TD-HC03



NOTES:

1. 75 mm MINIMUM BEARING ON STEEL.
2. PLACE REINFORCEMENT IN EACH GROUT JOINT.
3. USE WELDABLE REINFORCEMENT WHERE CONNECTED TO STEEL.
4. THE SLAB SUPPLIER DESIGNS, PROVIDES AND INSTALLS ALL REINFORCEMENT EMBEDDED IN SLAB, INCLUDING WELDING TO STEEL.
5. DESIGN THE DIAPHRAGM, INCLUDING REINFORCING. REFER TO PLAN FOR DESIGN LOADS.

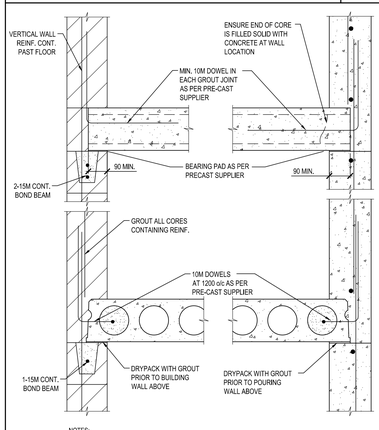
HOLLOWCORE ON STEEL — TD-HC04



NOTES:

1. 75 mm MINIMUM BEARING ON STEEL.
2. DRYPACK GROUT / STEEL SHIM BETWEEN THE SUPPORTING STEEL AND THE UNDERSIDE OF SLAB.
3. USE WELDABLE REINFORCEMENT WHERE CONNECTED TO STEEL.
4. THE SLAB SUPPLIER DESIGNS, PROVIDES AND INSTALLS ALL REINFORCEMENT EMBEDDED IN SLAB, INCLUDING WELDING TO STEEL.
5. DESIGN THE DIAPHRAGM, INCLUDING REINFORCING. REFER TO PLAN FOR DESIGN LOADS.
6. CONNECT REINFORCING DIRECTLY TO EACH SIDE OF THE STEEL BEAM IF IT IS A DIAPHRAGM/LATERAL ELEMENT.

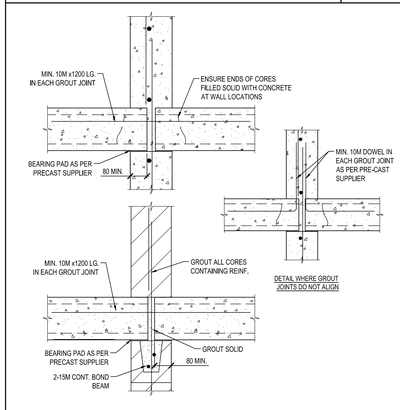
HOLLOWCORE ON MASONRY/ CONCRETE WALLS — TD-HC05



NOTES:

1. BEAR PANELS MIN. 90mm AT EACH END OR AS PER PRE-CAST SUPPLIER.
2. PLACE REINFORCEMENT IN EACH GROUT JOINT
3. THE PRE-CAST SUPPLIER SHALL DESIGN, PROVIDE AND INSTALL ALL REINFORCEMENT EMBEDDED IN SLAB.
4. DESIGN THE DIAPHRAGM, INCLUDING REINFORCING. REFER TO THE PLANS FOR DESIGN LOADS.

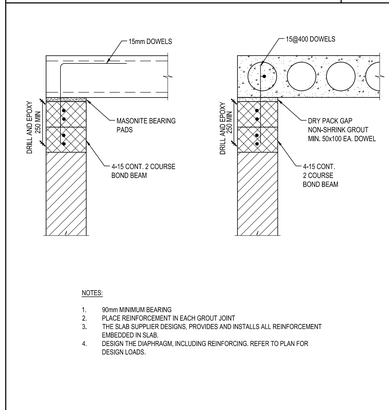
HOLLOWCORE ON MASONRY/ CONCRETE WALLS — TD-HC06



NOTES:

1. BEAR PANELS MIN. 80mm OR AS PER PRE-CAST SUPPLIER.
2. PLACE REINFORCEMENT IN EACH GROUT JOINT
3. THE PRE-CAST SUPPLIER SHALL DESIGN, PROVIDE AND INSTALL ALL REINFORCEMENT EMBEDDED IN SLAB.
4. DESIGN THE DIAPHRAGM, INCLUDING REINFORCING. REFER TO THE PLANS FOR DESIGN LOADS.

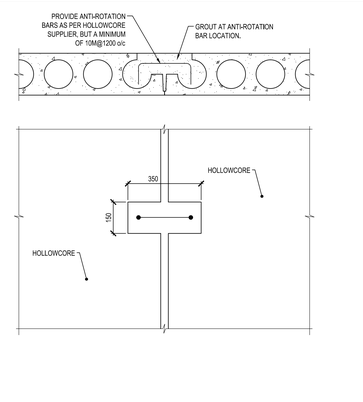
HOLLOWCORE ON CMU — TD-HC07



NOTES:

1. 90mm MINIMUM BEARING
2. PLACE REINFORCEMENT IN EACH GROUT JOINT
3. THE SLAB SUPPLIER DESIGNS, PROVIDES AND INSTALLS ALL REINFORCEMENT EMBEDDED IN SLAB.
4. DESIGN THE DIAPHRAGM, INCLUDING REINFORCING. REFER TO PLAN FOR DESIGN LOADS.

HOLLOWCORE SLAB DETAILS — TD-HC08



POPE FRANCIS ELEMENTARY ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1M8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

REV	DESCRIPTION	DATE
2	ISSUED FOR TENDER	2017.05.16
1	100% REVIEW	2017.05.10

BORTOLOTTO

PROJECT NUMBER: PFTP01

DATE: [illegible]

SCALE: AS NOTED

DRAWN BY: KOC/NAZ

TYPICAL DETAILS

S1.5

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

387 Bloomfield Street North
Timmins, Ontario

Unauthorized use of these documents is prohibited

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ANCHITECT INC.
533 Cabot Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E. Suite 209
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Wanstead Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultinghagineers.ca

S1.6

TYPICAL DETAILS

DRAWN BY
KOONAZ

SCALE
AS NOTED

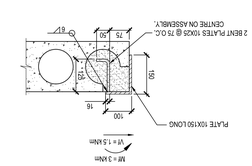
DATE
[illegible]

PROJECT NUMBER
PF1521

BORTOLOTTO

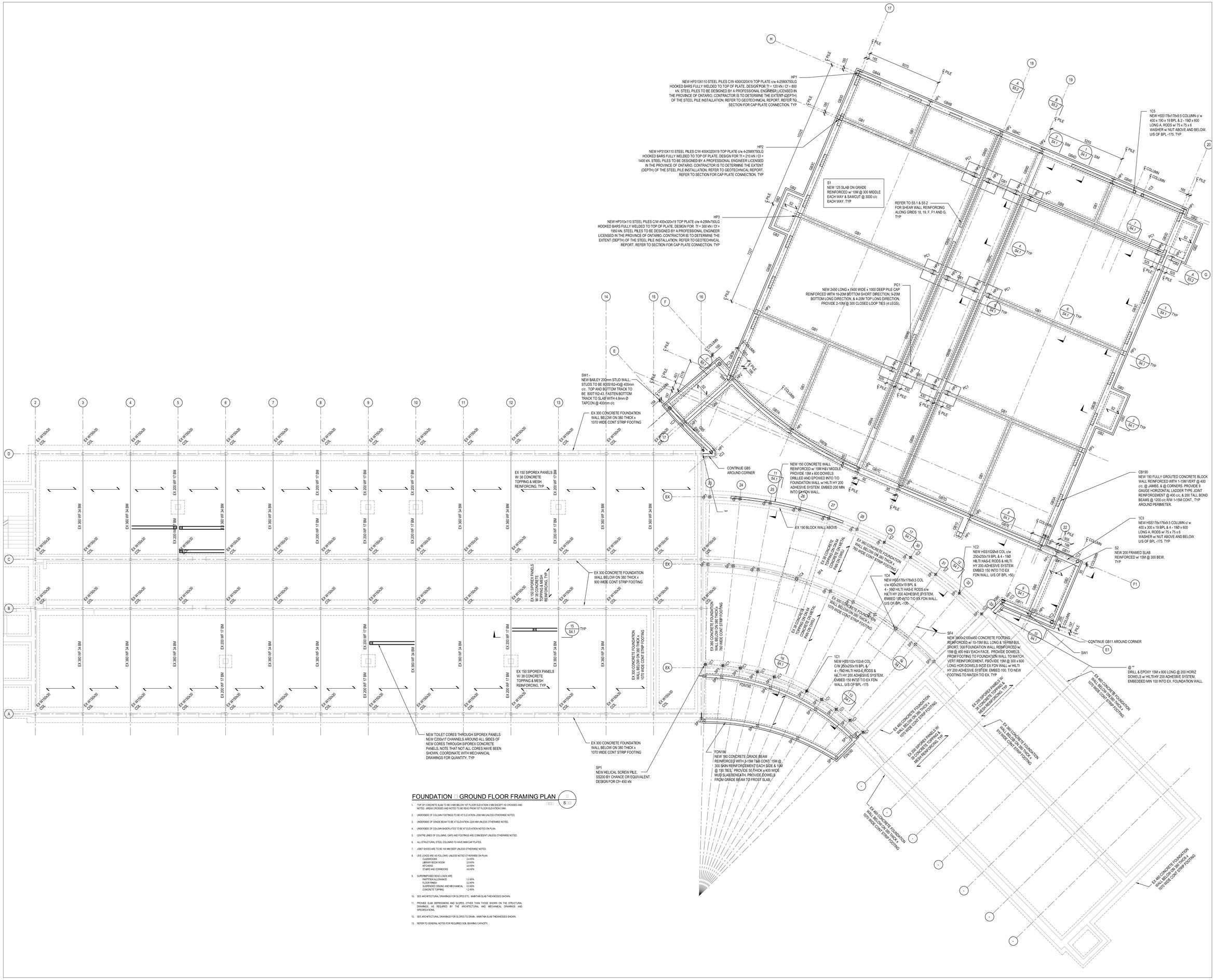
REV	DESCRIPTION	DATE
1	100% REVIEW	2021 05 10
2	ISSUED FOR TENDER	2021 05 16

GUARD CONNECTION TO HOLLOWCORE | TD-HC09



NOTES:

1. PROVIDE CONNECTION AT LOCATION OF GUARD VERTICALS.
2. GROUT LOCALLY 300 mm EACH SIDE OF ASSEMBLY.
3. MAX ALLOWABLE GUARD HEIGHT IS 1.9 m.



FOUNDATION & GROUND FLOOR FRAMING PLAN

1. TOP OF CONCRETE SLAB TO BE 0 MM BELOW 1ST FLOOR ELEVATION (1 MM EXCEPT AS CROSSED AND NOTED - AREAS CROSSED AND NOTED TO BE READ FROM 1ST FLOOR ELEVATION 0 MM).
2. UNDERSIDE OF COLUMN FOOTINGS TO BE AT ELEVATION -2590 MM UNLESS OTHERWISE NOTED.
3. UNDERSIDE OF GRADE BEAM TO BE AT ELEVATION -2205 MM UNLESS OTHERWISE NOTED.
4. UNDERSIDE OF COLUMN BASEPLATES TO BE AT ELEVATION NOTED ON PLAN.
5. CENTRE LINES OF COLUMNS, CAPS AND FOOTINGS ARE CONCIDENT UNLESS OTHERWISE NOTED.
6. ALL STRUCTURAL STEEL COLUMNS TO HAVE 8MM CAP PLATES.
7. JOIST SHOES ARE TO BE 100 MM DEEP UNLESS OTHERWISE NOTED.
8. LIVE LOADS ARE AS FOLLOWS, UNLESS NOTED OTHERWISE ON PLAN:

CLASSROOMS	2.4 KPA
LIBRARY/BOOK ROOM	2.9 KPA
KITCHENS	4.8 KPA
STAIRS AND CORRIDORS	4.8 KPA

9. SUPERIMPOSED DEAD LOADS ARE:

PARTITION ALLOWANCE	1.0 KPA
FLOOR FINISH	0.2 KPA
SUSPENDED CEILING AND MECHANICAL	0.5 KPA
CONCRETE TOPPING	1.2 KPA

10. SEE ARCHITECTURAL DRAWINGS FOR SLOPES ETC., MAINTAIN SLAB THICKNESSES SHOWN.
11. PROVIDE SLAB DEPRESSIONS AND SLOPES, OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS, AS REQUIRED BY THE ARCHITECTURAL AND MECHANICAL DRAWINGS AND SPECIFICATIONS.
12. SEE ARCHITECTURAL DRAWINGS FOR SLOPES TO DRAIN. MAINTAIN SLAB THICKNESSES SHOWN.
13. REFER TO GENERAL NOTES FOR REQUIRED SOIL BEARING CAPACITY.

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

REV	DESCRIPTION	DATE
2	ISSUED FOR TENDER	2017.05.16
1	100% REVIEW	2017.05.10

BORTOLOTTO

PROJECT NUMBER
PP1701

DATE
2017.05.16

SCALE
1:75

DRAWN BY
KOC

FOUNDATION PLAN

S2.1



SECOND FLOOR FRAMING PLAN

1. TOP OF CONCRETE TOPPING TO BE 00 MM FROM 2ND FLOOR ELEVATION 3300 MM, EXCEPT AS CROSSED AND NOTED. AREAS CROSSED AND NOTED TO BE READ FROM 2ND FLOOR ELEVATION 3300 MM.
2. TOP OF STEEL BEAMS ARE TO BE 300 MM BELOW 2ND FLOOR ELEVATION 3300 MM, UNLESS NOTED +/- 0.0 ON PLAN. BEAM ELEVATIONS NOTED ON PLAN ARE TO BE READ FROM 2ND FLOOR ELEVATION 3300 MM.
3. LIVE LOADS ARE AS FOLLOWS, UNLESS NOTED OTHERWISE ON PLAN:

CLASSROOMS	2.4 KPA
LIBRARY/BOOK ROOM	2.9 KPA
KITCHENS	4.8 KPA
STAIRS AND CORRIDORS	4.8 KPA
LOW ROOF	3.2 KPA + ASL

4. SUPERIMPOSED DEAD LOADS ARE:

PARTITION ALLOWANCE	1.0 KPA
FLOOR FINISH	0.2 KPA
SUSPENDED CEILING AND MECHANICAL	0.5 KPA
CONCRETE TOPPING	1.2 KPA

5. CONNECT HOLLOW CORE SLAB TO SUPPORTING ELEMENTS FOR AN UNFACTORED DIAPHRAGM SHEAR FORCE SHOWN ON S2.4.
6. STEEL BEAM CONNECTIONS ARE TO BE DESIGNED FOR THE FACTORED FORCES INDICATED ON PLAN. WHERE NO FORCE IS INDICATED, DESIGN STEEL CONNECTIONS FOR A FACTORED VERTICAL SHEAR FORCE OF 80 KN. PROVIDE MINIMUM 2 BOLTS AT ALL CONNECTIONS.
7. SEE ARCHITECTURAL DRAWINGS FOR SLOPES ETC. MAINTAIN SLAB THICKNESSES SHOWN.

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION PROJECT#R121

387 Balsam Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1M8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

REV	DESCRIPTION	DATE
2	ISSUED FOR TENDER	2017.05.16
1	100% REVIEW	2017.05.10

BORTOLOTTO

PROJECT NUMBER PF1701

DATE

SCALE 1:75

DRAWN BY KOC

SECOND FLOOR FRAMING PLAN

S2.2

S2.3

ROOF FRAMING PLAN

BORTOLOTTO

PROJECT NUMBER
PP1521

DATE
[redacted]

SCALE
1:75

DRAWN BY
KDC

REV	DESCRIPTION	DATE
1	100% REVIEW	2021.09.10

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9931
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E. Suite 209
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2164 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
constultingengineers.ca

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#P121
387 Bloors Street North
Timmins, Ontario

ROOF FRAMING PLAN
S.2.3

1. TOP OF CONCRETE TOPPING TO BE 0 MM FROM FINISHED ROOF ELEVATION 650 MM, EXCEPT AS CROSSED AND NOTED. AREAS CROSSED AND NOTED TO BE READ FROM ELEVATION 650 MM.
2. TOP OF STEEL BEAMS IS 300 MM BELOW ROOF ELEVATION 650 MM UNLESS OTHERWISE NOTED. BEAM ELEVATIONS NOTED ON PLAN ARE TO BE READ FROM ROOF ELEVATION 650 MM.

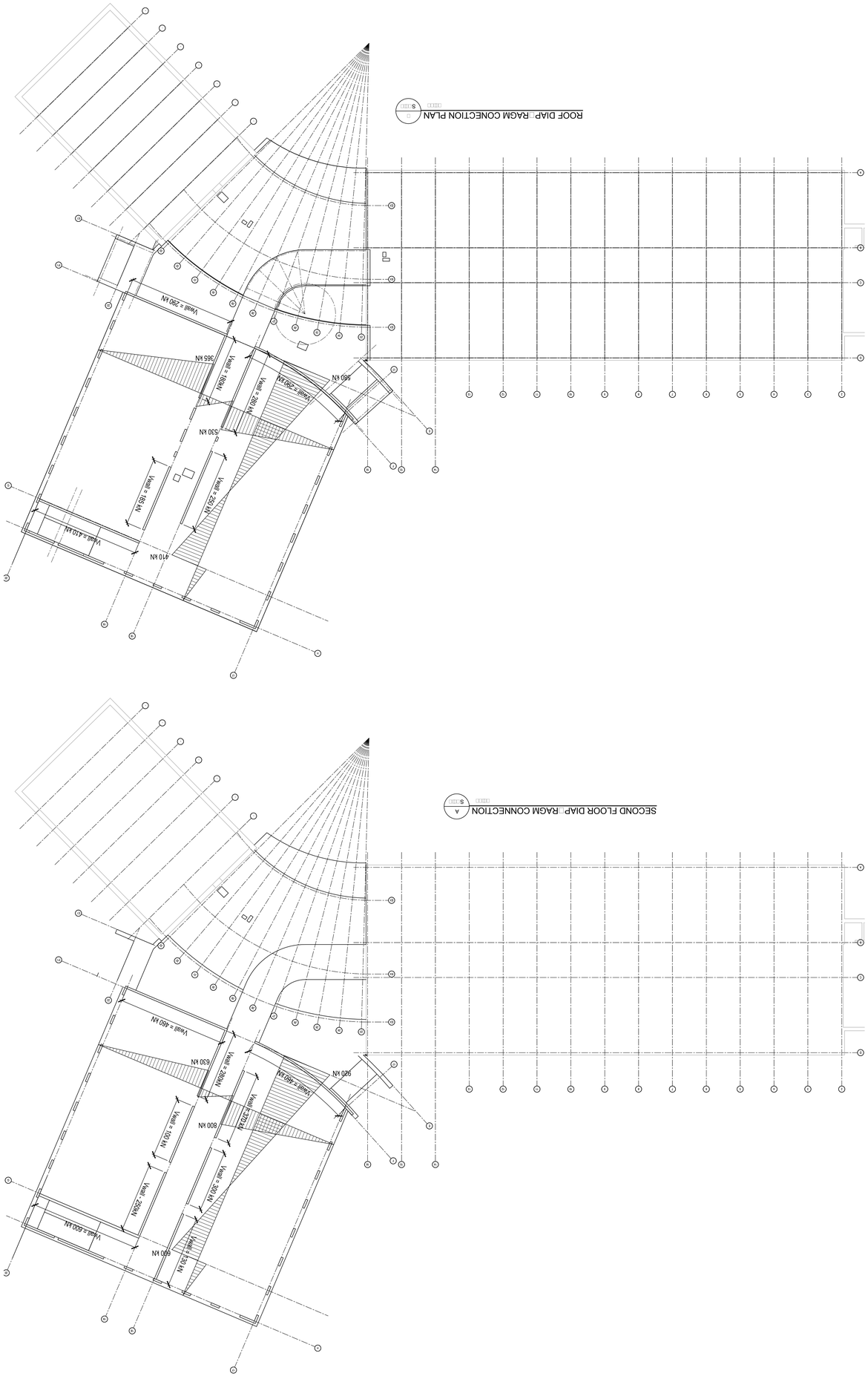
1. LIVE LOADS ARE AS FOLLOWS, UNLESS NOTED OTHERWISE ON PLAN:

LIVE LOAD	1 KPA
ROOF AREAS	1.2 KPA + ASL

2. SUPERIMPOSED DEAD LOADS ARE:

ROOFING	0.5 KPA
SUSPENDED CEILING AND MECHANICAL	0.3 KPA
CONCRETE TOPPING	1.2 KPA

3. CONNECT HOLLOWCORE SLAB TO SUPPORTING ELEMENTS FOR AN UNFACTORED DIAPHRAGM SHEAR FORCE SHOWN ON S2.4.
4. STEEL BEAM CONNECTIONS ARE TO BE DESIGNED FOR THE FACTORED FORCES INDICATED ON PLAN. WHERE NO FORCE IS INDICATED, DESIGN STEEL CONNECTIONS FOR A FACTORED VERTICAL SHEAR FORCE OF 80 KN. PROVIDE MINIMUM 2 BOLTS AT ALL CONNECTIONS.
5. SEE ARCHITECTURAL DRAWINGS FOR SLOPES ETC.



ROOF DIAP□RAGM CONECTION PLAN
S.XXX
S.XXX

SECOND FLOOR DIAP□RAGM CONNECTION
A
S.XXX

S2.4

ROOF DIAPHRAGM & SECOND FLOOR DIAPHRAGM CONNECTION PLAN

BORTOLOTTO

PROJECT NUMBER
PF1521

DATE
□□□□-□□-□□

SCALE
As NOTED

DRAWN BY
KQC

REV	DESCRIPTION	DATE
1	100% REVIEW	2021 05 10
2	ISSUED FOR TENDER	2021 05 16

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECTPR121
387 Bloomfield Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 Cedar Street Suite 401
Timmins ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E. Suite 209
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Wanstead Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
constultingengineers.ca

CONCRETE BEAM SCHEDULE

BEAM NO.	SIZE	FLEXURAL REINFORCEMENT			STIRRUPS			REMARKS
		LEFT END		RIGHT END	SIZE	TYPE	SPACING	
GB1	190 x 1200	2-15M TUL 2-15M TLL 5-15M EF 2-15M BUL 2-15M BLL			10		300	390 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB.
GB2	190 x 2000	2-20M TUL 2-20M TLL 9-15M EF 2-20BUL 2-20BLL			10		300	390 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB. REINF TO BE CONT AROUND CORNERS OF FROST SLAB
GB3A	370 x 2000	4-25M T 9-15M EF 4-25M B		CONT	10		200	570 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB. PROVIDE DOWELS TO MATCH VERTICAL REINFORCEMENT OF WALL ABOVE. SEE GB3B FOR CONTINUATION
GB3B	370 x 2000	4-25M T 9-15M EF 4-25M B	CONT	CONT	10		200	570 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB. PROVIDE DOWELS TO MATCH VERTICAL REINFORCEMENT OF WALL ABOVE. SEE GB3A AND GB3C FOR CONTINUATION
GB3C	370 x 2000	4-25M T 9-15M EF 4-25M B	CONT	CONT	10		200	570 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB. PROVIDE DOWELS TO MATCH VERTICAL REINFORCEMENT OF WALL ABOVE. SEE GB3B AND GB3D FOR CONTINUATION
GB3D	370 x 2000	4-25M T 9-15M EF 4-25M B	CONT		10		200	570 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB. PROVIDE DOWELS TO MATCH VERTICAL REINFORCEMENT OF WALL ABOVE. SEE GB3C FOR CONTINUATION
GB4A	370 x 2000	4-25M T 9-15M EF 4-25M B		CONT	10		200	570 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB. PROVIDE DOWELS TO MATCH VERTICAL REINFORCEMENT OF WALL ABOVE. SEE GB4B FOR CONTINUATION
GB4B	370 x 2000	4-25M T 9-15M EF 4-25M B	CONT	CONT	10		200	570 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB. PROVIDE DOWELS TO MATCH VERTICAL REINFORCEMENT OF WALL ABOVE. SEE GB4A AND GB4C FOR CONTINUATION
GB4C	370 x 2000	4-25M T 9-15M EF 4-25M B	CONT	CONT	10		200	570 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB. PROVIDE DOWELS TO MATCH VERTICAL REINFORCEMENT OF WALL ABOVE. SEE GB4B AND GB4D FOR CONTINUATION
GB4D	370 x 2000	4-25M T 9-15M EF 4-25M B	CONT	CONT	10		200	570 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB. PROVIDE DOWELS TO MATCH VERTICAL REINFORCEMENT OF WALL ABOVE. SEE GB4C AND GB4E FOR CONTINUATION
GB4E	370 x 2000	4-25M T 9-15M EF 4-25M B	CONT		10		200	570 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB. PROVIDE DOWELS TO MATCH VERTICAL REINFORCEMENT OF WALL ABOVE. SEE GB3D FOR CONTINUATION
GB5	370 x 2000	4-15M T 9-15M EF 4-15M B			10		200	595 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB.
GB6	395 x 2000	4-15M T 9-15M EF 4-15M B			10		200	595 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB.
GB7A	395 x 2000/ 1200	4-20M TUL 4-20M TLL 1900 2300 5-15M EF 4-20M BUL 4-20M BLL		CONT	10		200 TYP	595 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB. PROVIDE DOWELS TO MATCH VERTICAL REINFORCEMENT OF WALL ABOVE. SEE GB7B FOR CONTINUATION. 2000 THICK @ EXTERIOR, REDUCE TO 1200 @ INTERIOR
					2-10		9@150c/c,1200 FROM LEFT & RIGHT ENDS	
GB7B	395 x 1200	4-20M TUL 4-20M TLL 2400 1900 5-15M EF 4-20M BUL 4-20M BLL	CONT	CONT	10		200 TYP	595 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB. PROVIDE DOWELS TO MATCH VERTICAL REINFORCEMENT OF WALL ABOVE. SEE GB7A AND GB7C FOR CONTINUATION
					2-10		9@150c/c,1200 FROM LEFT & RIGHT ENDS	
GB7C	395 x 1200	4-20M TUL 4-20M TLL 5-15M EF 4-20M BUL 4-20M BLL	CONT	CONT	10		200 TYP	595 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB. SEE GB7B AND GB7D FOR CONTINUATION
					2-10		9@150c/c,1200 FROM LEFT & RIGHT ENDS	
GB7D	395 x 1200	4-20M TUL 4-20M TLL 1500 2000 5-15M EF 4-20M BUL 4-20M BLL	CONT	CONT	10		200 TYP	595 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB. PROVIDE DOWELS TO MATCH VERTICAL REINFORCEMENT OF WALL ABOVE. SEE GB7C AND GB7E FOR CONTINUATION
					2-10		9@150c/c,1200 FROM LEFT & RIGHT ENDS	
GB7E	395 x 1200	4-20M TUL 4-20M TLL 5-15M EF 4-20M BUL 4-20M BLL	CONT		10		200 TYP	595 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB. PROVIDE DOWELS TO MATCH VERTICAL REINFORCEMENT OF WALL ABOVE. SEE GB7D FOR CONTINUATION
					2-10		9@150c/c,1200 FROM LEFT & RIGHT ENDS	
GB8	370 x 1200	4-25M TUL 4-25M TLL 5-15M EF 4-25M BUL 4-25M BLL			10		200 TYP	570 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB. PROVIDE DOWELS TO MATCH VERTICAL REINFORCEMENT OF WALL ABOVE.
					2-10		9@150c/c,1200 FROM LEFT & RIGHT ENDS	
GB9A	370 x 1200	4-25M TUL 4-25M TLL 2000 2650 5-15M EF 4-25M BUL 4-25M BLL		CONT	10		200 TYP	570 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB. PROVIDE DOWELS TO MATCH VERTICAL REINFORCEMENT OF WALL ABOVE. SEE GB9B FOR CONTINUATION
					2-10		9@150c/c,1200 FROM LEFT & RIGHT ENDS	
GB9B	370 x 1200	4-25M TLL 4-25M TLL CONT 5-15M EF CONT 4-25M BUL 4-25M BLL			10		200 TYP	570 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB. PROVIDE DOWELS TO MATCH VERTICAL REINFORCEMENT OF WALL ABOVE. SEE GB9A AND GB9C FOR CONTINUATION
					2-10		9@150c/c,1200 FROM LEFT & RIGHT ENDS	
GB9C	370 x 1200	4-25M TUL 4-25M TLL 2800 2500 CONT 5-15M EF CONT 4-25M BUL 4-25M BLL			10		200 TYP	570 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB. PROVIDE DOWELS TO MATCH VERTICAL REINFORCEMENT OF WALL ABOVE. SEE GB9B AND GB9D FOR CONTINUATION
					2-10		9@150c/c,1200 FROM LEFT & RIGHT ENDS	
GB9D	370 x 1200	4-25M TUL 4-25M TLL 5-15M EF 4-25M BLL			10		200 TYP	570 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB. PROVIDE DOWELS TO MATCH VERTICAL REINFORCEMENT OF WALL ABOVE. SEE GB9C FOR CONTINUATION
					2-10		9@150c/c,1200 FROM LEFT & RIGHT ENDS	
GB10	395 x 1200	2-15M T 5-15M EF 2-15M B			10		300	595 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB.
GB11	370 x 2000	4-15M T 9-15M EF 4-15M B			10		200	595 WIDE x 50 THICK CONCRETE MUD SLAB. TOP OF GRADE BEAM TO BE @ -200 BELOW TOP OF SLAB.
2CB1	300 x 300	8-20M T 3-30M B			10		300	

NOTES:

1. PROVIDE 50 THICK MUD SLAB BENEATH GRADE BEAMS, 100 WIDER THAN WIDTH OF BEAMS. TYP FOR ALL GRADE BEAMS.
2. TOP OF GRADE BEAM IS -200 BELOW TOP OF SLAB UNLESS OTHERWISE NOTED

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

REV	DESCRIPTION	DATE
2	ISSUED FOR TENDER	2017.05.16
1	100% REVIEW	2017.05.10

BORTOLOTTO

PROJECT NUMBER
PF1701

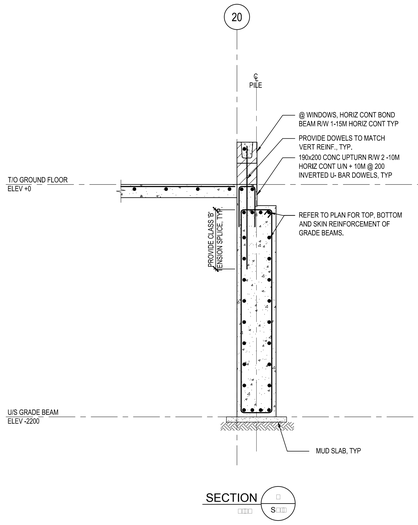
DATE
□□□□□□□

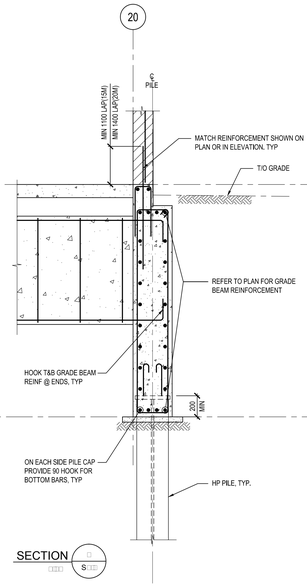
SCALE
AS NOTED

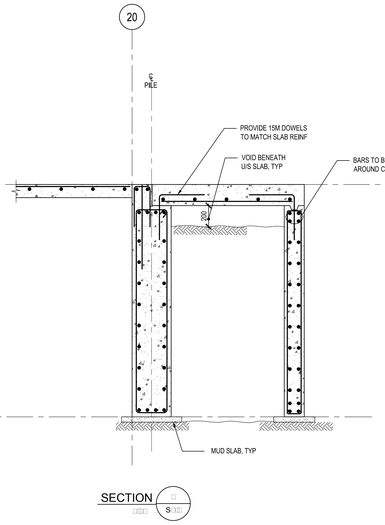
DRAWN BY
JRP

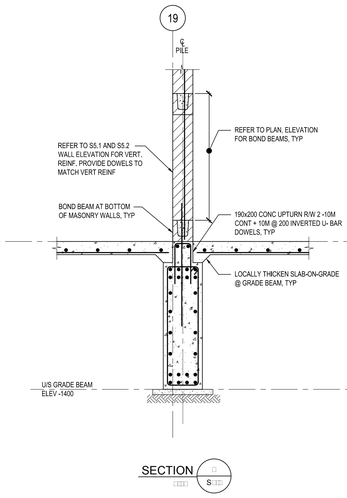
CONCRETE BEAM SCHEDULE

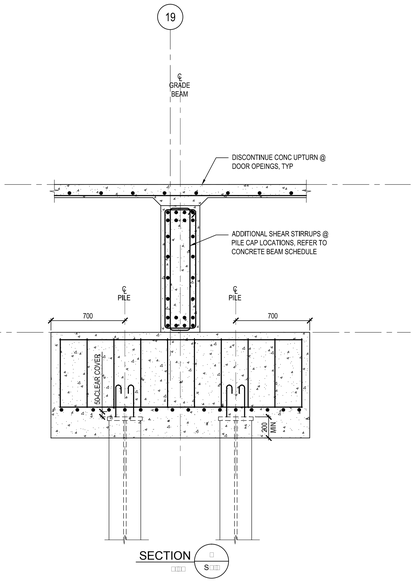
S3.1

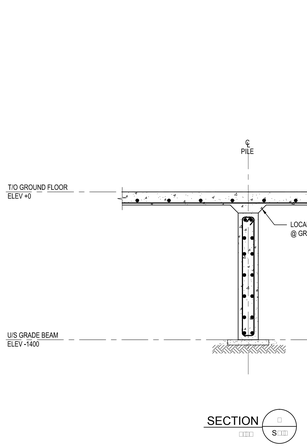


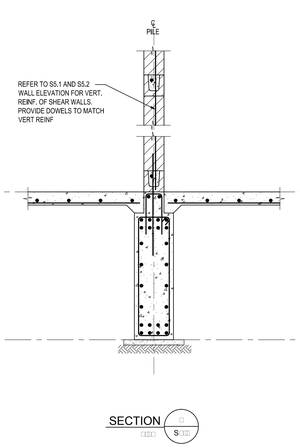


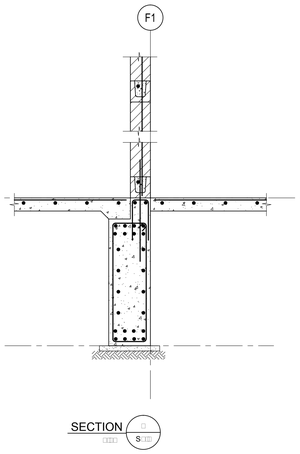


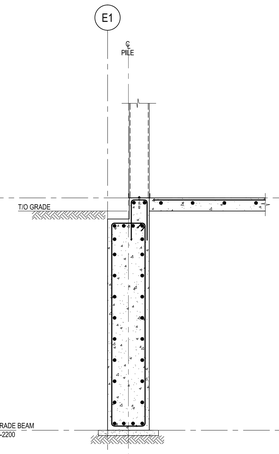


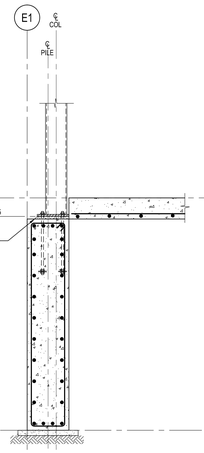


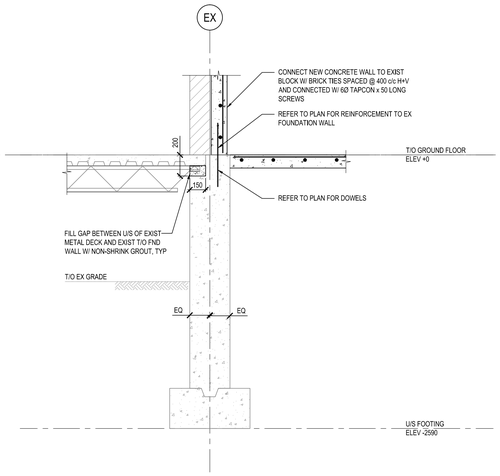


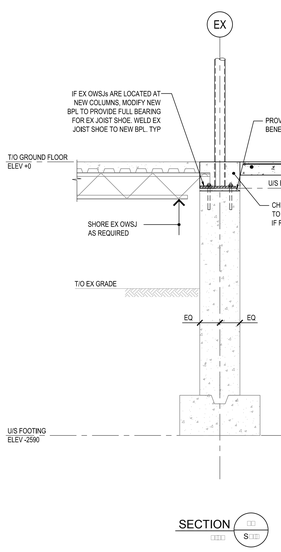


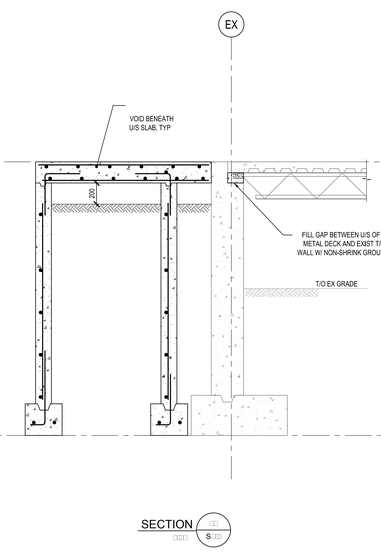


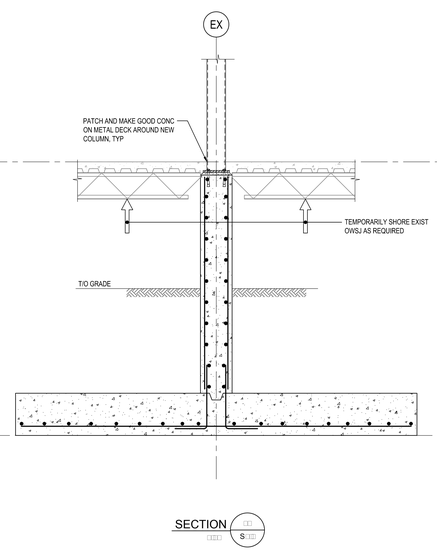


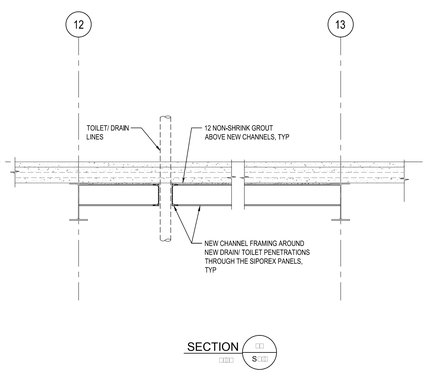


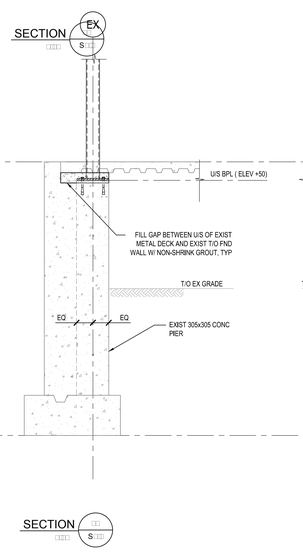


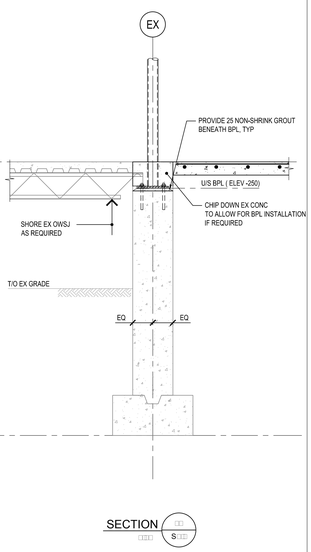












POPE FRANCIS ELEMENTARY ADDITION & RENOVATION
PROJECT#121

387 Balsam Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

REV	DESCRIPTION	DATE
2	ISSUED FOR TENDER	2017.05.16
1	100% REVIEW	2017.05.10

BORTOLOTTO

PROJECT NUMBER PF1701

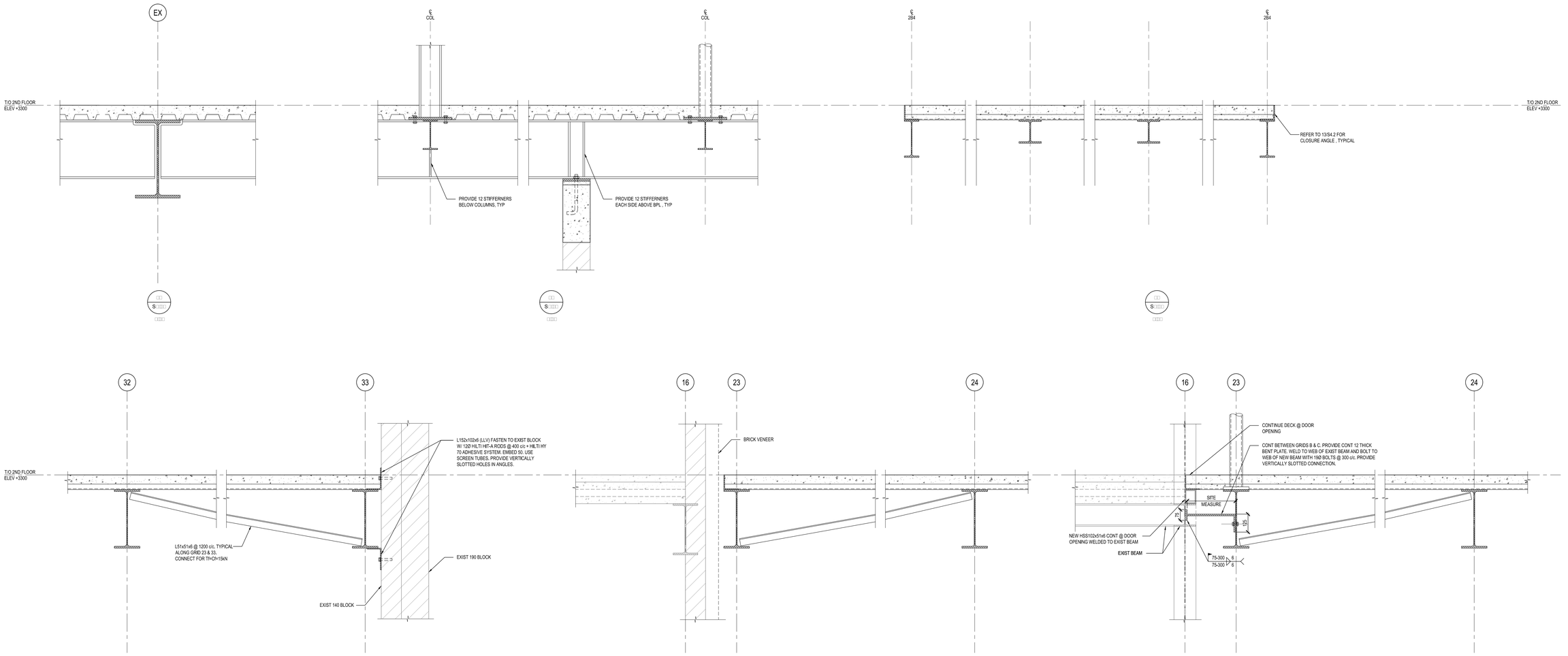
DATE

SCALE 1:20

DRAWN BY NAZ

SECTIONS AND DETAILS

S4.1



POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#121

387 Balsam Street North
Timmins, Ontario

[redacted]

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9953
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1M8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

REV	DESCRIPTION	DATE
2	ISSUED FOR TENDER	2017.05.16
1	100% REVEW	2017.05.10

BORTOLOTTO

PROJECT NUMBER
PF1701

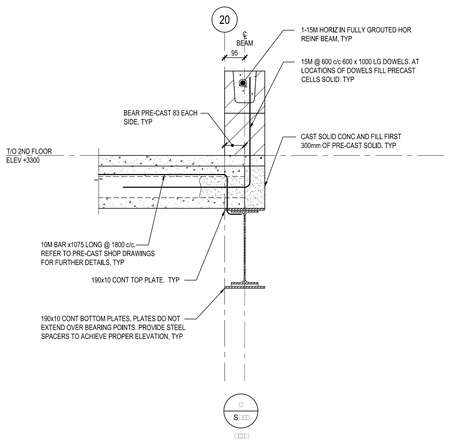
DATE
[illegible]

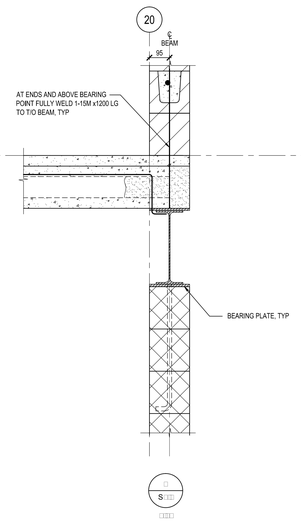
SCALE
1:10

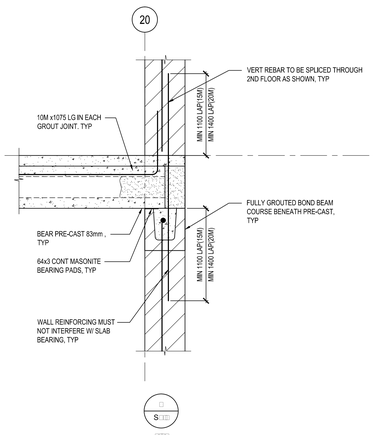
DRAWN BY
NAZ

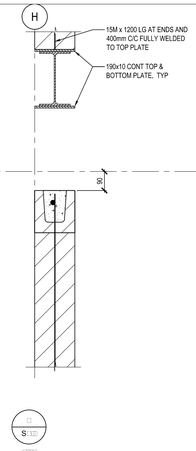
SECTIONS AND DETAILS

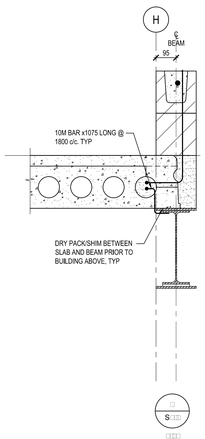
S4.2B

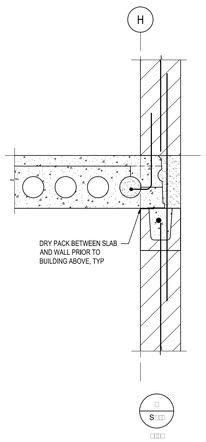


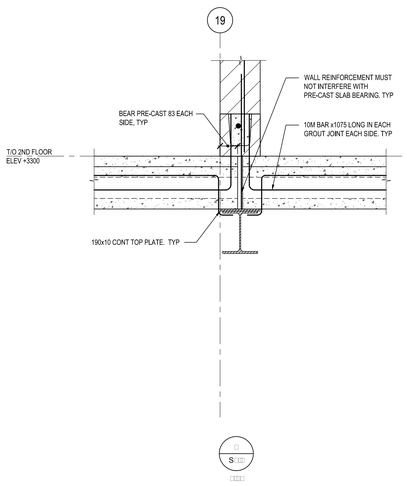


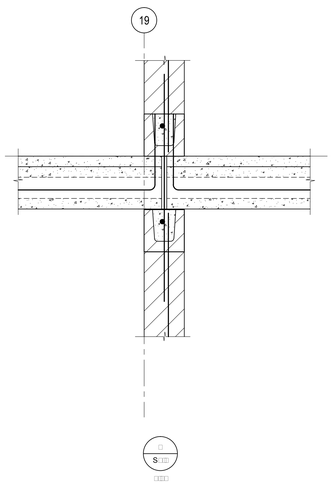


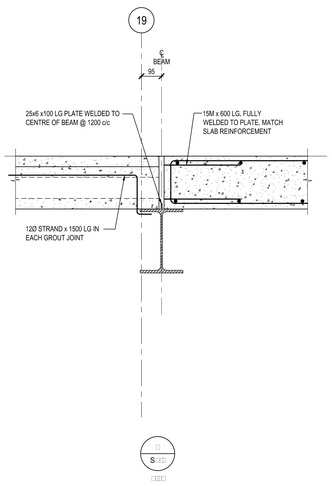


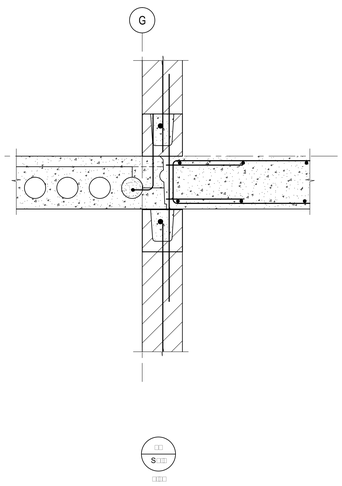


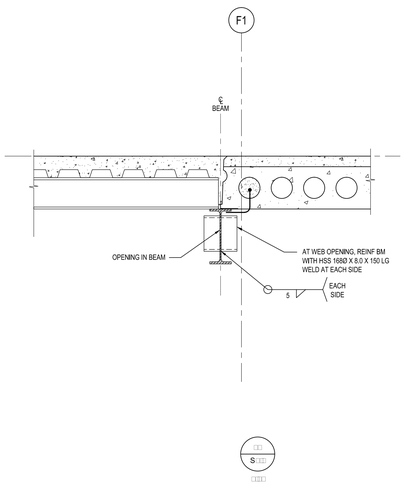


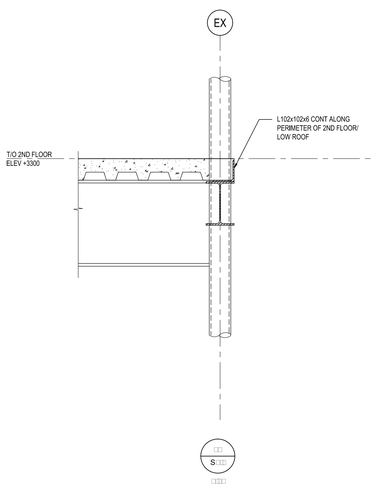


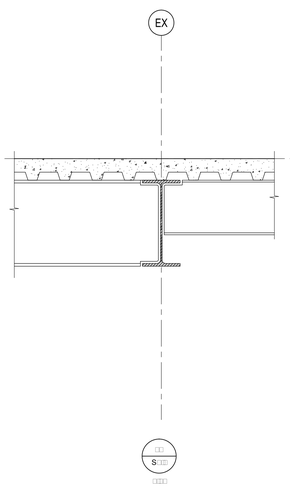


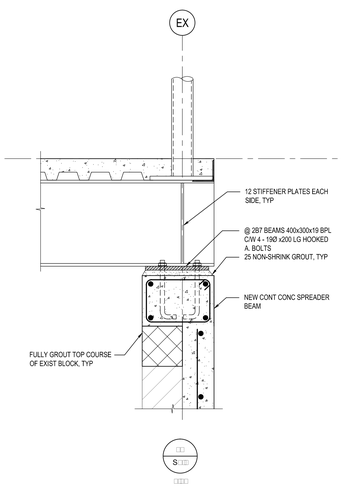


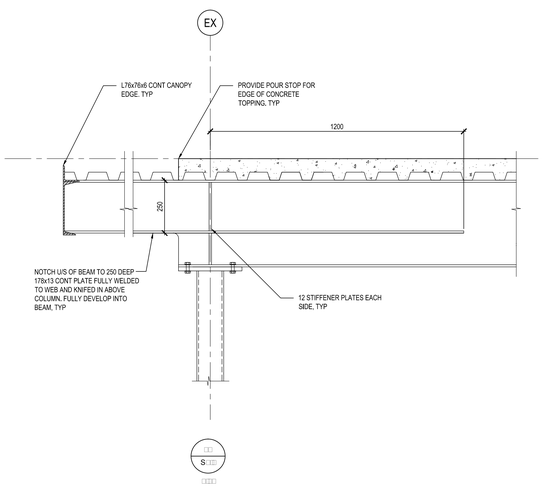


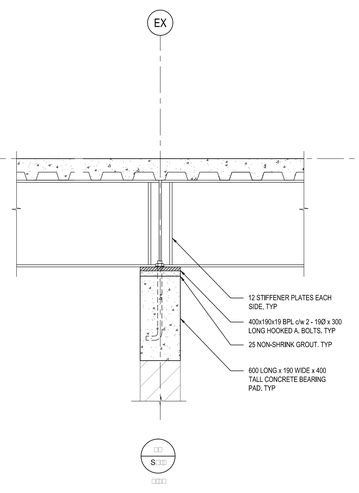












POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

THIS DRAWING IS COPYRIGHTED. Reuse Permitted With Permission Only.

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1M8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

REV	DESCRIPTION	DATE
2	ISSUED FOR TENDER	2017.05.16
1	100% REVIEW	2017.05.10

BORTOLOTTO

PROJECT NUMBER PP1701

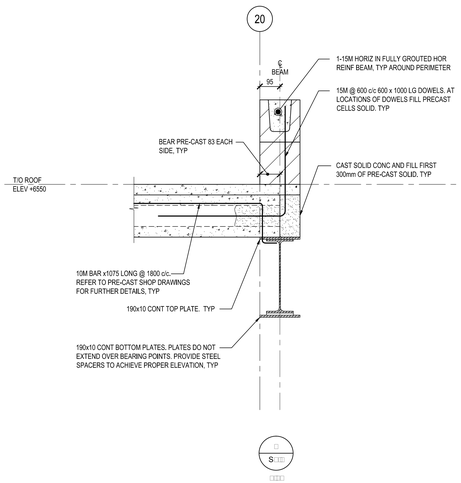
DATE

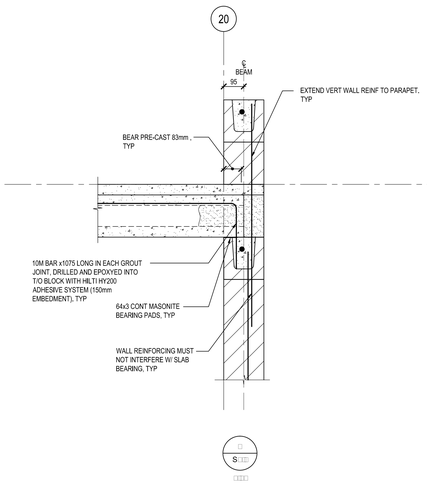
SCALE 1:10

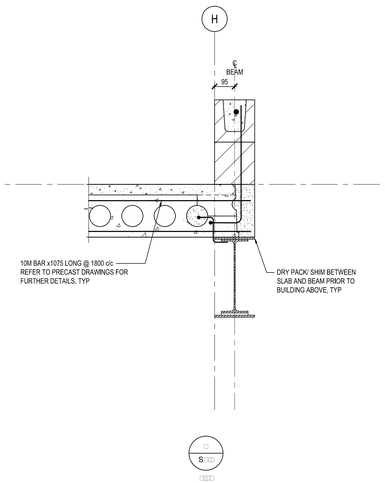
DRAWN BY NAZ

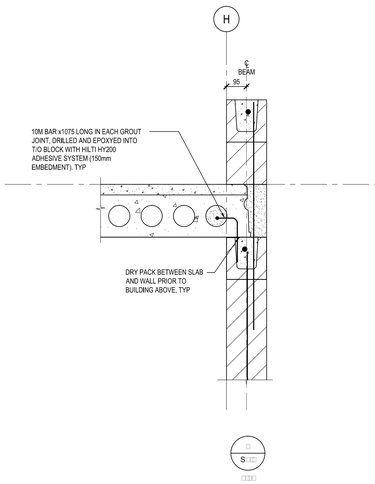
SECTIONS AND DETAILS

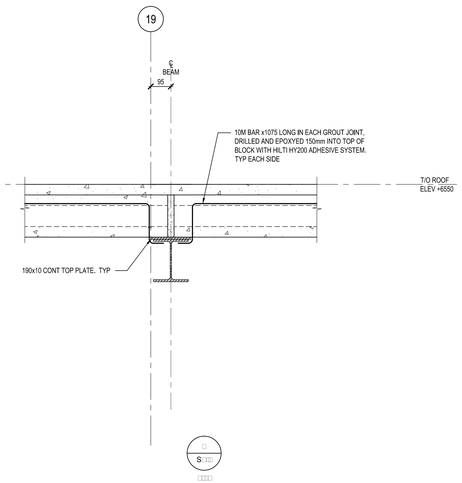
S4.2

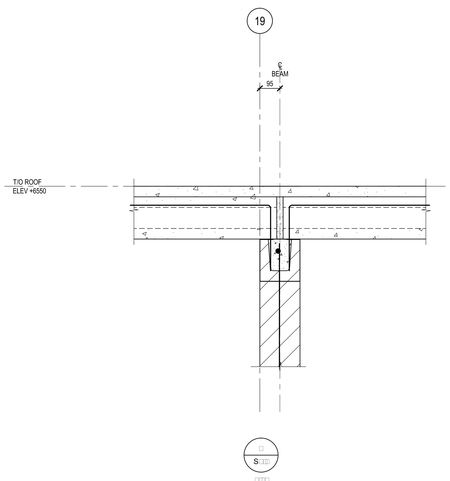


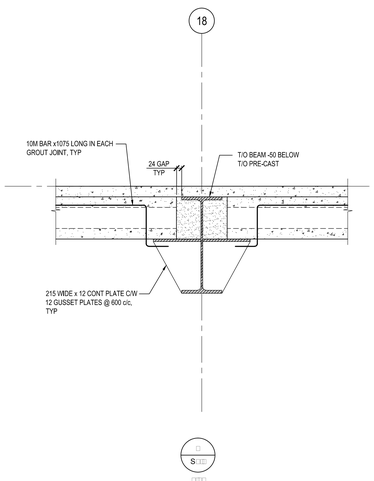


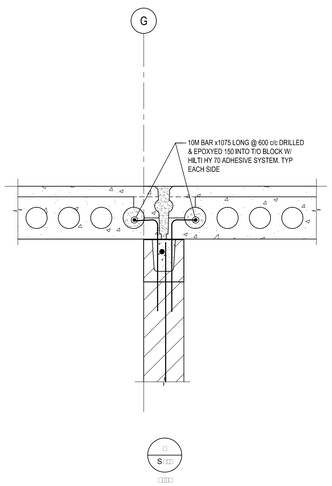


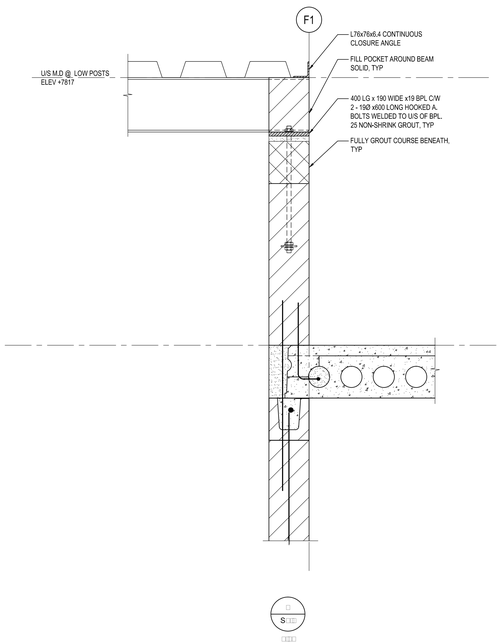


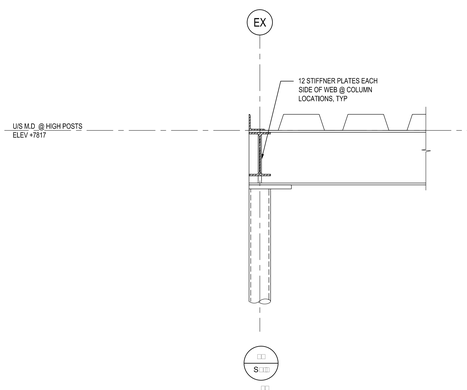


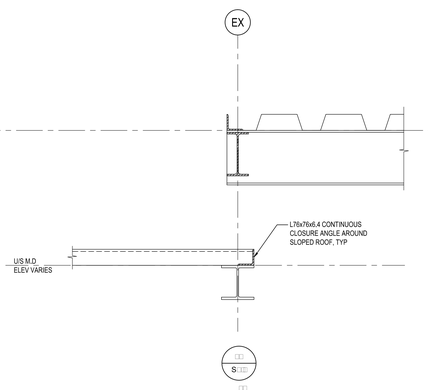


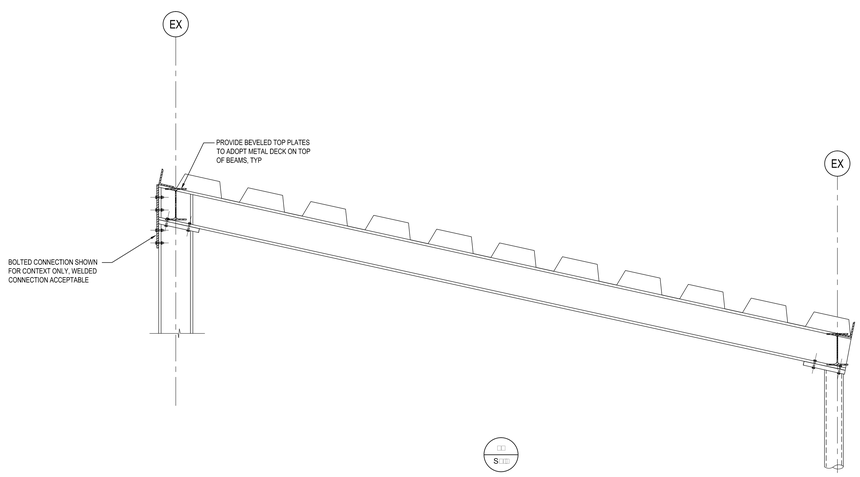












POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#121

387 Balsam Street North
Timmins, Ontario

[redacted]

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1M8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

REV	DESCRIPTION	DATE
2	ISSUED FOR TENDER	2017.05.16
1	100% REVIEW	2017.05.10

BORTOLOTTO

PROJECT NUMBER
PF1701

DATE
[redacted]

SCALE
1:10

DRAWN BY
NAZ

SECTIONS AND DETAILS

S4.3

S5.1

ELEVATIONS AND DETAILS

BORTOLOTTO

PROJECT NUMBER
PP1521

DATE
□□□□-□□-□□

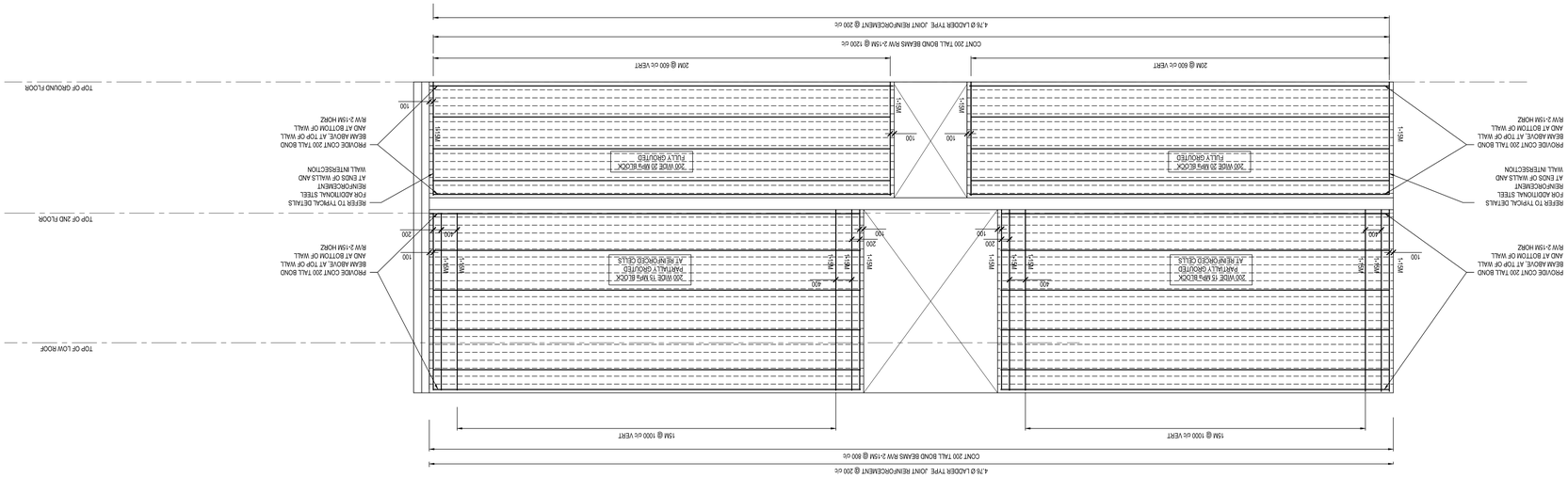
SCALE
AS NOTED

DRAWN BY
JNP

REV	DESCRIPTION	DATE
2	ISSUED FOR TENDER	2021.09.16
1	100% REVIEW	2021.09.10

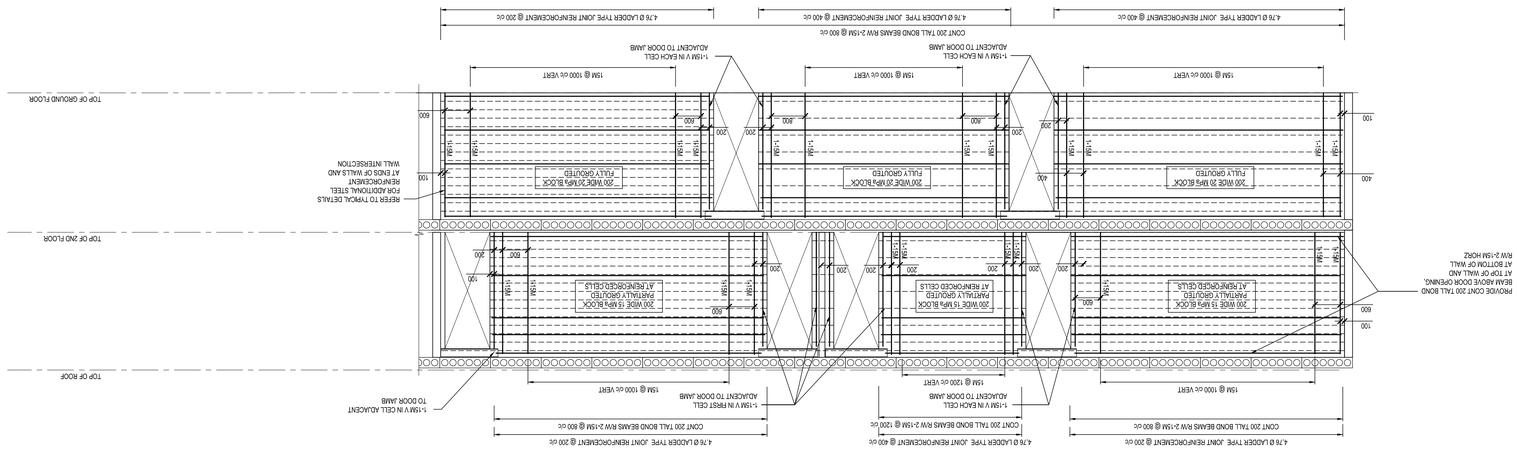
ELE□ATION ALONG GRID LINE F

S:□□
□□□□



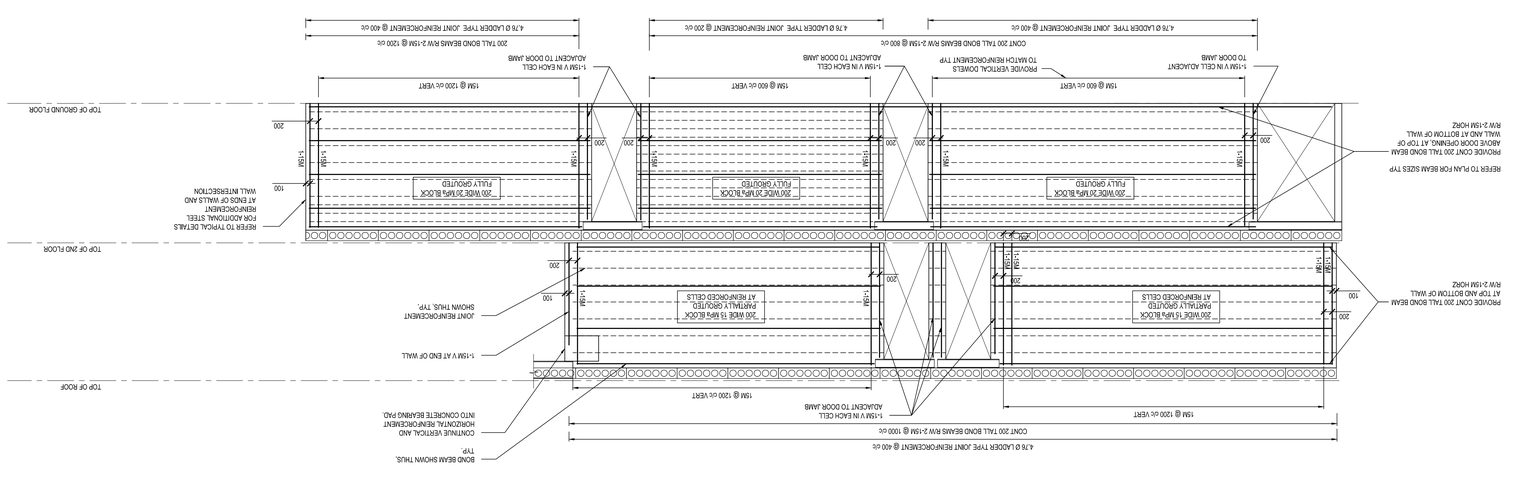
ELE□ATION ALONG GRID LINE □□

S:□□
□□□□



ELE□ATION ALONG GRID LINE □□

S:□□
□□□□



POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121
307 Bloom Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Addelaide St. E. Suite 200
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Memorial Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

S5.2

ELEVATIONS AND DETAILS

DRAWN BY
JNP

SCALE
A1 NOTED

DATE
[illegible]

PROJECT NUMBER
PF1521

BORTOLOTTO

REV	DESCRIPTION	DATE
1	100% REVIEW	2021 05 10
2	ISSUED FOR TENDER	2021 05 16

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Wanstead Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E. Suite 209
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ANCHITECT INC.
533 Cubitt Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

CONSULTANT TEAM

Unauthorized use of these documents is prohibited

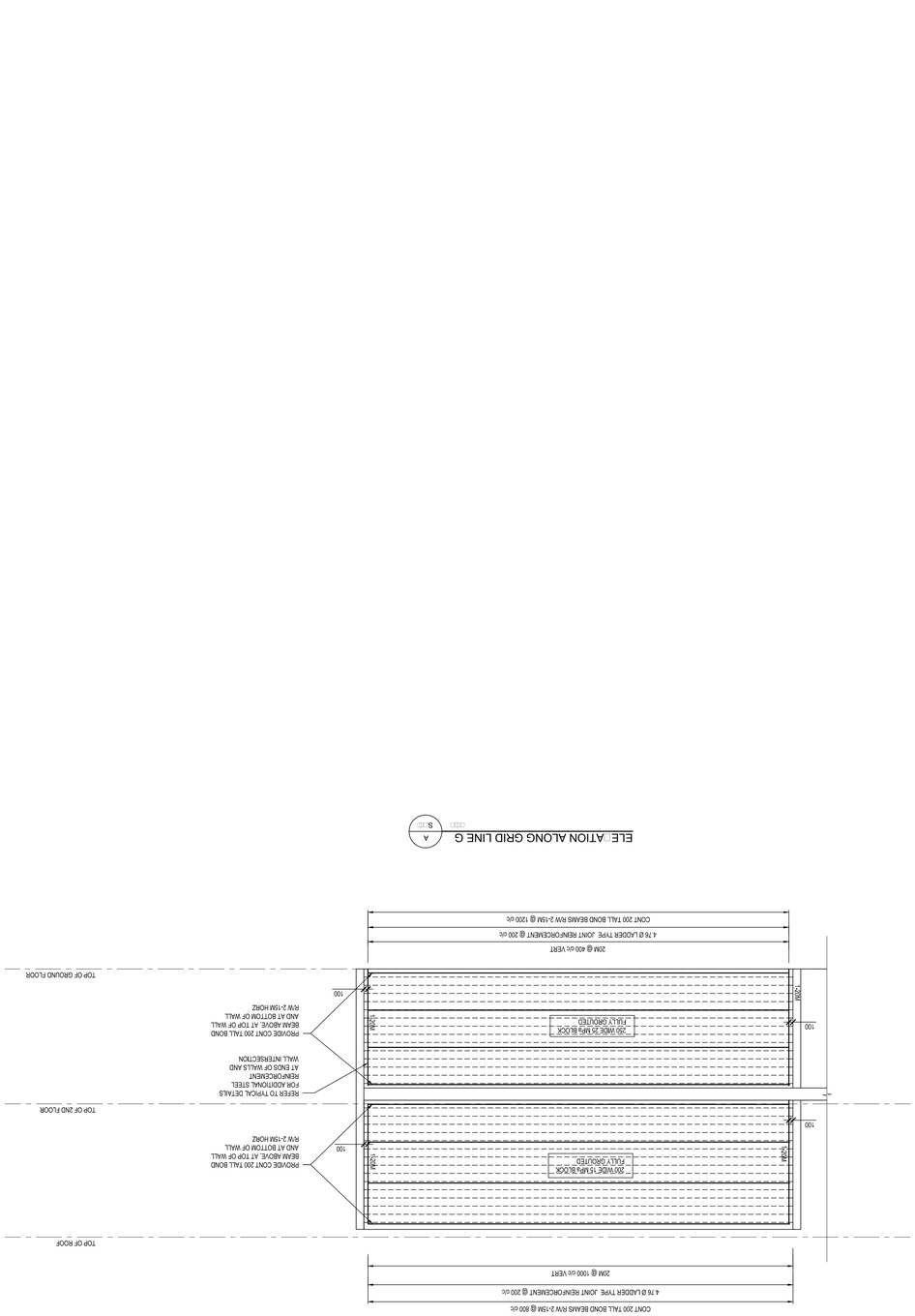
387 Bloomfield Street North
Thorold, Ontario

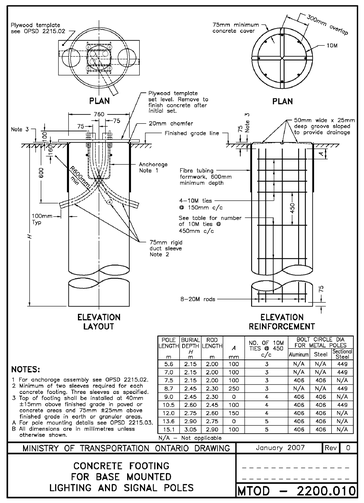
POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

ELE□ATION ALONG GRID LINE G

A
S5□

□□□□





POLE LENGTH	BURIAL DEPTH	ROD LENGTH	A	NO. OF 10M TIES @ A/c	BOLT CIRCLE DIA FOR METAL POLES	
m	m	m	mm	c/c	Aluminum Steel	Stainless Steel
5.6	2.15	2.00	100	3	N/A N/A	449
7.0	2.15	2.00	100	3	N/A N/A	449
7.5	2.15	2.00	100	3	406 406	N/A
8.7	2.45	2.30	250	3	N/A N/A	449
9.0	2.45	2.30	0	4	406 406	N/A
10.5	2.60	2.45	100	4	406 406	449
12.0	2.75	2.60	150	4	406 406	N/A
13.6	2.90	2.75	0	5	406 406	N/A
15.1	3.05	2.90	100	5	406 406	N/A

N/A – Not applicable

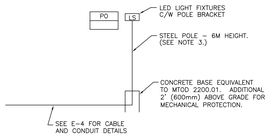
NOTES:
1. For anchorage assembly see OPSD 2215.02.
2. Minimum of two sleeves required for each concrete footing. Three sleeves as specified.
3. Top of footing shall be installed 100mm below finished grade in paved or concrete areas and 75mm ±25mm above finished grade in earth or granular areas.

A For pole mounting details see OPSD 2215.03.
B All dimensions are in millimetres unless otherwise shown.

MINISTRY OF TRANSPORTATION ONTARIO DRAWING | January 2007 | Rev 0

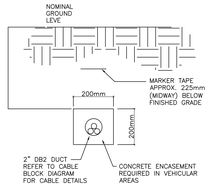
CONCRETE FOOTING FOR BASE MOUNTED LIGHTING AND SIGNAL POLES

MTOD – 2200.010



NEW LIGHT POLE INSTALLATION NOTES:

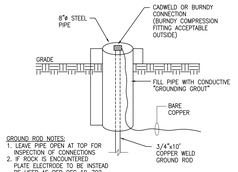
1. ALL CABLES TO BE RUN IN 2" RIGID PVC UNDERGROUND PER OPSD 2101.01
2. ALL DUCTING WHICH PASSES UNDER LOT TO BE CONCRETE ENCASED (SEE DETAIL THIS DRAWING).
3. ENSURE POLE AND FIXTURE FIT PRIOR TO ORDERING.



TRENCH PROFILE DETAIL

SCALE: NTS

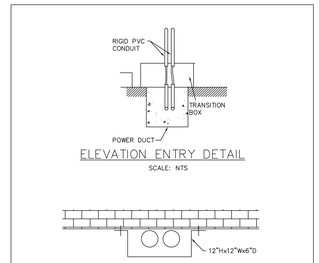
NOTE: INSTALL PER OEC SECTION 12-012. CONCRETE ENCASEMENT REQUIRED FOR MECHANICAL PROTECTION IN VEHICULAR AREAS.



GROUND ROD NOTES:
1. LEAVE PIPE OPEN AT TOP FOR INSPECTION OF CONNECTIONS
2. IF ROCK IS ENCOUNTERED DRIVE A COPPER CLAD PLATE ELECTRODE TO BE INSTEAD BE USED AS PER OEC 10-702.

TYPICAL GROUND ROD DETAIL

SCALE: NTS



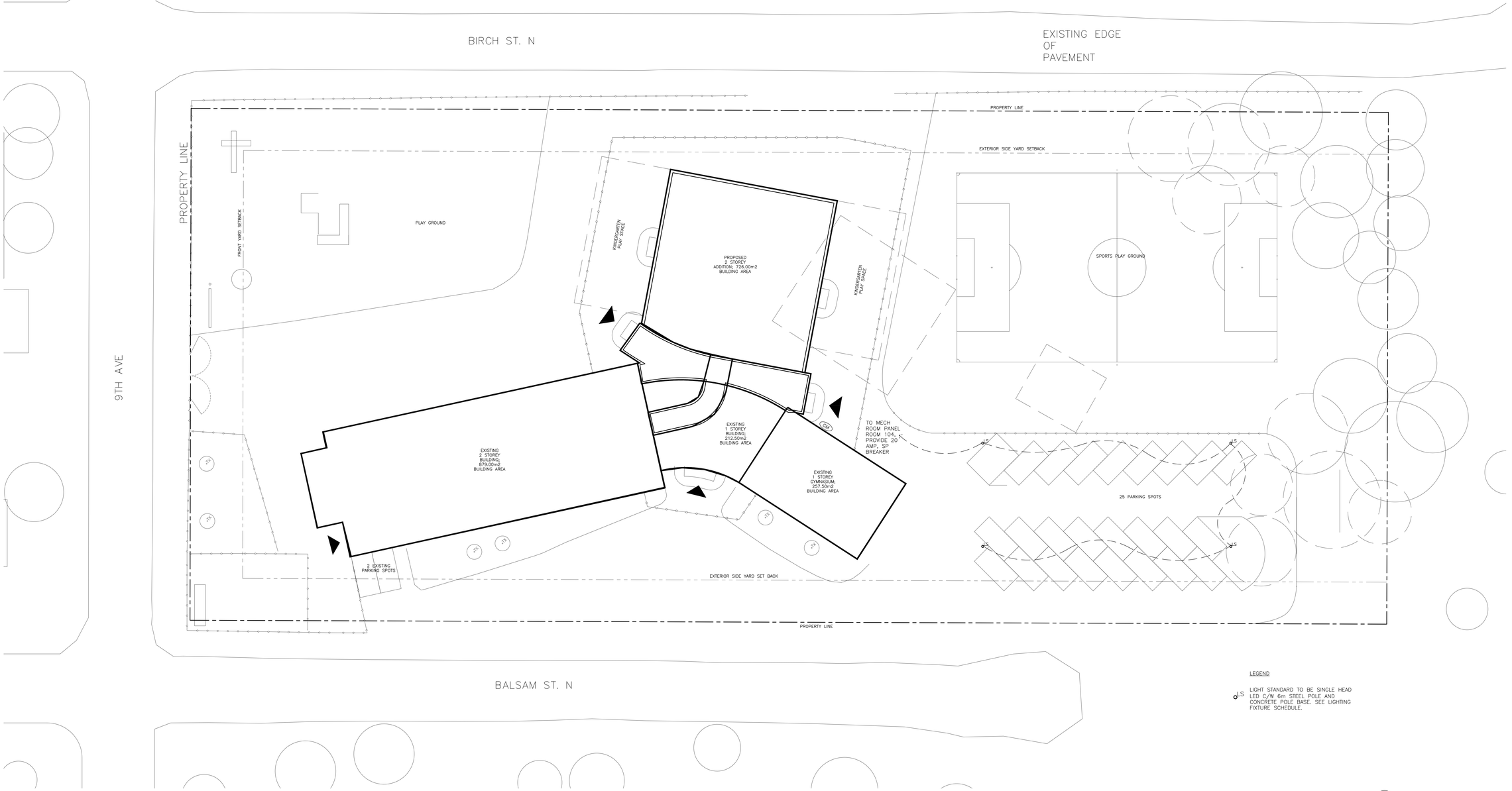
ELEVATION ENTRY DETAIL

SCALE: NTS

POWER TRANSITION BOX TOP VIEW

SCALE: NTS

NOTE: BOXES TO BE OUTDOOR PVC WITH PAINT COLOR TO MATCH EXISTING BRICK FACIA AND C/W LATCHING AND BOLTED COVER ALLOWING ACCESS FOR INSPECTION.



LEGEND

LIGHT STANDARD TO BE SINGLE HEAD LED C/W 6m STEEL POLE AND CONCRETE POLE BASE. SEE LIGHTING FIXTURE SCHEDULE.

1 ME1.1 MECHANICAL/ELECTRICAL SITE PLAN
1:200

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

JOHN R. HAMALAINEN
ENGINEERING LTD.
Consulting Engineers
Since 1987
2166 Armstrong Street, Sudbury, ON P3E 5G9
Tel: (705)522-5745 Fax: (705)522-5600
info@consultingengineers.ca

REV	DESCRIPTION	DATE
3	ISSUED FOR PERMIT & TENDER	17.05.17
2	ISSUED FOR CLIENT REVIEW	17.05.08
1	ISSUED FOR CLIENT REVIEW	17.04.28

REGISTERED PROFESSIONAL ENGINEER
2017-05-17
J.R.HAMALAINEN
9003
PROVINCE OF ONTARIO

BORTOLOTTO

PROJECT NUMBER
PF1701
JHNE 3203

DATE
17.05.17

SCALE
1:200

DRAWN BY
CR

SITE PLAN
MECH./ELEC.

ME-1.1

MECHANICAL SPECIFICATIONS DIV. 23

GENERAL

1. GENERAL NOTES
   - (A) CONFORM TO THE APPLICABLE PROVISIONS OF THE GENERAL CONDITIONS OF THE CONTRACT.
   - (B) THE GENERAL MECHANICAL SPECIFICATIONS SHALL APPLY TO AND BE PART OF EACH OF THE SECTIONS COVERING THE MECHANICAL TRADES WORK.
   - (C) FOR THE PURPOSES OF THIS CONTRACT, THE MECHANICAL CONTRACTOR SHALL TAKE ON THE ROLE AS PRIME CONTRACTOR AND BE RESPONSIBLE FOR RETAINING ALL NECESSARY SUB–TRADES TO COMPLETE ALL HIS MECHANICAL WORK.
   - (D) AN IMPORTANT REQUIREMENT OF THIS CONTRACT IS TO COORDINATE WORK WITH THE OWNER'S SITE REPRESENTATIVE. THIS CONTRACTOR IS TO SUBMIT HIS PROPOSED PROJECT SCHEDULE TO THE PROJECT MANAGER.
   - (E) IF DURING THE WORK, ASBESTOS NOT VISIBLE OR UNDISCLOSED PRIOR TO TENDER IS FOUND, STOP WORKING AND INFORM OWNER'S REPRESENTATIVE IMMEDIATELY. CONTRACTOR TO SUBMIT 3 PRICES FROM QUALIFIED ASBESTOS CONSULTANTS EXPERIENCED IN THIS TRADE. APPROVAL OF THIS EXTRA WORK TO BE BY OWNER'S REPRESENTATIVE.
2. EXAMINATION OF INFORMATION
   - (A) THE CONTRACTOR BEFORE TENDERING, SHALL EXAMINE THE ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS AND HE SHALL FAMILIARIZE HIMSELF WITH THE BUILDING CONSTRUCTION AND FINISH IN ORDER THAT HIS TENDER MAY INCLUDE EVERYTHING NECESSARY FOR THE PROPER COMPLETION OF THE WORK.
   - (B) IT SHALL BE THIS CONTRACTOR'S RESPONSIBILITY THAT MATERIAL AND EQUIPMENT BE BROUGHT INTO THE BUILDING IN SUCH ASSEMBLIES AND SIZES AS TO ENTER INTO THE SPACES WHERE THEY ARE TO BE LOCATED AND TO BE SMALL ENOUGH TO BE HOISTED INTO THE BUILDING WITHOUT DIFFICULTY. ANY CUTTING, PATCHING, ETC, INVOLVED IN GETTING LARGE ASSEMBLIES INTO PLACE SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR.
   - (C) IT SHALL BE THIS CONTRACTOR'S RESPONSIBILITY TO VERIFY EXISTING SERVICES NOT LIMITED TO NATURAL GAS TO CONFIRM GAS PRESSURE AVAILABLE & COORDINATE IN ADVANCE WITH UTILITY COMPANY AS REQUIRED TO AVOID ANY DELAYS.
   - (D) THERE IS A SIGNIFICANT AMOUNT OF DEMOLITION REMOVAL AND RELOCATION WORK THAT IS NOT INDICATED ON THE DRAWINGS. CONTRACTOR SHALL VISIT THE SITE PRIOR TO CLOSE OF TENDERS AND DRAW HIS/HER CONCLUSIONS REGARDING THE WORK INVOLVED AND INCLUDE ALL COSTS.
3. RELATIONSHIP TO OTHER TRADES
   - (A) THIS CONTRACTOR SHALL CONFER WITH ALL OTHER SUBCONTRACTORS INSTALLING EQUIPMENT, PIPING, ROOFING, FOUNDATIONS, ETC, WHICH MAY AFFECT HIS INSTALLATION, AND HE SHALL ARRANGE HIS EQUIPMENT, PIPING, ETC, IN PROPER RELATION WITH OTHER STRUCTURES, APPARATUS, PLANS AND WITH THE BUILDING CONSTRUCTION OF THE PROJECT AND ORDER EQUIPMENT ACCORDINGLY.
   - (B) SPECIAL CARE SHALL BE TAKEN IN THE INSTALLATION OF ALL WORK, TO SEE THAT THEY ALL COME WITHIN THE LIMITS ESTABLISHED BY THE FINISH LINES OF ALL WALLS, FLOORS, AND CEILING, ETC.
4. IDENTIFICATION OF EQUIPMENT
   - (A) PROVIDE THE IDENTIFICATION WORK AS SPECIFIED HEREIN: ALL DUCTWORK SYSTEM, PIPING SYSTEMS, VALVE, CONTROLS AND EQUIPMENT ON THE PROJECT SHALL BE IDENTIFIED AS SPECIFIED HEREIN. ALL MARKS OF IDENTIFICATION SHALL BE EASILY VISIBLE FROM THE FLOOR OR USUAL POINT OF VISION.
   - (B) IDENTIFICATION OF EQUIPMENT AND PIPING SHALL GENERALLY BE MADE BY STENCIL PAINTING AS HEREINAFTER SPECIFIED, OR MANUFACTURED TAGS BY "SETON BRADY" OR EQUAL.
   - (C) WHERE APPARATUS IS TOO SMALL FOR STENCILS, USE SMALL BLACK AND WHITE ENGRAVED "LAMACOID" PLASTIC PLATES WITH THE EQUIPMENT IDENTIFICATION AND ATTACH TO THE EQUIPMENT WITH TWO STAINLESS STEEL SELF TAPPING SCREWS.
   - (D) ALL DUCTWORK SHALL BE IDENTIFIED AS TO THE SERVICE OF THE DUCT AND THE DIRECTION OF FLOW. THE LETTERS SHALL BE AT LEAST TWO INCHES HIGH AND THE FLOW ARROW SHALL BE AT LEAST SIX INCHES LONG. THE LETTERS AND FLOW ARROW SHALL BE MADE BY PRECUT STENCILS AND BLACK OIL BASE PAINT WITH AN AEROSOL CAN. CONCEALED DUCTS NEED NOT BE IDENTIFIED.
   - (E) ALL PIPING SHALL BE IDENTIFIED AS TO THE SERVICE OF THE PIPE AND THE NORMAL DIRECTION OF FLOW.
   - (F) ALL EQUIPMENT, EXCEPT IN FINISHED ROOMS, SHALL BE IDENTIFIED BY STENCILING THE TITLE OF THE EQUIPMENT AS TAKEN FROM THE PLANS IN A POSITION THAT IS CLEARLY VISIBLE FROM THE FLOOR.
5. SHOP DRAWINGS AND PRODUCT DATA
   - (A) SUBMIT 6 SETS OF SHOP DRAWINGS AND PRODUCT DATA FOR ALL MAJOR EQUIPMENT AND FIXTURES.
   - (B) SHOP DRAWINGS SHALL INDICATE MOUNTING ARRANGEMENTS, OPERATING CLEARANCES, MAINTENANCE CLEARANCES, PROVIDED OPTIONS, CONTROLS AND PERFORMANCE.
   - (C) NO EQUIPMENT SHALL BE ORDERED PRIOR TO APPROVAL OF SHOP DRAWINGS.
6. PERMIT, FEES AND INSPECTIONS
   - (A) COMPLY WITH ALL APPLICABLE CODES AND ALL LOCAL MUNICIPAL, PROVINCIAL AND FEDERAL BY–LAWS, RULES AND REGULATIONS. OBTAIN ALL PERMITS REQUIRED AND PAY PERMIT FEES.
   - (B) BEFORE STARTING ANY WORK, SUBMIT COPIES OF DRAWINGS AND SPECIFICATIONS TO THE INSPECTION AUTHORITY FOR APPROVAL. ANY CHANGES REQUESTED SHALL BE REFERRED TO THE ENGINEER IMMEDIATELY SO THAT PROPER ACTION CAN BE TAKEN.
   - (C) ARRANGE FOR INSPECTION BY THE AUTHORITY HAVING JURISDICTION UPON COMPLETION. PRESENT THE FINAL CERTIFICATE OF APPROVAL TO SITE REPRESENTATIVE.
   - (D) COMPLY WITH THE ONTARIO BUILDING CODE ACT. THIS CONTRACTOR TO APPLY AND PAY FOR BUILDING PERMIT IN CONNECTION TO ALL MECHANICAL WORK IN THIS CONTRACT.

HEATING, VENTILATION AND AIR CONDITIONING (HVAC)

1. WORK INCLUDED
   - (A) THIS CONTRACTOR SHALL DO ALL VENTILATION WORK AS SHOWN ON THE DRAWINGS, INCLUDING DUCTWORK AND PROVISION OF ROOF TOP UNIT(S) INCLUDING THE INDOOR HEATING COIL AND GAS FIRED UNIT(S).
   - (B) PROVIDE ALL HVAC EQUIPMENT AND CONTROL SYSTEMS AS LISTED ON HVAC EQUIPMENT SCHEDULE AND AS SHOWN ON THE DRAWINGS.
   - (C) PROVIDE ALL MATERIAL AND LABOUR FOR POWER AND CONTROL WIRING NECESSARY TO COMPLETE THE WORK DESCRIBED ON DRAWINGS.
   - (D) PROVIDE ALL GAS PIPING, CONTROLS, CONTROL WIRING FOR THERMOSTATS, CONTROL PANEL(S), ETC., AS NOTED.
   - (E) PROVIDE ALL THERMOSTATS, MOTOR STARTERS AND BREAKERS. PROVIDE UNIT MOUNTED SAFETY DISCONNECT SWITCHES WHERE THEY ARE NOT PART OF THE EQUIPMENT.
   - (F) PROVIDE ALL DUCT ACOUSTIC LINING WITH PERFORATED METAL COVER, CORROSION RESISTANT, 1 INCH THICK BY 10 FEET LONG FOR SUPPLY AND RETURN DUCT CONNECTIONS AT EACH ROOF TOP UNIT.
   - (G) PROVIDE UNIT WITH SMOKE DETECTOR, INTERLOCK ROOF TOP UNIT WITH EXISTING FIRE ALARM SYSTEM TO SHUT DOWN UNIT UPON DETECTION OF SMOKE.
2. INSTALLATION
   - (A) INSTALL HVAC UNIT(S) AS PER MANUFACTURER'S INSTRUCTIONS.
   - (B) MANUFACTURER'S REPRESENTATIVE TO CERTIFY INSTALLATION, SUPERVISE START–UP AND COMMISSION UNIT(S). PROVIDE TEST REPORTS AND PAY FOR ALL FEES.
   - (C) ALL WORK TO BE CARRIED OUT BY CONTRACTOR WITH EXPERIENCE IN INSTALLING SYSTEMS BEING USED.
3. DUCTWORK
   - (A) PROVIDE DUCTWORK AS SHOWN AND REQUIRED, WHERE THIS IS NOT POSSIBLE, CONSULT WITH ENGINEER. ALL METAL DUCTS SHALL BE PRIME–COATED GALVANIZED COLD–ROLLED STEEL AND WITH GAUGES AS PER THE FOLLOWING:

LONGEST SIDE	US GAUGE
UP TO 12"	26
13" TO 30"	24
OUTDOOR PLENUM WITH SOLDERED SEAMS AND PRIME COATED	20

   - (B) DUCTWORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH GOOD PRACTICE USING STANDING SEAMS WHERE NECESSARY TO PREVENT DRUMMING. DUCTS SHALL BE CONSTRUCTED TO STANDARDS AS PUBLISHED BY SMACNA.
   - (C) WHERE DUCT IS ACOUSTICALLY LINED, DUCTS SHALL BE INCREASED TO PROVIDE INSIDE DIMENTIONS AS STATED AND/OR SHOWN.
   - (D) DUCTS SHALL BE ADEQUATELY SUPPORTED USING ANGLE IRON AND THREADED RODS OR 18 GAUGE STRIPS (1" WIDE) FOR SMALLER DUCTS.
   - (E) ELBOWS SHALL HAVE ROUND THROATS WHERE POSSIBLE WITH ONE DUCT WIDTH RADIUS. WHERE NOT POSSIBLE DUE TO SPACE LIMITATIONS, SQUARE ELBOWS MAY BE USED WITH DURO–DYNE AIRFOIL TURNING VANES.
   - (F) PROVIDE SPLITTER DAMPERS WITH ROD–TYPE OPERATORS FASTENED AT THE BLADE END. SMALL DAMPERS MAY HAVE LOCKING QUADRANT–TYPE OF OPERATORS.
   - (G) ALL SUPPLY AND RETURN AIR DUCTS TO BE INSULATED WITH 1" FOIL–FACED FIBRE GLASS INSULATION (24Kg/m3 DENSITY) AND COVERED WITH CANVAS CLOTH, PAINTED WITH 2 COATS OF "DUCT FOSTER 40/20.
   - (H) PROVIDE FLEXIBLE DUCT CONNECTIONS TO ALL PIECES OF EQUIPMENT, (EG: FANS) FROM DURO–DYNE OR EQUAL AND PROVIDE RAIN SHIELDS FOR OUTSIDE CONNECTIONS.
   - (I) WHERE FLEXIBLE DUCT SECTIONS ARE USED, THEY SHALL NOT EXCEED 10FT (3M) IN LENGTH. APPROVED FLEX TO BE BY FLEXMASTER, ULC LISTED. ALL FLEXIBLE DUCT TO BE INSULATED WITH 1" FOIL–FACED FIBRE GLASS INSULATION.
   - (J) ALL EXPOSED DUCT LINES ON ROOF TOP TO BE INSULATED WITH 2" FOIL FACED FIBERGLASS INSULATION (72kg/m3 DENSITY) AND COVERED WITH 22 GAUGE CORRUGATED ALUMINUM CLADDING, PROVIDE WATER PROOF FLASHING FOR ALL DUCTWORK PENETRATE WALL ON ROOFTOP.
4. THERMAL/ACOUSTICAL DUCT LINER INSULATION

   A) PROVIDE AND INSTALL DUCT LINER INSULATION AS SHOWN ON DRAWINGS. TYPE AND THICKNESS TO BE AS NOTED ON DRAWINGS:
   TYPE I – FLEXIBLE BLANKETS
   TYPE II – RIGID BOARDS
   B) BOTH TYPES OF DUCT LINER INSULATION SHALL MEET THE PHYSICAL PROPERTY REQUIREMENTS OF ASTM C 1071, STANDARD SPECIFICATION FOR DUCT LINING INSULATION (THERMAL AND SOUND ABSORBING MATERIAL), AND SHALL RESIST CORROSION, HIGH TEMPERATURE, EROSION, ODOR EMISSION AND MOISTURE VAPOUR SORPTION.
   C) ALL DUCT LINER INSULATION SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NAIMA FIBROUS GLASS DUCT LINER STANDARD OR SMACNA HVAC DUCT CONSTRUCTION STANDARD.
   D) ALL DUCT LINER INSULATION SHALL BE ADHERED TO THE DUCT USING ADHESIVES COMPLYING WITH THE PROPERTY REQUIREMENTS OF ASTM C 916, STANDARD SPECIFICATION FOR ADHESIVES FOR DUCT. THERMAL INSULATION, PLUS MECHANICAL FASTENERS DESIGNED SPECIFICALLY FOR THIS PURPOSE,
   E) ALL DUCT LINER INSULATION SHALL BE AKOUSTI–LINER OR APPROVED EQUAL.
5. FIRE DAMPERS
   - (A) FIRE DAMPERS SHALL BE PROVIDED AS SHOWN OR REQUIRED AND SHALL BE ULC APPROVED TYPES AND SHALL BE AT THE FIRE SEPARATION AND INSTALLED PER MANUFACTURER'S INSTRUCTIONS.
   - (B) CONTRACTOR TO PROVIDE ACCESS DOORS FOR EACH FIRE DAMPER AS REQUIRED. WHERE NECESSARY, THEY SHALL BE ULC RATED.
   - (C) FIRE STOPPING OF DUCT PENETRATIONS THROUGH FIRE WALLS TO CONSIST OF RETAINING ANGLES ALL AROUND DUCT ON BOTH SIDES OF FIRE SEPARATION. SEAL ANY OPEN AREAS WITH AN APPROVED "FIRE PROOF" SEALANT THROUGHOUT DEPTH OF FLOOR STRUCTURE.
6. GRILLES AND DIFFUSERS
   - (A) SUBMIT PRODUCT DATA TO ENGINEER.
   - (B) SIZES AND RATINGS TO BE AS SHOWN ON DRAWINGS.
   - (C) MUST BE OF STEEL CONSTRUCTION AND ACCEPTABLE MANUFACTURERS ARE: EH PRICE, NAILOR OR EQUAL.
   - (D) PROVIDE ALL SUPPLY DIFFUSERS WITH VOLUME CONTROL DAMPERS c/w STRAIGHTENING DEVICES, FRAMES AND GASKETS.
7. GAS PIPING
   - (A) ALL GAS PIPING SHALL CONFORM TO THE GAS UTILIZATION CODE – LATEST AND AMENDED EDITION.
   - (B) PROVIDE GAS COCK AND DIRT TRAP. PAINT EXPOSED PIPING TO CODE REQUIREMENTS.
   - (C) TEST AND ADJUST GAS PRESSURE TO SUIT – MINIMUM 7"wc.
   - (D) PROVIDE GAS REGULATOR AS REQUIRED.
8. EXHAUST FANS
   - A) PROVIDE EXHAUST FANS AS SHOWN ON DRAWINGS.
   - B) EACH FAN SHALL BE COMPLETE WITH BACKDRAFT DAMPER.
9. REFRIGERANT PIPING
   - (A) ALL REFRIGERANT PIPING SHALL CONFORM TO STM B280, AHSRAE 15, AND ASME B16.22.
   - (B) PIPE TO BE SEAMLESS COPPER TYPE 'K' OR 'L' PER ASTM B88.
   - (C) PIPING TO BE CLEANED, DEHYDRATED AND SEALED WHEN DELIVERED ON SITE.
   - (D) USE SILVER SOLDER AND APPROVED BRAZING COMPOUND AND INSULATE WITH RUBBER FOAM INSULATION TO 1/2" THICK AS PER ASTM C534.
   - (E) PROVIDE PIPING SUPPORTS, FITTINGS, VALVES, ETC., ON FIELD INSTALLED PIPING.
   - (F) PIPE RATING TO SUIT R–410A.
10. HYDRONIC SPECIALTIES
    - (A) PIPING TO BE SCHEDULE 40, WELDED BLACK CARBONSTEEL TO ASTM A53 GRADE B WITH THREADED ENDS.
    - (B) FITTINGS RATED TO CLASS 150 BLACK MALLEABLE IRON SCREW TYPE TO ASTM A197 AND ASME B16.3.
    - (C) PROVIDE DI–ELECTRIC UNIONS BETWEEN COPPER TUBING AND FERROUS PIPING OR EQUIPMENT.
    - (D) GATE VALVES TO BE CLASS 125 BRONZE BODY WITH SCREWED ENDS AND JENKINS OR EQUAL.
    - (E) CHECK VALVES TO BE CLASS 125 BRONZE BODY WITH SCREWED ENDS AND CAPS, HORIZONTAL SWING CHECK, BRONZE DISC AND SEAT BY JENKINS OR EQUAL.
    - (F) AIR VENTS TO BE BY TACO OR EQUAL.
    - (G) CIRCUIT BALANCING VALVES BY ARMSTRONG OR EQUAL.
    - (H) PRESSURE AND TEMPERATURE GAUGES WITH 1%–5% ACCURACY BY ASHCROFT OR EQUAL.
    - (I) STRAINER "Y–PATTERN" #125 BRONZE BY CRANE OR EQUAL.
11. TEST, START–UP AND GUARANTEE
    - (A) PROVIDE BALANCING FOR ALL AIR SYSTEMS AND A REPORT TO THE ENGINEER. ALL AIR BALANCING TO BE DONE BY AN INDEPENDENT CERTIFIED AIR BALANCING COMPANY REGULARLY ENGAGED IN THIS KIND OF WORK. REFERENCES TO BE PROVIDED TO THE ENGINEER IF REQUESTED.
    - (B) OPERATE ALL SYSTEMS TO THE SATISFACTION OF THE ENGINEER AND OWNER.
    - (C) LUBRICATE ALL UNITS REQUIRING LUBRICATION AND WASH/REPLACE THE FILTERS IMMEDIATELY PRIOR TO TAKE–OVER.
    - (D) FURNISH A LETTER OF GUARANTEE TO THE OWNER, COVERING ALL SYSTEMS FOR ONE YEAR FROM DATE OF ACCEPTANCE. INSERT A COPY IN THE OPERATING AND MAINTENANCE (O&M) BINDERS.
    - (E) THIS WARRANTY DOES NOT TAKE PRECEDENCE OVER OTHER WARRANTIES ON SPECIFIC ITEMS WHICH MAY BE FOR LONGER PERIODS.
    - (F) DEMONSTRATE TO THE OWNER'S REPRESENTATIVE, THE PROPER OPERATING PROCEDURES AND PROVIDE 2 COPIES OF OPERATING INSTRUCTIONS, SUITABLY BOUND, TITLED AND BEARING THE CONTRACTOR'S COMPANY NAME, ADDRESS AND TELEPHONE NUMBER.
12. ZONE CONTROL SYSTEMS
    - (A) PROVIDE A SYSTEM 2000 GEN COMMERCIAL ZONING SYSTEM C/W ROOM SENSORS, CONTROL DAMPERS, STATIC PRESSURE SENSOR, SUPPLY AIR TEMPERATURE SENSOR, BY–PASS DAMPER ETC. TO FORM A COMPLETE SYSTEM.
    - (B) THE CONTROL SYSTEM IS TO BE A COMMERCIAL MODULATING AUTO CHANGE OVER ZONING SYSTEM TO CONTROL A SINGLE HVAC UNIT. PROVIDE ONE SYSTEM FOR EACH HVAC UNIT. (TYPICAL OF THREE).
    - (C) ALL POWER WIRING IS TO BE 2#16 LUT, MAKE WIRING TERMINATIONS IN ELECTRICAL BOXES.
    - (D) ALL SENSOR WIRING IS TO BE TWISTED SHIELDED PAIR, MAKE WIRING TERMINATIONS IN ELECTRICAL BOXES.
    - (E) ALL WIRING IS TO BE CONTROLLER TO CONTROLLER, CONTROLLER TO SENSOR, CONTROLLER TO ACTUATOR. DO NOT SPLICE CABLES.
    - (F) INSTALL STRICTLY IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.
    - (G) PROVIDE FACTORY TRAINED TECHNICIAN FOR STARTUP AND COMMISSIONING.
    - (H) PROVIDE AS–BUILT WIRING DRAWINGS.

PLUMBING AND DRAINAGE

1. GENERAL CONDITIONS
   - (A) THE GENERAL CONDITIONS OF THE CONTRACT AND THE GENERAL REQUIREMENTS FOR MECHANICAL WORK SHALL FORM PART OF THIS DIVISION.
2. WORK INCLUDED
   - (A) THIS CONTRACTOR SHALL DO ALL PLUMBING AND DRAINAGE WORK AS REQUIRED AND/OR SHOWN ON THE DRAWINGS. ALL PLUMBING AND DRAINAGE WORK SHALL BE INSTALLED, TESTED AND INSPECTED IN ACCORDANCES WITH THE ONTARIO PLUMBING CODE, LATEST AMENDMENT.
   - (B) PROVIDE THE DOMESTIC HOT WATER SYSTEM AS SHOWN ON DRAWINGS. PROVIDE ALL BEDDING MATERIALS, COMPACTION AND BACKFILL FOR THE WORK INCLUDED IN THIS CONTRACT.
3. DRAINS
   - (A) FLOOR DRAINS IN STORAGE ROOMS AND OTHER NON–FINISHED AREAS, SHALL BE CAST IRON, ADJUST–TO–LEVEL TYPE WITH DOUBLE DRAINAGE FLANGE AND WEEPHOLES.
   - (B) FLOOR DRAINS IN FINISHED AREAS SHALL BE AS ABOVE BUT WITH 6" DIAMETER ADJUSTABLE POLISHED BRASS STRAINER.
   - (C) EQUIVALENT PRODUCTS BY ENPOCO, ZURN, ROTO–TECH–SMITH WILL BE CONSIDERED AS EQUALS.
4. PIPE AND PIPE FITTINGS FOR PLUMBING
   - (A) ALL BURIED DRAINAGE PIPES SHALL BE ABS OR PVC TYPE SDR–35. ALL AS APPROVED BY THE LOCAL PLUMBING INSPECTOR. WHERE LOCATED ON UNSTABLE GROUND PROVIDE PVC SCHEDULE 40 PATTERN PIPE WITH REINFORCED CONCRETE SUPPORTS.
   - (B) ALL NON–BURIED DRAINAGE PIPE INSIDE THE BUILDING SHALL BE D.W.V. GRADE COPPER OR DWV PVC WITH FIRESTOP COLLARS.
   - (C) WATER PIPING SHALL BE TYPE "L" COPPER WITH SOLDERED JOINTS TO ASTM B88–83, SOLDER SHALL BE 95/5 EXCEPT AS NOTED.
   - (D) UNDERGROUND WATER PIPING SHALL BE TYPE "K" COPPER OR PEX PIPING, CSA APPROVED FOR POTABLE WATER c/w MANUFACTURER SUPPLIED FITTINGS BY WIRSBO, REHAU, SEPTOR, STADLER OR HEATLINK
5. PIPING SUPPORTS
   - (A) HORIZONTAL PIPING SHALL B SUPPORTED AT INTERVALS AS FOLLOWS:

PIPING SIZES UP TO 3/4	6'–0"
PIPING SIZES 1" TO 3	8'–0"
PIPING SIZES OVER 34	12'–0

   - (B) VERTICAL PIPING SHALL BE SUPPORTED AT THE FLOOR AND/OR WITH INTERMEDIATE WALL SUPPORTS AT 10FT INTERVALS FOR PIPING 2" AND OVER, AND 6FT INTERVALS FOR SMALLER PIPING. MORE FREQUENT SUPPORTS SHALL BE PROVIDED WHERE NECESSARY TO PREVENT MOVEMENT.
   - (C) PIPE HANGERS SHALL CONSIST OF GRINNELL #260 CLEVIS HANGERS WITH THREADED RODS AND SUITABLE CLAMPING DEVICES AT TOP END. GRAPPLER STRAP HANGERS ARE NOT ACCEPTABLE
   - (D) WHERE NECESSARY, PROVIDE INTERMEDIATE ANGLE IRON OF SUFFICIENT STRENGTH, WELDED TO JOISTS FROM WHICH TO HANG PIPES.
   - (E) THIS CONTRACTOR SHALL MAKE PROVISIONS FOR THE EXPANSION AND CONTRACTION OF PIPES AND SHALL PROVIDE SIDE AND/OR END ANCHORS TO CONTROL OR LIMIT PIPE MOVEMENT AS REQUIRED. PROVIDE SWING JOINTS ON ALL BRANCH LINES, EXPANSION LOOPS ON ALL STRAIGHT RUNS OF 100FT OR MORE, AND ANCHORS TO LIMIT HORIZONTAL EXPANSION.
   - (F) PROVIDE DRAINCOCKS AT ALL LOW POINTS IN THE SYSTEM TO ALLOW DRAINAGE OF THE SYSTEM.
   - (G) BURIED PIPING SHALL BE INSTALLED ON UNDISTURBED SOIL OR COMPACTED GRANULAR WITH 6" SAND BEDDING ALL AROUND AND FOR FULL LENGTH.
6. CLEANOUTS
   - (A) PROVIDE CLEANOUTS AT EVERY 50FT IN BURIED DRAINAGE PIPE 6" AND SMALLER AND WHEREVER ELSE REQUIRED FOR MAINTENANCE OF THE SYSTEM.
   - (B) PROVIDE "BARRETT" STYLE CLEANOUTS AT THE BASE OF ALL STACKS.
   - (C) CLEANOUTS SHALL BE FULL PIPE SIZE UP TO 4" IN PIPE SIZE, FOR THOSE PIPE LARGER THAN 4", CLEANOUTS TO BE 4"MAX.
7. SHOCK ABSORBERS
   - (A) PROVIDE AIR COLUMN CHAMBERS AT EACH GROUP OF FIXTURES. THESE SHALL BE A 3/4" MINIMUM PIPE WITH CAP, 18" LONG MOUNTED ON THE TOP OF THE SUPPLY HEADERS, HOT AND COLD. WHERE THE HEADER IS LARGER THAN 1", THE COLUMN SHALL BE ONE SIZE LARGER THAN THE HEADER. ALTERNATIVELY, PROVIDE MANUFACTURED SHOCK ABSORBERS, SIZED FOR THE APPLICATION.
8. VALVES
   - (A) PROVIDE EACH FIXTURE WITH A SHUTOFF VALVE ON HOT AND COLD WATER AND PROVIDE ISOLATING VALVES AT EACH MAIN BRANCH.
   - (B) VALVES SHALL BE 125LB WATER RATED, GATE PATTERN, BRONZE BODY, RISING STEM AND SHALL BE EMCO, TOYO, JENKINS OR EQUAL.
   - (C) HOSE BIBBS TO BE AS SHOWN ON DRAWINGS. THEY SHALL BE NON–FREEZE HOSE BIBBS AND EQUIVALENT MANUFACTER'S ARE ZURN, RTS, AND JOSAM. PROVIDE INSIDE SHUTOFF VALVE WITH WASTE FITTING, IF HOSE BIBB IS HIGHER THAN FEED LINE.
   - (D) WHERE REQUIRED FOR BALANCING, PROVIDE WATTS B–6000 BALL VALVE OR GLOBE PATTERN, RENEWABLE COMPOSITION DISC, RISING STEM BRONZE BODY, 125LB RATED VALVES OF EMCO, TOYO, OR JENKINS MANUFACTURE.
9. PIPE INSTALLATION
   - (A) INSULATE ALL COLD WATER LINES WITH 1/2" PRE–FORMED, FOIL–FACED FIBREGLASS PIPE INSULATION. WHERE PIPING IS EXPOSED, COVER WITH 2–PLY CANVAS AND TWO AFTER–COATS OF FIRE–RESISTANT LAGGING ADHESIVE, FLINTKOTE #101 OR EQUAL.
   - (B) INSULATE ALL EXPOSED HOT WATER LINES IN A SIMILAR MANNER.
   - (C) ALL INSULATION SHALL BE DONE BY AN INSULATION SPECIALIST.
10. THERMOMETERS AND GAUGES
    - (A) PROVIDE THERMOMETERS AND PRESSURE GAUGES AS SHOWN ON THE DRAWINGS, AND AS REQUIRED FOR INDICATION OF SYSTEM FUNCTION.
    - (B) PRESSURE GAUGES SHALL BE "BOURDAN" TYPE WITH A 3" DIAL AND A DAMPENING DEVICE.
    - (C) THERMOMETERS SHALL BE RED LIQUID TYPE, 6" LONG WITH COMBINATION OF FAHRENHEIT & CELCIUS READINGS.
11. PLUMBING FIXTURES
    - (A) PROVIDE PLUMBING FIXTURES AS SHOWN ON DRAWINGS AND AS LISTED IN THE PLUMBING FIXTURE SCHEDULE.
12. ACCESS DOORS
    - (A) THIS CONTRACTOR SHALL PROVIDE AND INSTALL ACCESS DOORS WHERE VALVES, CLEANOUTS, OR OTHER DEVICES ARE CONCEALED IN CEILINGS OR WALLS. ALL ACCESS PANELS IN FIRE–RATED FLOORS, CEILINGS AND WALLS SHALL BEAR A "ULC" LABEL.
13. PIPE SLEEVES
    - (A) PROVIDE SCHEDULE 40 IRON PIPE SLEEVES IN ALL MASONARY WALLS WHERE WATER PIPES PASS THROUGH. SLEEVES SHALL BE SIZED TO ACCEPT THE INSULATED PIPE.

SPRINKLER SYSTEM NOTES:

1. PROVIDE NEW SPRINKLER SYSTEM TO COMPLY WITH THE ONTARIO BUILDING CODE AND NFPA 13. ALL WORK SHALL BE CONDUCTED BY A LICENSED FIRE PROTECTION CONTRACTOR NORMALLY ENGAGED IN THIS TYPE OF WORK AND OVERSEEN BY A LICENSED PROFESSIONAL ENGINEER ENGAGED BY THE FIRE PROTECTION CONTRACTOR. SUBMIT STAMPED DRAWINGS TO CONSULTANT FOR REVIEW. SUBMIT CERTIFICATE OF COMPLIANCE FOR COMPLETED INSTALLATION IN ACCORDANCE WITH NFPA 13 SIGNED & SEALED BY A LICENSED PROFESSIONAL ENGINEER.
2. CONTRACTOR TO REFER TO ARCHITECTURAL DRAWINGS FOR ALL FIRE SEPARATIONS AND RAITINGS.
3. ALL SPRINKLER PIPING, MATERIAL, AND INSTALLATION IS TO BE IN ACCORDANCE WITH NFPA 13.
4. THE CONTRACTOR IS TO INSTALL A FIRE DEPARTMENT CONNECTION FOR EACH ALARM VALVE AND A FLOW TEST HEADER FOR THE COMMON WATER SUPPLY IN ACCORDANCE WITH NFPA 13 WITH CHECK VALVES, AND A BALL DRIP FOR EACH ALARM VALVE. ALL MATERIALS ARE TO MEET THE REQUIREMENTS OF CHAPTER 3 OF NFPA 13, AND TABLE 3–1.1.1 PIPE OR TUBE MATERIALS AND DIMENSIONS.
5. ALL PIPING IS TO BE SEAMLESS STEEL PIPING FOR FIRE PROTECTION USE TO ASTM A795. PIPING CAN BE THREATED OR ROLLED GROOVE PIPING.
6. ALL PIPING IS TO BE SLOPED TO DRAIN AT A MINIMUM OF 1 INCH IN 25 FEET. INSTALL 1.25 INCH DIAMETER VALVES WITH A CAPPED OR PLUGGED PIPE AT ALL LOW POINTS FOR DRAINAGE OF THE SYSTEM. INSTALL INSPECTORS TEST AND DRAINS AT THE END OF EACH ZONE WITH A ¾" ORIFICE UNION AND 1" VALVE TERMINATED THROUGH THE BUILDING WALL AT 18" AFF, WITH THE VALVE AT 48" AFF, AND ORIFICE IN BETWEEN. INSTALL A PATIO STONE, 24" X 24" ON THE OUTSIDE OF THE BUILDING TO PREVENT EROSION OF SOIL DURING TESTING.
7. USE PIPING HANGERS THAT MEET THE INTENT OF NFPA 13 PARAGRAPH 3–10. HANGERS ARE TO BE CLEVIS TYPE HANGERS SPACED EVERY 10' MINIMUM USING THE THREADED ROD, AND A CENTER LOAD TYPE UPPER ATTACHMENTS ATTACHED TO THE OPEN WEB STEEL JOINTS. IF A HANGER IS REQUIRED TO BE PLACED BETWEEN OWSJ'S THE CONTRACTOR IS TO INSTALL STRUCTURAL STEEL THAT SPANS BETWEEN TWO OWSJS IN ACCORDANCE WITH THE HANGER DETAILS.
8. CONTRACTOR IS TO CONDUCT HYDRANT FLOW TESTS ON THE COMMON WATER SUPPLY FOR THE ALARM VALVES, AND ALSO FOR THE FIRE HYDRANT ADJACENT TO THE BUILDING IN ACCORDANCE WITH NFPA 13.

PLUMBING NOTES:

1. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL ACCESSORIES ie: PAPER TOWEL DISPENSERS, SOAP DISPENSERS ETC.
2. USE MANUFACTURERS' SPECIFICATIONS AND TEMPLATES FOR ALL COMPONENTS.
3. ALL HOT AND COLD WATER LINES TO BE INSULATED.
4. PLUMBING LINES ARE SHOWN OUTSIDE OF WALLS FOR CLARITY PURPOSES. LOCATIONS OF PLUMBING LINES SHOW INTENT. LOCATIONS MAY NEED TO BE REVISED TO SUIT SITE CONDITIONS.
5. ALL EXPOSED PIPING, VALVES, TRAPS, FITTINGS, ETC., SHALL BE HEAVILY CHROME PLATED BRASS.
6. ALL COLD AND HOT WATER LINES TO BE TYPE 'L' COPPER PIPING.
7. PROVIDE OFFSET DRAIN, INSULATED P–TRAP AND INSULATED SUPPLY PIPING AT ALL EXPOSED BARRIER FREE SINKS/LAVATORIES.
8. INCLUDE ALL LABOUR, EQUIPMENT, TOOLS AND OTHER INCIDENTALS NECESSARY AND REQUIRED FOR THE COMPLETE INSTALLATION. USE ONLY NEW MATERIALS AND EQUIPMENT.
9. ALL WORK SHALL BE IN ACCORDANCE WITH OBC PART 7, THE LATEST EDITIONS OF LOCAL CODES AND STANDARDS AND WITH THE APPROVAL OF THE AUTHORITIES HAVING JURISDICTION.
10. CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES, OBTAIN ALL REQUIRED PERMITS AND PAY FEES.
11. CONTRACTOR SHALL INSPECT THE PROJECT PRIOR TO TENDER TO REALIZE THE SCOPE OF WORK INVOLVED AND TO FAMILIARIZE HIMSELF WITH THE SITE CONDITIONS, FAILURE TO DO SO WILL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY IN THIS RESPECT.
12. CONTRACTOR MAY USE EXISTING SANITARY AND DOMESTIC WATER LINES IF SUITABLY SIZED.
13. PLUMBER TO SUPPLY AND INSTALL ALL NECESSARY VALVES AND FITTINGS.
14. PROVIDE SANITARY VENT LINES FOR ALL PLUMBING FIXTURES AS PER OBC PART 7.
15. PROVIDE CLEAN OUTS ON SANITARY DRAIN LINES AS PER OBC PART 7.
16. PROVIDE ¾"ø TSP FOR ALL FLOOR DRAINS.
17. SEE GENERAL NOTES THIS DRAWING.
18. OBTAIN

Digital Controller Points List
Pope Francis School

Point Description	Analog	Binary	Analog	Binary	Alarm	Non-DDC	Other	Notes
Main Boiler Room	Input	Input	Output	Output	Point*	Point**	(specify)	
Outside Air Sensor #1	X							BAS
Outside Air Sensor #2	X							Boiler Controller
Outside Air Sensor #1 Fail					X			BAS
Outside Air Sensor #2 Fail					X			Boiler Controller
BAS Enable Boilers				X				
Bo ler #1 SWT	X							Boiler Controller
Bo ler #1 Circulator Start Stop (P-5)				X				Boiler Controller
Bo ler #1 Circulator status (P-5) (Current Sensor)		X			X			Boiler Controller
Bo ler #1 Circulator Alarm (P-5)					X			Boiler Controller
Bo ler #1 Enable - Disable				X				BAS
Bo ler #1 Burner Status	X							Boiler Controller
Bo ler #1 Target Firing Rate								Boiler Controller
Bo ler #1 Actual Firing Rate.								Boiler Controller
Bo ler #1 Inlet Water Temp								Boiler Controller
Bo ler #1 Outlet Water Temperature								Boiler Controller
Bo ler #1 Stack Temp.								Boiler Controller
Bo ler #2 SWT	X							Boiler Controller
Bo ler #2 Circulator Start Stop				X				Boiler Controller
Bo ler #2 Circulator status		X						Boiler Controller
Bo ler #2 Circulator Alarm (P-6)					X			Boiler Controller
Bo ler #2 Enable - Disable				X				BAS
Bo ler #2 Burner Status	X							Boiler Controller
Bo ler #2 Target Firing Rate								Boiler Controller
Bo ler #2 Actual Firing Rate.								Boiler Controller
Bo ler #2 Inlet Water Temp								Boiler Controller
Bo ler #2 Outlet Water Temperature								Boiler Controller
Bo ler #2 Stack Temp.								Boiler Controller
Bo ler #3 SWT	X							Boiler Controller
Bo ler #3 Circulator Start Stop				X				Boiler Controller
Bo ler #3 Circulator status		X						Boiler Controller
Bo ler #3 Circulator Alarm (P-7)					X			Boiler Controller
Bo ler #3 Enable - Disable				X				BAS
Bo ler #3 Burner Status	X							Boiler Controller
Bo ler #3 Target Firing Rate								Boiler Controller
Bo ler #3 Actual Firing Rate.								Boiler Controller
Bo ler #3 Inlet Water Temp								Boiler Controller
Bo ler #3 Outlet Water Temperature								Boiler Controller
Bo ler #3 Stack Temp.								Boiler Controller
Heating Supply Water Temperature #1	X				X			Boiler Controller
Heating Supply Water Temperature #2	X				X			BAS
Heating Return Water Temperature Zone #1	X				X			BAS
Heating Return Water Temperature Zone #2	X				X			BAS
Heating Return Water Temperature Common	X				X			BAS
Pe imeter Heating Pump P05 Enable/Disable				X				BAS
Pe imeter Heating Pump P05 Status		X						BAS
Pe imeter Heating Pump P05 Alarm					X			BAS
Pe imeter Heating Pump P06 Enable/Disable				X				BAS
Pe imeter Heating Pump P06 Status		X						BAS
Pe imeter Heating Pump P06 Alarm					X			BAS
DHW Tank Temp	X							Boiler Controller
DHW Priority Call for Heat				X				Boiler Controller
DHW Pump 11 Enable/Disable				X				Boiler Controller
DHW Pump 11 Status		X						Boiler Controller
DHW Pump 11 Alarm					X			Boiler Controller
Atrium Slab Heating Pump P07 Enable/Disable				X				BAS
Atrium Slab Heating Pump P-07 Status		X						BAS
Atrium Slab Heating Pump P07 Alarm					X			BAS
HVAC Unit #1 Energize Blower		X						
HVAC Unit #1 Blower Status				X				
HVAC Unit #1 Return Air Temp.	X							
HVAC Unit #1 Furnace Stage 1		X						
HVAC Unit #1 Furnace Stage 2		X						
HVAC Unit #1 Cooling (Comp)		X						
HVAC Unit #1 Compressor Status				X				
HVAC Unit #1 Dirty Filter		X						
HVAC Unit #1 Fault (Alarm)					X			
HVAC Unit #2 Energize Blower		X						
HVAC Unit #2 Blower Status				X				
HVAC Unit #2 Return Air Temp.	X							
HVAC Unit #2 Furnace Stage 1		X						
HVAC Unit #2 Furnace Stage 2		X						
HVAC Unit #2 Cooling (Comp)		X						
HVAC Unit #2 Compressor Status				X				
HVAC Unit #2 Dirty Filter		X						
HVAC Unit #2 Fault (Alarm)					X			
HVAC Unit #3 Energize Blower		X						
HVAC Unit #3 Blower Status				X				
HVAC Unit #3 Return Air Temp.	X							
HVAC Unit #3 Furnace Stage 1		X						
HVAC Unit #3 Furnace Stage 2		X						
HVAC Unit #3 Cooling (Comp)		X						
HVAC Unit #3 Compressor Status				X				
HVAC Unit #3 Dirty Filter		X						
HVAC Unit #3 Fault (Alarm)					X			
HVAC Unit #4 Energize Blower		X						
HVAC Unit #4 Blower Status				X				
HVAC Unit #4 Return Air Temp.	X							
HVAC Unit #4 Furnace Stage 1		X						
HVAC Unit #4 Furnace Stage 2		X						
HVAC Unit #4 Cooling (Comp)		X						
HVAC Unit #4 Compressor Status				X				
HVAC Unit #4 Dirty Filter		X						
HVAC Unit #4 Fault (Alarm)					X			

Digital Controller Points List
Pope Francis School
Energy Recovery Unit

Point Description	Analog	Binary	Analog	Binary	Alarm	Non-DDC	Other	Notes
Ventilation	Input	Input	Output	Output	Point*	Point**	(specify)	
Outside Air Sensor #1	X							
Outside Air Sensor #2	X							
Outside Air Sensor #1 Fail					X			
Outside Air Sensor #2 Fail					X			
ERV Schedule							Program	
Pump P01 Enable - Disable					X			
Pump P01 Status		X						
Pump P01 Alarm					X			
Pump P02 Enable - Disable					X			
Pump P02 Status		X						
Pump P02 Alarm					X			
Pump P03 Enable - Disable					X			
Pump P03 Status		X						
Pump P03 Alarm					X			
Pump P04 Enable - Disable					X			
Pump P04 Status		X						
Pump P04 Alarm					X			
Glycol Supply Temperature T1	X							
Glycol Supply Temperature T2	X							
Glycol Return Temperature	X							
Modulating Valve Set Point			X					
Modulating Valve % Opened	X							
ERV Supply Fan Enable/Disable					X			
ERV Supply Fan Status		X						
ERV Supply Fan Alarm					X			
ERV Supply Fan Speed Control			X					
ERV Supply Fan Speed Reference	X							
ERV Exhaust Fan Enable/Disable					X			
ERV Exhaust Fan Status		X						
ERV Exhaust Fan Alarm					X			
ERV Exhaust Fan Speed Control			X					
ERV Exhaust Fan Speed Reference	X							
Return Air CO2 Level	X							
Return Air Temperature	X							
Exhaust Air Temperature	X							
Supply Air Temperature	X							
Supply Air Temperature	X							
Outside Air Temperature	X							
Outside Air Humidity	X							
Exhaust Air Damper Open - Close					X			
Exhaust Air Damper Open End Switch					X			
Exhaust Air Damper Closed End Switch		X						
Outside Air Damper Opened-Closed		X			X			
Outside Air Damper End Switch		X						

Wall Fin Radiation Schedule

TYPE	MODEL BY MODINE		DISCRIPTION	CONDITIONS	OUTPUT	ELECTRICAL	Comments
	ENCLOUSRE	ELEMENT			BTU/HR		
A	S-24-14-N	CP-125-C-2 TER	24" SLOPING TOP	160°F AWT	1450	N/A	Wall Hung Bottom Inlet

Cabinet Unit Heater Schedule

					Output		Comments
Type	Model By Modene	BLOWER CAPACITY	Discription	Conditions	BTU/HR	ELECTRICAL	
CUH01	C006-D-7-A-D-B-L-2-3-1-F-1-O	620 CFM / 370 CFM	WALL MOUNTED	20°F WTD; 6.2 USGPM; 160°F EWT	42340 / 29400	120 Volt Single Phase	Two Stage Blower, PSC motor with plug connector.
CHU02	C002-S-B-A-B-B-L-2-3-1-F-O-O	250 CFM / 140 CFM	CEILING MOUNTED	20°F WTD; 2.4 USGPM; 160°F EWT	16700 / 10710	120 Volt Single Phase	Two Stage Blower, PSC motor with plug connector.
CHU03	HC-2-4-5-B-0-1-5-A	370 CFM	HUNG FROM CEILING	20°F WTD; 1.7GPM; 160°F EWT	11,570	120 Volt Single Phase	Horizontal Unit Heater

PUMP SCHEDULE

Tag No.	LOCATION	Serving	Model by Wilo	Type	FLUID	FLOW (USGPM)	Head (Feet)	Pipe Connections	Motor Type & Electrical	NOTES:
P01	BOILER ROOM ADDITION	Heat Exchanger	Stratos - 1.25- 3 x 35	Commercial Wet Rotor Design	WATER	35	20	1 1/4" Flanged Non-ANSI	1/4 HP; 230 Volt; Single Phase; 200 Watts max EMC Motor	Cataphoretic coated Cast Iron Housing, Stainless Steel Shaft, Plastic Impeller, Metal Impregnated carbon bearing, Delta p-v Pressure Differential Variable, factory set
P02	BOILER ROOM ADDITION	Heat Exchanger	Stratos - 1.5- 3 x 35	Commercial Wet Rotor Design	WATER	35	20	1 1/4" Flanged Non-ANSI	1/4 HP; 230 Volt; Single Phase; 200 Watts max EMC Motor	Cataphoretic coated Cast Iron Housing, Stainless Steel Shaft, Plastic Impeller, Metal Impregnated carbon bearing, Delta p-v Pressure Differential Variable, factory set
P03	BOILER ROOM ADDITION	Rooftop Energy Recovery Unit	Stratos - 1.5- 3 x 35	Commercial Wet Rotor Design	50% P.G.	35	20	1 1/4" Flanged Non-ANSI	1/4 HP; 230 Volt; Single Phase; 200 Watts max EMC Motor	Cataphoretic coated Cast Iron Housing, Stainless Steel Shaft, Plastic Impeller, Metal Impregnated carbon bearing, Delta p-v Pressure Differential Variable, factory set
P04	BOILER ROOM ADDITION	Rooftop Energy Recovery Unit	Stratos - 1.5- 3 x 35	Commercial Wet Rotor Design	50% P.G.	35	20	1 1/4" Flanged Non-ANSI	1/4 HP; 230 Volt; Single Phase; 200 Watts max EMC Motor	Cataphoretic coated Cast Iron Housing, Stainless Steel Shaft, Plastic Impeller, Metal Impregnated carbon bearing, Delta p-v Pressure Differential Variable, factory set
P05	BOILER ROOM ADDITION	Addition Hydronic Heating	Stratos - 1.5- 3 x 35	Commercial Wet Rotor Design	WATER	35	20	1 1/4" Flanged Non-ANSI	1/4 HP; 230 Volt; Single Phase; 200 Watts max EMC Motor	Cataphoretic coated Cast Iron Housing, Stainless Steel Shaft, Plastic Impeller, Metal Impregnated carbon bearing, Delta p-v Pressure Differential Variable, factory set
P06	BOILER ROOM ADDITION	Addition Hydronic Heating	Stratos - 1.5- 3 x 35	Commercial Wet Rotor Design	WATER	35	20	1 1/4" Flanged Non-ANSI	1/4 HP; 230 Volt; Single Phase; 200 Watts max EMC Motor	Cataphoretic coated Cast Iron Housing, Stainless Steel Shaft, Plastic Impeller, Metal Impregnated carbon bearing, Delta p-v Pressure Differential Variable, factory set
P07	BOILER ROOM ADDITION	Atrium Slab Heating	Stratos - 1.5- 3 x 20	Commercial Wet Rotor Design	WATER	5	13	1 1/4" Flanged Non-ANSI	1/12 HP; 230 Volt; Single Phase; 65 Watts Max, EMC Motor	Cataphoretic coated Cast Iron Housing, Stainless Steel Shaft, Plastic Impeller, Metal Impregnated carbon bearing, Delta p-v Pressure Differential Variable, factory set
P08	BOILER ROOM ADDITION	Boiler #1	By Boiler MFG						115 Volt; Single Phase	
P09	BOILER ROOM ADDITION	Boiler #2	By Boiler MFG						115 Volt; Single Phase	
P10	BOILER ROOM ADDITION	Boiler #3	By Boiler MFG						115 Volt; Single Phase	

HEAT EXCHANGER SCHEDULE

Tag No.	LOCATION	HEAT TRANSFERRED BTU/H	FLUID	FLOW (USGPM)	ET °F	LT °F	ΔP PSI	FLUID	FLOW (USGPM)	ET °F	LT °F	ΔP PSI	TYPE	NOTES:
HE-1	BOILER ROOM ADDITION	340,000	WATER	34.9	170	150	4.916	50% P.G.	25.1	130	160	2.692	ASME	ALLOY 316, OPERATING WEIGHT 65LBS, 5.65 " X 7.52" X 24"

Boiler Schedule

Tag	Manufacture	Model	Natural Gas Input	Net IBR Rating	Efficiency	Comments
B01	Triangle Tube	CPS 1200	1,197,000 Btu/hr.	990,000 Btu/hr. 34 Boiler Horse Power	95%	complete with 3 Prestige Solo 399 Boilers; 3 Boiler Manifold (4" piping) & Structural Support with concrete anchors; 4" Low Loss heater; Flexible Stainless Steel Connectors; BACNet IP Modules; Low Water Cut-off & High Temperature limit manual reset & fittings; Stainless Steel Concentric Vent/Air Side Wall kit for 2 pipe CPVC System; 3 Boiler Common Vent Near Boiler kit; Horizontal Common Vent Termination.
						Contractor is to pay all costs for Factory Trained Technicthon for Start up and Commissioning of the System, which is to enclude coordination with Building Automation System for Integration of Graphics.

Exhaust Fan Schedule

Tag	Manufacture	Model	Capacity	Static Pressure	Electrical	Comments
EF-1	Solar & Palau	FF100	100	1/8" WC	120V SP 1.1 Amps	C/W Time Delay off Switch & Back Draft Damper
EF-2	Soler & Palau	FF200	200	1/8" WC	120V SP 1.8 Amps	C/W Time Delay off switch & Back Draft Damper
EF-3	Soler & Palau	FF250	245	1/8" WC	120V SP 2.1 Amps	LAN Room Controlled by Honeywell T651 Cooling Thermostat
EF-4	Soler & Palau	TD100XS	110	1/8" WC	120V SP 21 Watts	C/W Backdraft Damper & Time Delay Switch (2) Wired in Parallel

POPE FRANCIS ELEMENTARY ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

JOHN R. HAMALAINEN ENGINEERING LTD.
Consulting Engineers
Since 1987
2166 Armstrong Street, Sudbury, ON P3E 5G9
Tel: (705)522-5745 Fax: (705)522-5650
info@consultingengineers.ca

REV	DESCRIPTION	DATE
3	ISSUED FOR PERMIT & TENDER	17.05.17
2	ISSUED FOR CLIENT REVIEW	17.05.08
1	ISSUED FOR CLIENT REVIEW	17.04.28

LICENSED PROFESSIONAL ENGINEER
2017-05-17
J.R.HAMALAINEN
100113
PROVINCE OF ONTARIO

BORTOLOTTO

PROJECT NUMBER
PF1701
JRHE 3203

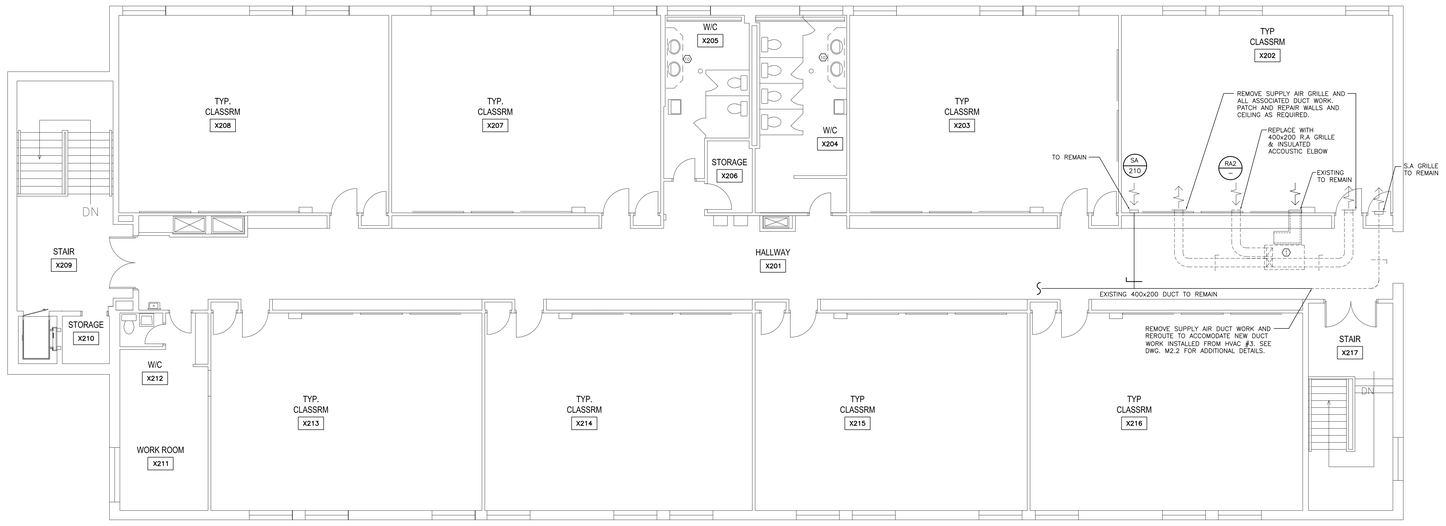
DATE
17.05.17

SCALE
NTS

DRAWN BY
JD

MECHANICAL
NOTES, LEGENDS & POINTS LISTS

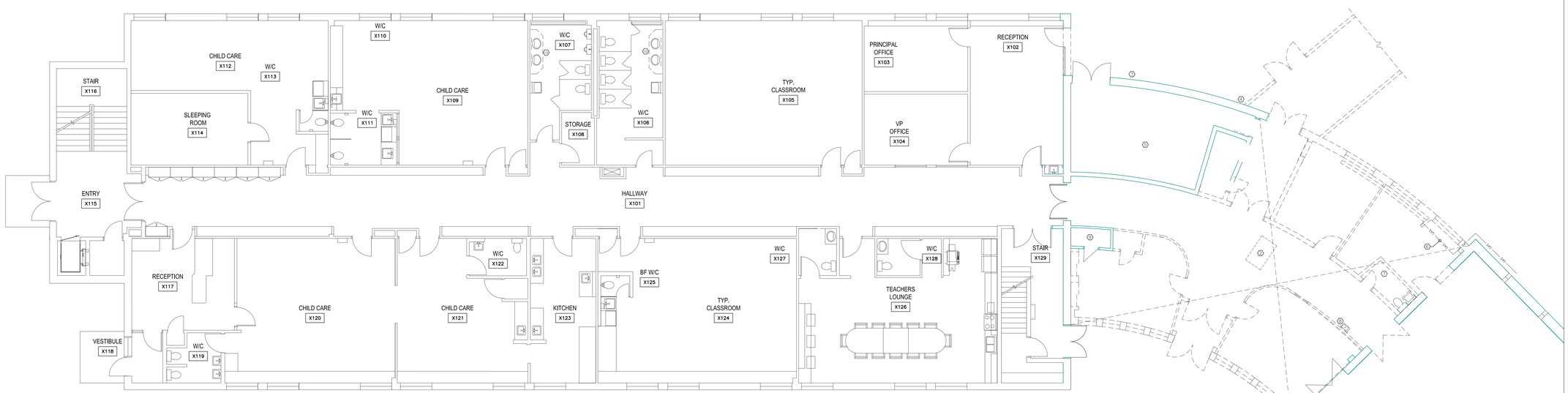
M0.2



SECOND FLOOR – DEMOLITION PLAN

MECHANICAL DEMOLITION NOTES:

1. REMOVE THE EXISTING ROOFTOP AIR CONDITIONER, AND ASSOCIATED DUCT WORK, FROM THE 2ND FLOOR ROOF. FILL IN THE CURB WITH R-20 INSULATION, AND COVER WITH 1B GAUGE 304 STAINLESS STEEL CAP WITH 4 INCH SIDES, WELD SEAMS AT CORNERS, AND SECURE TO CURB WITH SHEET METAL SCREWS OR WOOD SCREWS AS APPROPRIATE.
2. REMOVE THE EXISTING ROOFTOP UNIT FROM THE EXISTING 1 STORY ROOF ABOVE ADMINISTRATION. ALL DUCTWORK, GRILLES AND DIFFUSERS FOR THIS UNIT ARE TO BE REMOVED AND DISCARDED. PROVIDE TEMPORARY PLYWOOD COVER TO MEET OSHA UNTIL ROOF IS REMOVED BY GENERAL CONTRACTOR.
3. REMOVE THE EXISTING COMBUSTION AND VENTILATION AIR LOUVERS AND DUCTS, REFER TO DRAWINGS FOR REPLACEMENT DUCTS AND ROOF CURB, ETC.
4. REMOVE THE EXISTING RAIN WATER LEADER AND WALL SPOUT FOR STORM DRAINAGE.
5. THE EXISTING ROOF WILL BE ENTIRELY REMOVED AND REPLACED BY THE GENERAL CONTRACTOR. THE MECHANICAL CONTRACTOR IS TO PROVIDE TEMPORARY SUPPORT FOR ALL MECHANICAL DUCTWORK, HEATING SUPPLY AND RETURN PIPING, DOMESTIC WATER HOT, COLD AND RECIRCULATION PIPING, ETC. REMOVE ALL PIPING AND DUCT HANGERS FROM THE CEILING TO FACILITATE THE REMOVAL OF THE ROOF. ONCE THE NEW ROOF HAS BEEN REINSTALLED, THE CONTRACTOR IS TO PROVIDE DUCT HANGERS AND PIPING HANGERS TO SUPPORT ALL DUCTWORK AND PIPING, AND MECHANICAL EQUIPMENT ORIGINALLY SUPPORTED BY THE ROOF STRUCTURE. ALL SERVICES FOR EXISTING BUILDING ARE TO REMAIN OPERATIONAL AT ALL TIMES DURING DEMOLITION AND CONSTRUCTION.
6. THE EXISTING NATURAL GAS PIPING IS TO BE REMOVED FROM THE GAS METER TO THE NATURAL GAS PIPING HEADER TO THE BOILERS AND WATER HEATER. THIS HEADER IS TO BE RESUPPLIED NATURAL GAS AS INDICATED ON THE MECHANICAL CONSTRUCTION DRAWINGS. THE GAS METER SET IS TO BE MODIFIED TO PROVIDE 5 PSIG GAS BY THE UTILITY COMPANY. MECHANICAL CONTRACTOR IS TO COORDINATE WITH THE GAS COMPANY AND PAY ALL COSTS.
7. REMOVE THE EXISTING WASHROOM TOILET AND SINK, EXTEND THE DRAINAGE, HOT WATER, AND COLD WATER PIPING TO THE NEW LOCATION OF THE WASHROOM, AND ROUGH IN THE PLUMBING FOR THE PROPOSED WASHROOM, AND INSTALL FIXTURES AS PER DRAWINGS. REMOVE THE EXHAUST FAN, DUCT, AND CURB, ETC. PLUMBING VENT TO BE COMPLETELY REMOVED, PROVIDE VENT FOR PROPOSED WASHROOM AT THE NEW LOCATION, IN THE REPLACEMENT ROOF.
8. REMOVE EXISTING WATER FOUNTAIN COMPLETELY INCLUDING DOMESTIC WATER, DRAIN WASTE AND VENT CAP IN CRAWL SPACE, REMOVE VENT COMPLETELY.
9. REMOVE EXISTING EXHAUST FAN, DUCT, CURB, ETC. REMOVE THE EXISTING PLUMBING VENT, ALL TO BE PROVIDED AFTER THE REPLACEMENT ROOF HAS BEEN REINSTALLED FOR THE WASHROOM WHICH WILL BE REMAINING.
10. REMOVE EXISTING SINKS FROM MEN'S & WOMEN'S WASHROOMS TO PREPARE FOR INSTALLATION OF NEW SINKS. PATCH AND REPAIR WALLS AND FLOOR AS REQUIRED.



FIRST FLOOR – DEMOLITION PLAN

1 M1.0 MECHANICAL LAYOUT - DEMOLITION PLAN
1:75

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

JOHN R. HAMALAINEN ENGINEERING LTD.
Consulting Engineers
Since 1987
2166 Armstrong Street, Sudbury, ON P3E 5G9
Tel: (705)522-5745 Fax: (705)522-5650
info@consultingengineers.ca

REV	DESCRIPTION	DATE
3	ISSUED FOR PERMIT & TENDER	17.05.17
2	ISSUED FOR CLIENT REVIEW	17.05.08
1	ISSUED FOR CLIENT REVIEW	17.04.28

REGISTERED PROFESSIONAL ENGINEER 2017-05-17 J.R.HAMALAINEN 3203 PROVINCE OF ONTARIO

BORTOLOTTO

PROJECT NUMBER
R1121
JRHE 3203

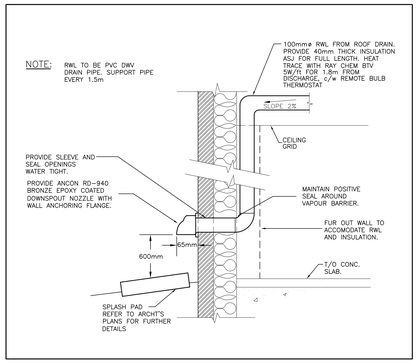
DATE
17.05.17

SCALE
1:75

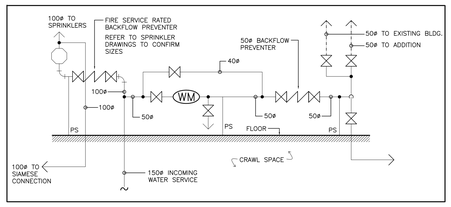
DRAWN BY
JD/CR

DEMOLITION PLAN
MECHANICAL LAYOUT

M1.0



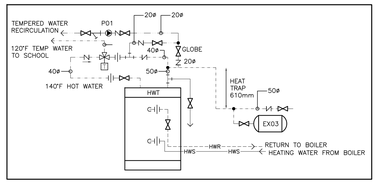
2 / M1.1 TYPICAL RAINWATER DISCHARGE DETAIL
N.T.S



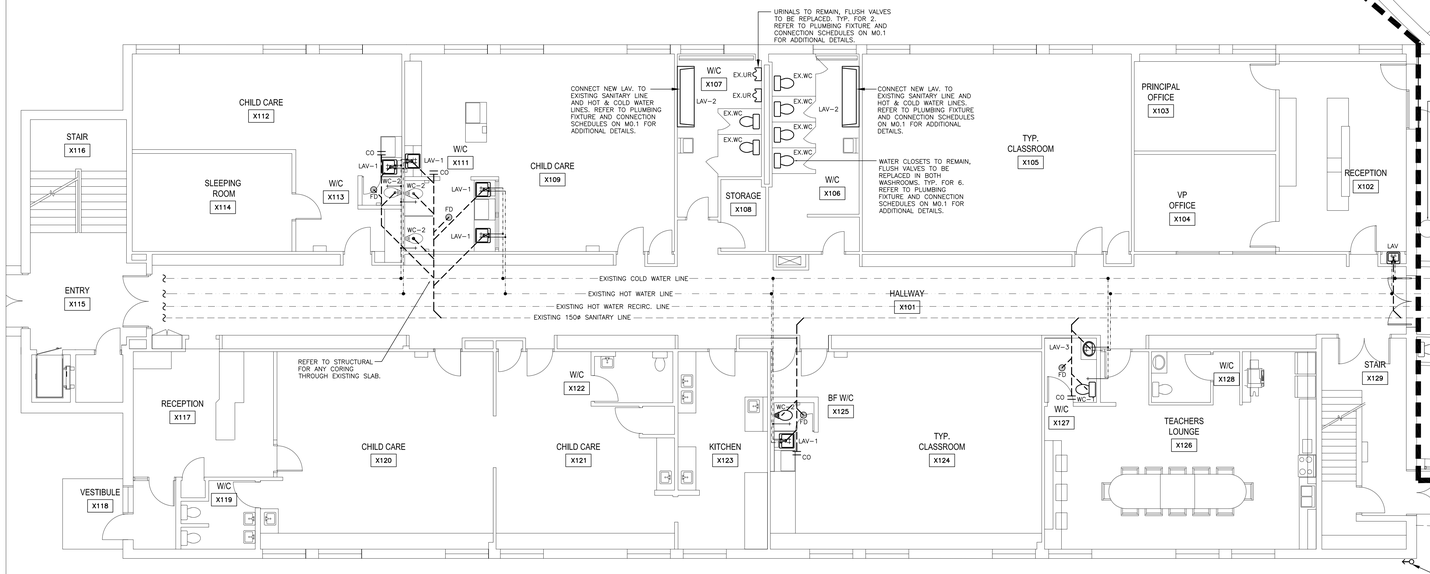
3 / M1.1 INCOMING WATER SERVICE SCHEMATIC
N.T.S

NOTES

1. EXISTING WATER METER TO BE REMOVED. EXISTING PLUMBING SERVICES TO EXISTING SCHOOL TO REMAIN. EXTEND 50ø CW TO NEW METER IN STORAGE ROOM 104a.
2. CONTRACTOR TO CONFIRM LOCATION OF ALL EXISTING PLUMBING PIPING ON SITE AND ADJUST LAYOUT TO SUIT.
FE. RECESSED FIRE EXTINGUISHER CABINET C/W EXTINGUISHER. CONSULT WITH LOCAL FIRE DEPARTMENT TO DETERMINE EXACT NUMBERS AND LOCATIONS.



4 / M1.1 DOMESTIC WATER HEATING SCHEMATIC WITH TEMPERED WATER SUPPLY
N.T.S



1 / M1.1 PLUMBING LAYOUT - GROUND FLOOR PLAN - RENO
1:75

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

JOHN R. HAMALAINEN ENGINEERING LTD.
Consulting Engineers
Since 1987
2166 Armstrong Street, Sudbury, ON P3E 5G9
Tel: (705)522-5745 Fax: (705)522-5650
info@consultingengineers.ca

REV	DESCRIPTION	DATE
3	ISSUED FOR PERMIT & TENDER	17.05.17
2	ISSUED FOR CLIENT REVIEW	17.05.08
1	ISSUED FOR CLIENT REVIEW	17.04.28

REGISTERED PROFESSIONAL ENGINEER
2017-05-17
J.R.HAMALAINEN
3203
PROVINCE OF ONTARIO

BORTOLOTTO

PROJECT NUMBER
PF1701
JR/HE 3203

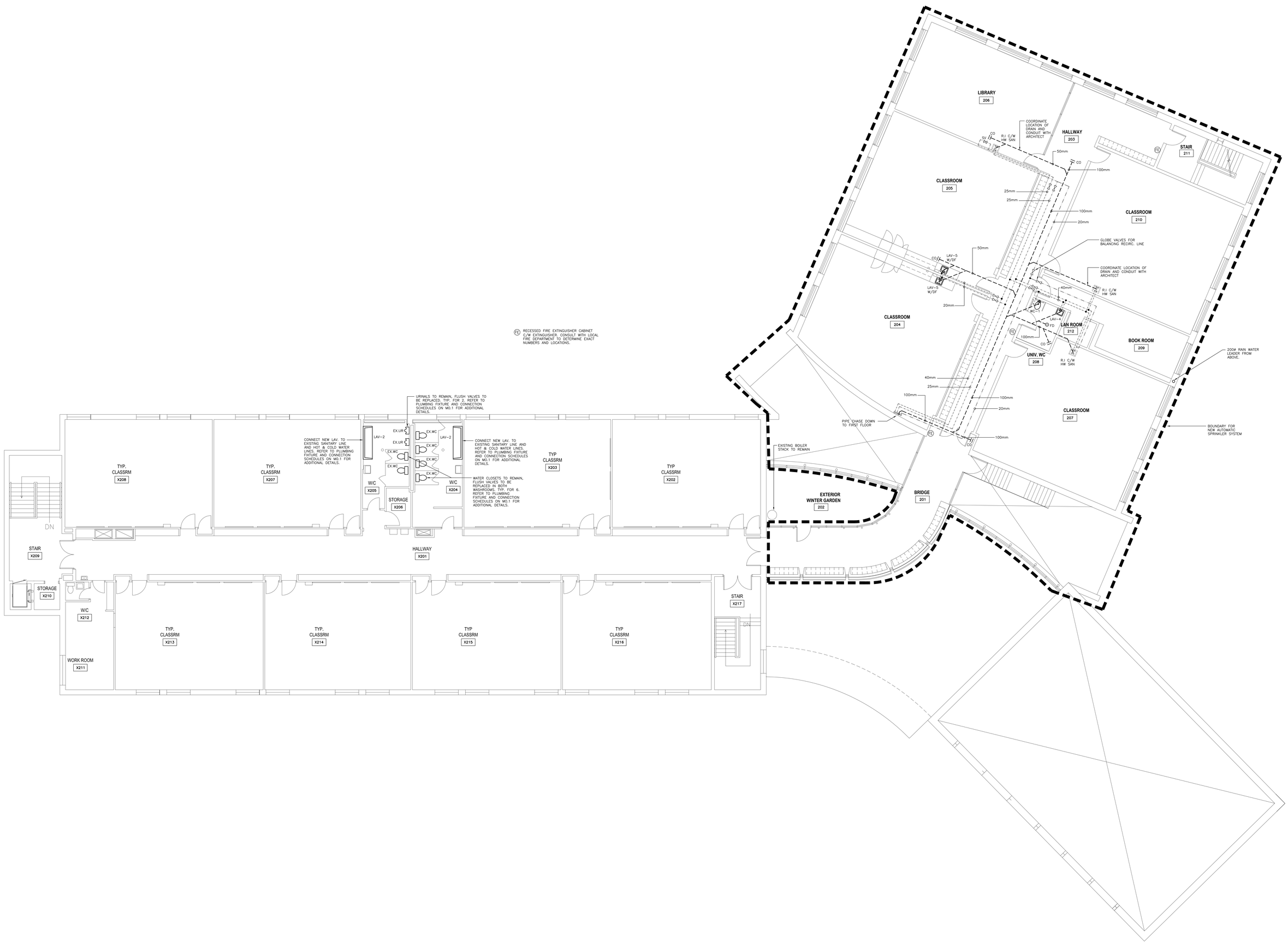
DATE
17.05.17

SCALE
1:75

DRAWN BY
JD/DI

GROUND FLOOR PLAN - RENO
PLUMBING LAYOUT

M1.1



1 M1.2 PLUMBING LAYOUT - SECOND FLOOR PLAN - RENO
1:75

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHTECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultngengineers.ca

JOHN R. HAMALAINEN ENGINEERING LTD.
Consulting Engineers
Since 1987
2166 Armstrong Street, Sudbury, ON P3E 5G9
Tel.: (705)522-5745 Fax: (705)522-5650
info@consultingengineers.ca

REV	DESCRIPTION	DATE
3	ISSUED FOR PERMIT & TENDER	17.05.17
2	ISSUED FOR CLIENT REVIEW	17.05.08
1	ISSUED FOR CLIENT REVIEW	17.04.28

REGISTERED PROFESSIONAL ENGINEER
2017-05-17
J.R.HAMALAINEN
100113
PROVINCE OF ONTARIO

BORTOLOTTO

PROJECT NUMBER
PF1701
JRHE 3203

DATE
17.05.17

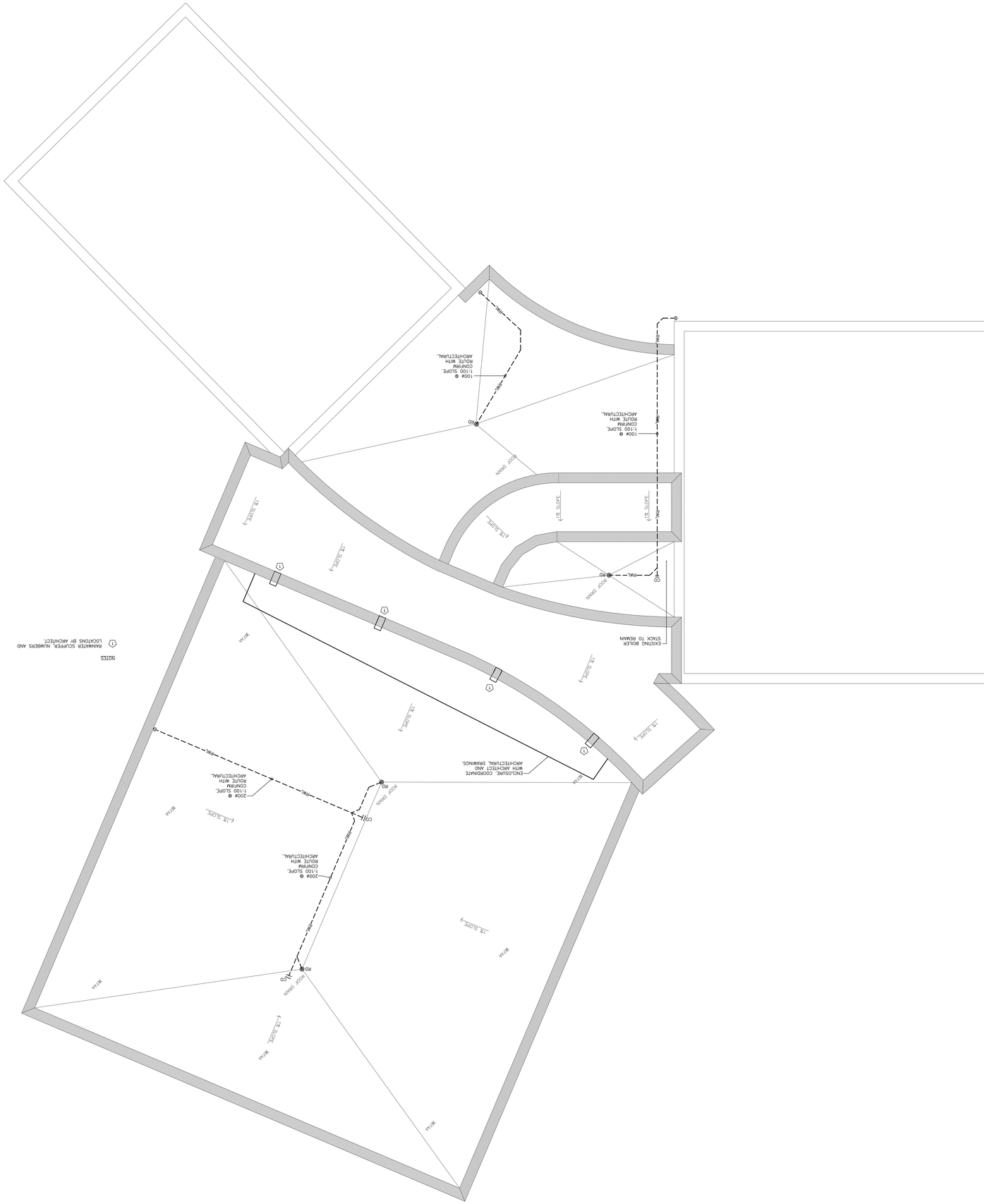
N

SCALE
1:75

DRAWN BY
JD/CR

SECOND FLOOR PLAN - RENO
PLUMBING LAYOUT

M1.2



1 PLUMBING LAYOUT - ROOF PLAN
M1.3 1:75

M1.3

ROOF PLAN
PLUMBING LAYOUT

DRAWN BY
JD/CR

SCALE
1:75

DATE
17.05.17

PROJECT NUMBER
PP15P1
JUNE 2020

BORTOLOTTO

REGISTERED PROFESSIONAL ENGINEER
J.R.HAMALAINEN
2021-08-31
PROVINCE OF ONTARIO

REV	DESCRIPTION	DATE
1	ISSUED FOR CLIENT REVIEW	17.04.28
2	ISSUED FOR CLIENT REVIEW	17.05.08
3	ISSUED FOR PERMIT & TENDER	17.05.17

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121
387 Bloem Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
tel 416 324 9951
bortolotto.com

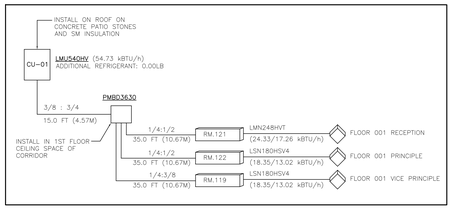
STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
engineeringlink.ca

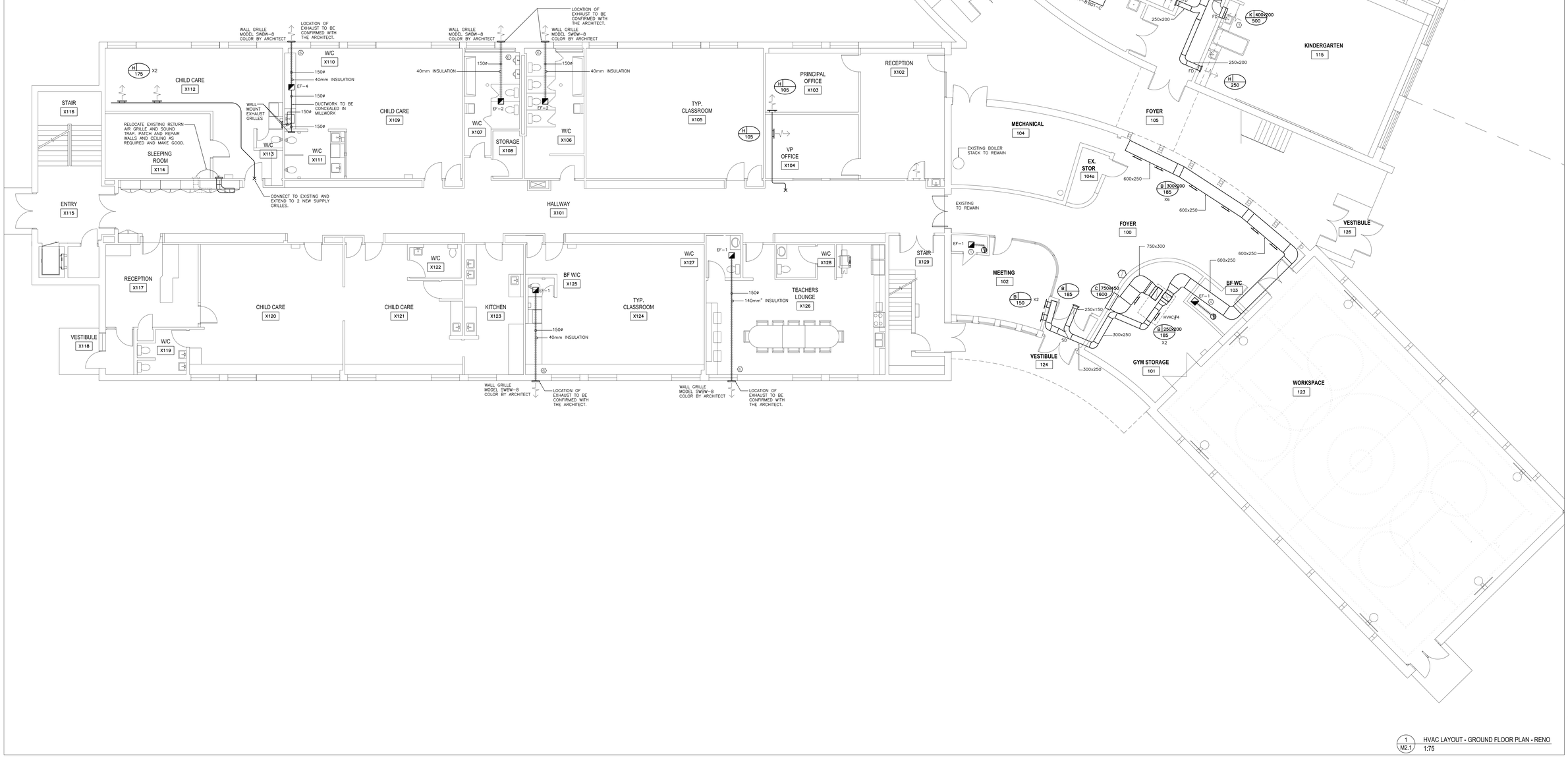
MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5245 x22
ourbuildingsystems.ca

JOHN R. HAMALAINEN
ENGINEERING LTD
Consulting Engineers
Seal 136
2166 Armstrong Street, Sudbury, ON P3E 5G9
Tel: (705)522-5245 Fax: (705)522-4500
info@ourbuildingsystems.ca

HVAC NOTES:

1. PROVIDE 250x250 ROOF CURB, 450mm HIGH, INSULATED, AND A GRAVITY ROOF VENT FOR EXHAUST DISCHARGE.
2. LINEAR SLOT DIFFUSER SUPPLY AIR
3. SUPPLY AND RETURN WALL GRILLES WITH MAIN DUCT RUNNING ABOVE DROP CEILING IN CORRIDOR. TYP.
4. PROVIDE 250x250 ROOF CURB, 450mm HIGH, INSULATED, AND A GRAVITY ROOF VENT FOR EXHAUST DISCHARGE.
5. PANEL RADIATORS FOR PERIMETER HEATING AS SHOWN ON DRAWINGS. RITTLING PR SERIES. ONE CONTROL VALVE FOR EACH ROOM. CONNECT TO NEW THERMOSTATS. CONDUIT FOR CONTROLS TO RUN NEATLY ALONG WALLS AND CEILING AS REQUIRED.
6. NEW EXHAUST FANS IN WASHROOMS TO BE DUCTED OUTSIDE THROUGH WALL AS SHOWN ON DRAWINGS. TYP.
7. PROVIDE NEW LAN ROOM EXHAUST FAN, GEIST CLOSETAIR C/W DUCT KIT. FAN SHALL EXHAUST THROUGH EXTERIOR WALL.
8. 750mm EXPOSED ROUND SPIRAL DUCT WITH SUPPLY AIR DIFFUSERS FROM ROOFTOP HVAC UNIT ALONG ATRIUM GLASS.







1 M2.1 HVAC LAYOUT - GROUND FLOOR PLAN - RENO
1:75

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

JOHN R. HAMALAINEN ENGINEERING LTD.
Consulting Engineers
Since 1987
2166 Armstrong Street, Sudbury, ON P3E 5G9
Tel: (705)522-5745 Fax: (705)522-5650
info@consultingengineers.ca

REV.	DESCRIPTION	DATE
3	ISSUED FOR PERMIT & TENDER	17.05.17
2	ISSUED FOR CLIENT REVIEW	17.05.08
1	ISSUED FOR CLIENT REVIEW	17.04.28

REGISTERED PROFESSIONAL ENGINEER
2017-05-17
J.R.HAMALAINEN
100113
PROVINCE OF ONTARIO

BORTOLOTTO

PROJECT NUMBER
PF1701
JRHE 3203

DATE
17.05.17

SCALE
1:75

DRAWN BY
JD

GROUND FLOOR PLAN - RENO
HVAC LAYOUT

M2.1

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

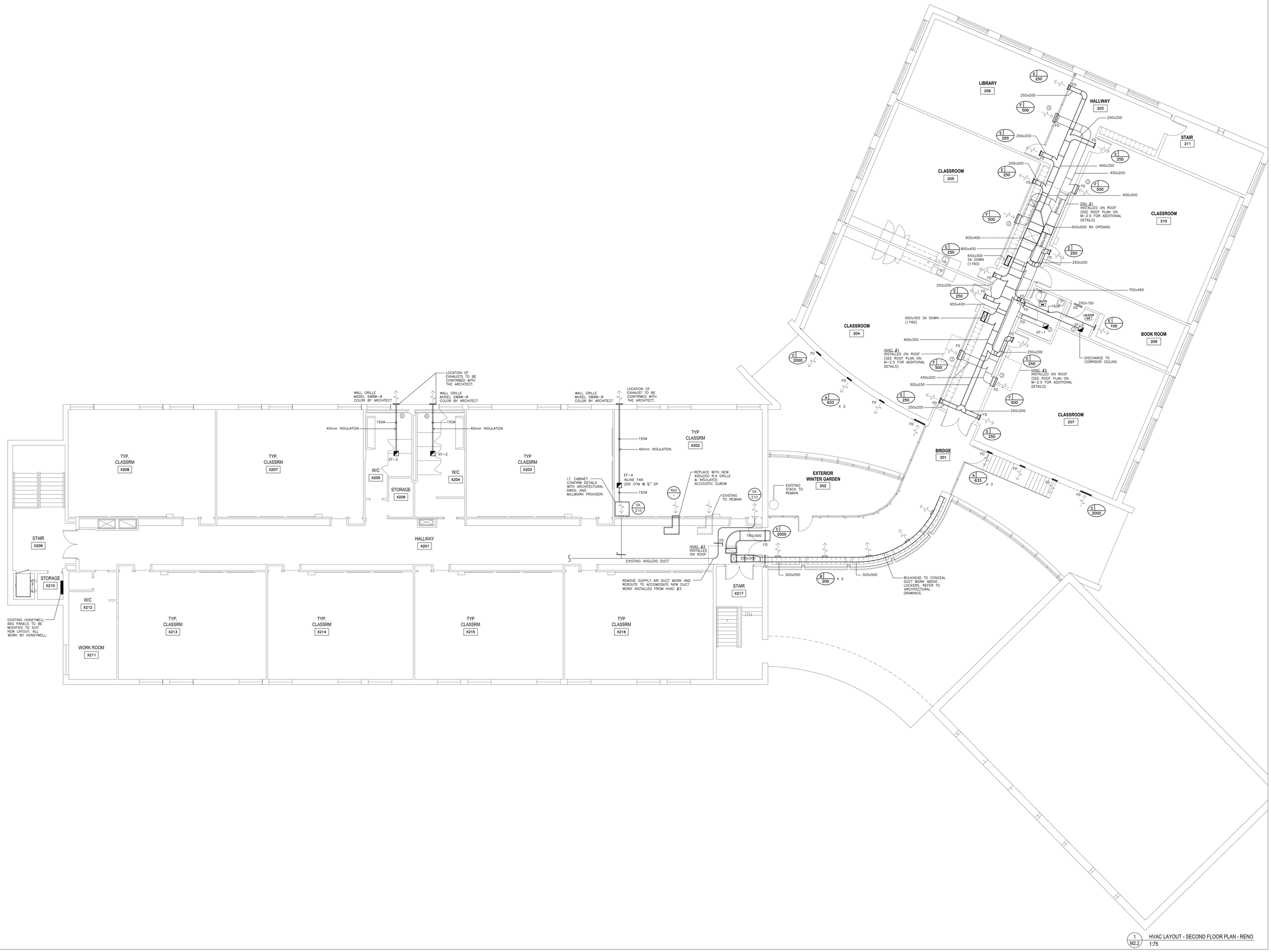
CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

JOHN R. HAMALAINEN ENGINEERING LTD.
Consulting Engineers
Since 1987
2166 Armstrong Street, Sudbury, ON P3E 5G9
Tel: (705)522-5745 Fax: (705)522-5650
info@consultingengineers.ca



1 / M2.2 HVAC LAYOUT - SECOND FLOOR PLAN - RENO
1:75

REV	DESCRIPTION	DATE
3	ISSUED FOR PERMIT & TENDER	17.05.17
2	ISSUED FOR CLIENT REVIEW	17.05.08
1	ISSUED FOR CLIENT REVIEW	17.04.28

REGISTERED PROFESSIONAL ENGINEER
J.R.HAMALAINEN
2017-05-17
PROVINCE OF ONTARIO

BORTOLOTTO

PROJECT NUMBER
PF1701
JR/HE 3203

DATE
17.05.17

SCALE
1:75

DRAWN BY
JD

SECOND FLOOR PLAN - RENO
HVAC LAYOUT

M2.2

M2.3

GROUND FLOOR PLAN - RENO
HEATING PIPING LAYOUT

BORTOLOTTO

PROJECT NUMBER
PP1191
JUNE 2023

DATE
17.06.17

SCALE
1:75

DRAWN BY
JD

REV	DESCRIPTION	DATE
1	ISSUED FOR CLIENT REVIEW	17.04.28
2	ISSUED FOR CLIENT REVIEW	17.05.08
3	ISSUED FOR PERMIT & TENDER	17.06.17

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E, Suite 200
Toronto ON Canada M5A 1N8
tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x32
constructingengineers.ca

JOHN R. HAMALAINEN
ENGINEERING LTD.
Licence 1007
Constructing Excellence
2166 Armstrong Street, Sudbury, ON P3E 5G9
Tel: (705)522-5745 Fax: (705)522-5630
mail@constructingengineers.ca

CONSULTANT TEAM

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#21

387 Bloom Street North
Timmins, Ontario

1 M2.3 1:75 HEATING PIPING LAYOUT - GROUND FLOOR PLAN - RENO

M2.3

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

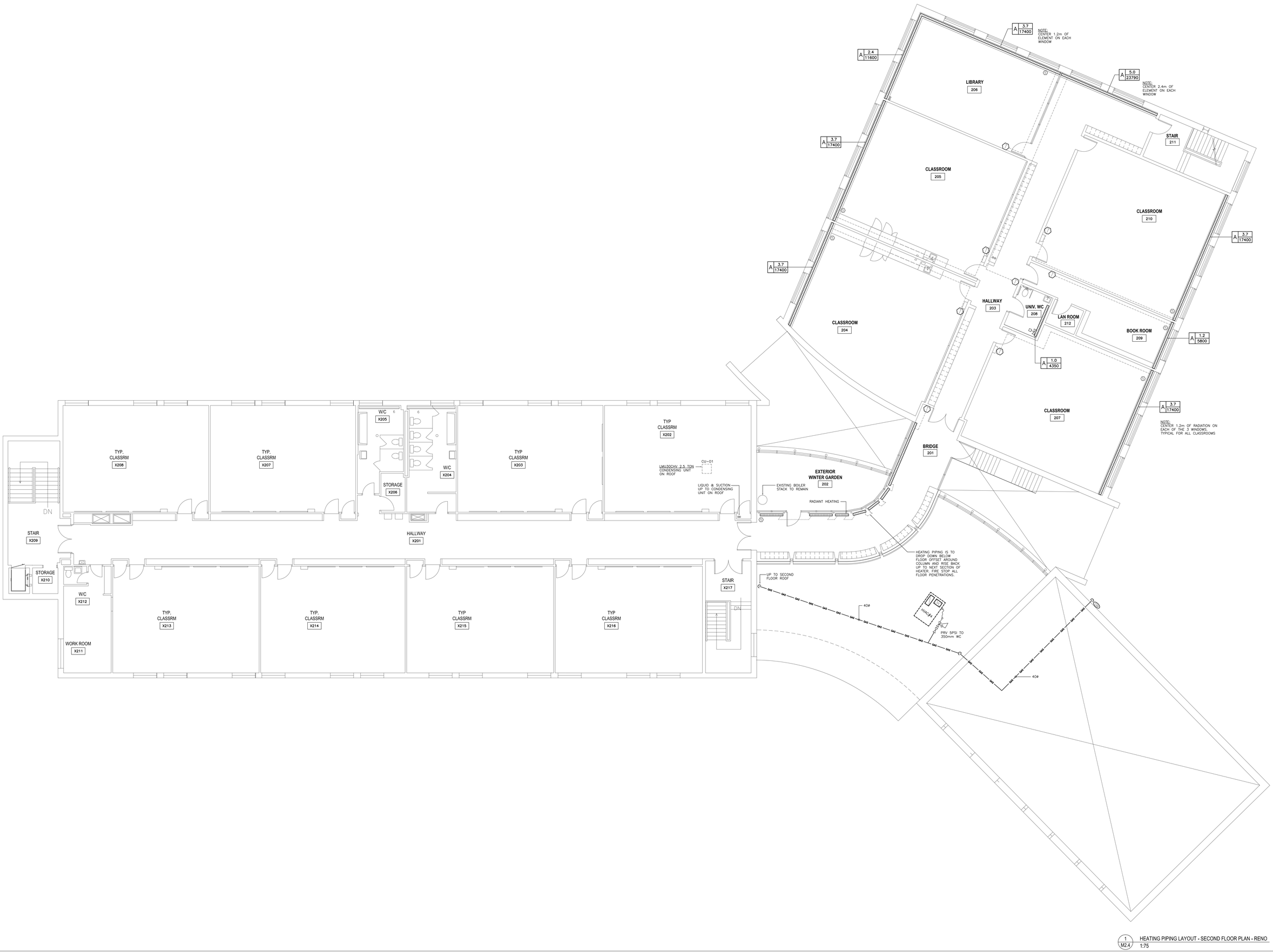
CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultngengineers.ca

JOHN R. HAMALAINEN ENGINEERING LTD.
Consulting Engineers
Since 1987
2166 Armstrong Street, Sudbury, ON P3E 5G9
Tel: (705)522-5745 Fax: (705)522-5650
info@consultingengineers.ca



1 M2.4 HEATING PIPING LAYOUT - SECOND FLOOR PLAN - RENO
1:75

REV	DESCRIPTION	DATE
3	ISSUED FOR PERMIT & TENDER	17.05.17
2	ISSUED FOR CLIENT REVIEW	17.05.08
1	ISSUED FOR CLIENT REVIEW	17.04.28

REGISTERED PROFESSIONAL ENGINEER
2017-05-17
J.R.HAMALAINEN
3203
PROVINCE OF ONTARIO

BORTOLOTTO

PROJECT NUMBER
PF1701
JRHE 3203

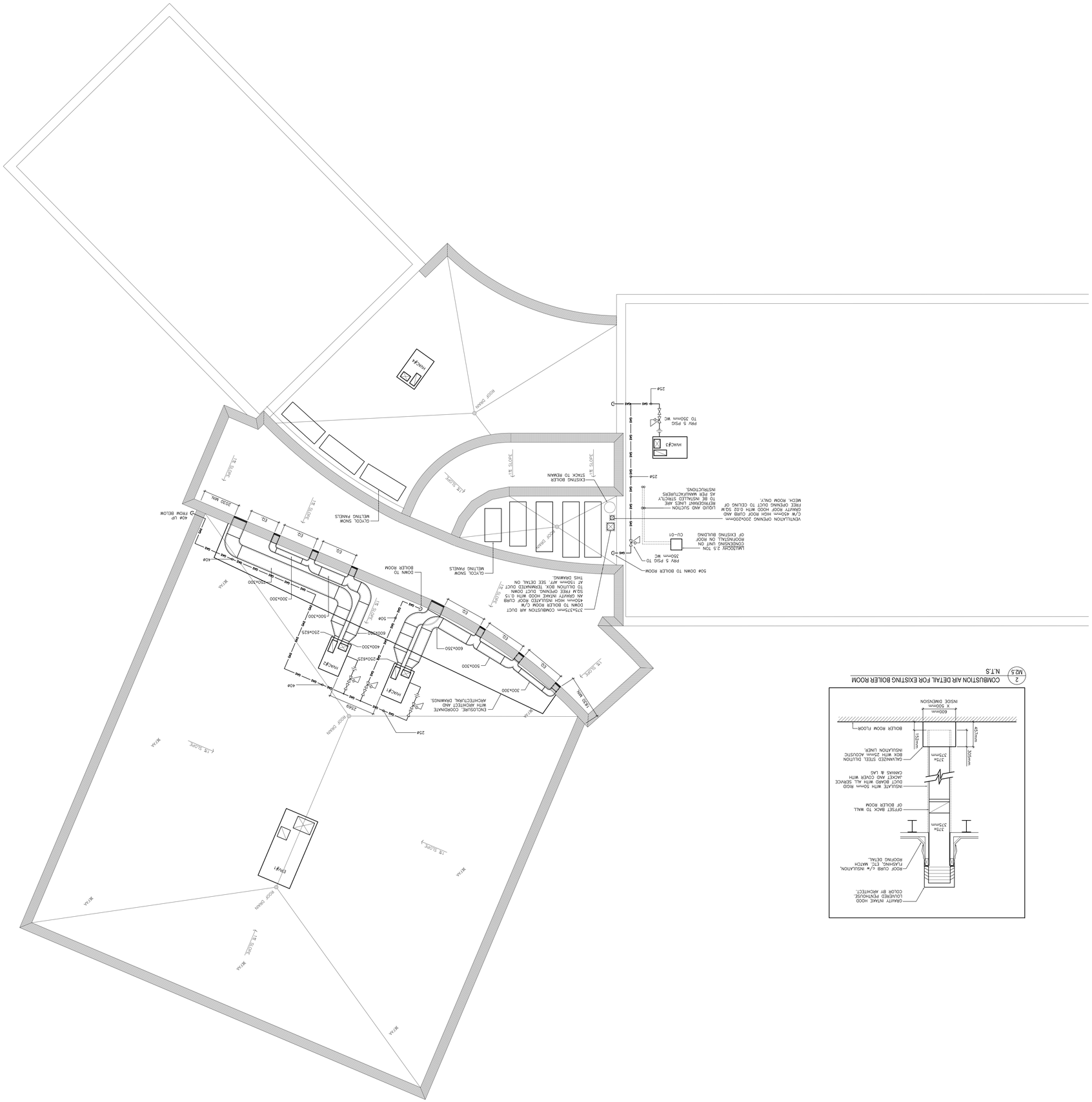
DATE
17.05.17

SCALE
1:75

DRAWN BY
JS

SECOND FLOOR PLAN - RENO
HEATING PIPING LAYOUT

M2.4


ROOF DRAIN
HVAC-P1
HVAC-P2
HVAC-P3
EXHAUST
LOUVRE
EXISTING BOILER STACK TO REMAIN
GLYCOL SNOW MELTING PANELS
GLYCOL SNOW MELTING PANELS
50ø DOWN TO BOILER ROOM
PRV 5 PSIG TO 350mm WC
LG4000SKV 2.5 TON CONDENSING UNIT ON ROOFTOP OF EXISTING BUILDING
CU-01
VENTILATION OPENING 200x200mm C/W 40ohm HIGH ROOF CURB AND GRAVITY HOOD WITH 0.02 SQ.M FREE OPENING DUCT TO CEILING OF MECH. ROOM ONLY.
LIQUID AND SUCTION REFRIGERANT LINES ARE TO BE INSTALLED STRICTLY AS PER MANUFACTURERS INSTRUCTIONS.
PRV 5 PSIG TO 350mm WC
HM-P3
25ø
25ø
50ø DOWN TO BOILER ROOM
375x375mm COMBUSTION AIR DUCT DOWN TO BOILER ROOM C/W 45ohm HIGH INSULATED ROOF CURB
GRAVITY INTAKE HOOD WITH 0.1S SQM FREE OPENING. DUCT DOWN TO OUTLOOK BOX. TERMINATED AT 150mm AFF. SEE DETAIL ON THIS DRAWING.
GLYCOL SNOW MELTING PANELS
DOWN TO BOILER ROOM
ENCLOSURE. COORDINATE WITH ARCHITECT AND ARCHITECTURAL DRAWINGS.
1.5" SLOPE
1.5" SLOPE
1.5" SLOPE

ELECTRICAL SPECIFICATIONS DIV. 26

1. GENERAL

A) THE GENERAL CONDITIONS OF THE CONTRACT, SHALL APPLY TO ALL WORK DONE UNDER THIS SECTION.

B) THIS SUBCONTRACTOR SHALL BE FAMILIAR WITH THE WORK OF ALL OTHER TRADES SO THAT HE CAN INCLUDE FOR ALL WORK NECESSARY UNDER THIS CONTRACT.

2. EXAMINATION OF SITE AND DRAWINGS

A) BEFORE TENDERING, THE ELECTRICAL SUBCONTRACTOR SHALL EXAMINE THE SITE, LOCAL CONDITIONS AFFECTING THE WORK OF THIS CONTRACT, WORK OF OTHER TRADES AND SHALL SATISFY HIMSELF THAT THE WORK MAY BE CARRIED OUT IN THE MANNER INDICATED ON THE PLANS AND SPECIFICATIONS. REPORT ANY CONFLICTS OR DISCREPANCIES PRIOR TO CLOSE OF TENDER.

3. STANDARDS OF EQUIPMENT AND MATERIALS

A) MATERIALS AND EQUIPMENT IN THESE SPECIFICATIONS ARE FOR THE PURPOSE OF ESTABLISHING THE STANDARD OF MATERIALS AND WORKMANSHIP. EQUAL PRODUCTS MAY BE USED UPON APPROVAL.

B) ALL MATERIALS SHALL BE NEW AND SHALL BE C.S.A. APPROVED, AND SHALL BEAR THE C.S.A. LABEL. MATERIALS WHICH ARE NOT C.S.A. APPROVED SHALL BE APPROVED BY SPECIAL INSPECTION.

4. PERMITS, FEES AND INSPECTIONS

A) COMPLY WITH ALL APPLICABLE CODES AND ALL LOCAL, MUNICIPAL PROVINCIAL AND FEDERAL BY-LAWS, RULES AND REGULATIONS. OBTAIN ALL PERMITS REQUIRED AND PAY PERMIT FEES.

B) BEFORE STARTING ANY WORK, SUBMIT COPIES OF DRAWINGS AND SPECIFICATIONS TO THE INSPECTION AUTHORITY FOR APPROVAL. ANY CHANGES REQUESTED SHALL BE REFERRED TO THE ENGINEER IMMEDIATELY, SO THAT PROPER ACTION CAN BE TAKEN.

C) ARRANGE FOR INSPECTION BY THE AUTHORITY HAVING JURISDICTION UPON COMPLETION PRESENT TO THE OWNER THE FINAL CERTIFICATE OF APPROVAL.

5. COOPERATION WITH OTHER TRADES

A) CONFER WITH OTHER SUBCONTRACTORS INSTALLING PIPING, OTHER EQUIPMENT, FOUNDATIONS, ETC., WHICH MAY AFFECT THE INSTALLATION AND ARRANGEMENT OF EQUIPMENT. SPECIAL CARE SHALL BE TAKEN IN THE INSTALLATION OF ALL PIPING, DUCTS, ETC., WHERE THE SAME ARE TO BE CONCEALED TO SEE THAT THEY COME WITH THE FINISHED LINES OF THE FLOORS, WALLS AND CEILINGS.

B) FAILURE TO DO THIS MAY NECESSITATE RELOCATION, AS DIRECTED BY THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.

C) NOTIFY THE GENERAL CONTRACTOR OF ALL OPENINGS, FOUNDATION WORK, ANCHORS, HANGERS OR OTHER PROVISION NECESSARY FOR THE INSTALLATION IN AMPLE TIME SO THAT PROPER PROVISION CAN BE MADE FOR THEM. FAILURE TO COMPLY ON THE PART OF THE ELECTRICAL SUB-CONTRACTOR SHALL NOT RELIEVE HIM OF THE COST OF CUTTING AND PATCHING AT A LATER PERIOD.

D) DIV. 26 IS RESPONSIBLE FOR REVIEWING DIV. 23 DRAWINGS AND INCLUDING ALL ELECTRICAL WORK FOR EQUIPMENT SUPPLIED BY DIV. 23. ELECTRICAL DRAWINGS DO NOT SHOW ALL OF THIS WORK.

6. PROTECTION

A) KEEP EQUIPMENT DRY AND CLEAN AT ALL TIMES.

7. CONTRACT DRAWINGS

A) THE DRAWINGS ARE IN GENERAL SMALL SCALE, AND MEASUREMENTS SHALL NOT BE SCALED FROM THESE DRAWINGS. WHERE THERE IS A CONFLICT THAT REQUIRES CHANGES, REFER TO THE ENGINEER FOR RESOLUTION. MINOR RELOCATIONS SHALL BE DONE AT NO EXTRA COST.

8. RECORD DRAWINGS

A) OBTAIN AND PAY FOR SET OF WHITE PRINTS, AS THE JOB PROGRESSES, MARK THESE DRAWINGS TO ACCURATELY INDICATE THE LOCATION OF INSTALLED WORK.

9. SHOP DRAWINGS

A) PRIOR TO ORDERING OF ANY MATERIAL OR EQUIPMENT, PROVIDE (8) COPIES OF SHOP DRAWINGS AND/OR DESCRIPTIVE DATA FOR REVIEW.

10. HANGERS, INSERTS AND SLEEVES

A) PROVIDE AND INSTALL INSERTS, HANGERS, ANCHORS AND SUPPORTS REQUIRED FOR WORK TO BE INSTALLED UNDER THIS SECTION.

11. CUTTING AND PATCHING

A) CUTTING AND PATCHING FOR ELECTRICAL WORK SHALL BE DONE BY THIS SECTION.

B) HOLES IN CONCRETE BLOCK WALLS AND CONCRETE FLOORS FOR CONDUITS OR DUCTS SHALL BE CORE DRILLED WHERE NOT SLEEVED.

12. ACCESS DOORS

A) WHEREVER ANY ELECTRICAL EQUIPMENT REQUIRING MAINTENANCE OR ADJUSTMENT IS "BUILT-IN", DOORS ARE REQUIRED. THE COST OF THESE DOORS SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL TRADE.

13. IDENTIFICATION OF EQUIPMENT

A) ALL EQUIPMENT SUPPLIED SHALL BE IDENTIFIED WITH LAMACOID PLASTIC NAMEPLATES, BLACK BACKGROUND WITH WHITE ETCHED LETTERS 3/8" HIGH.

14. WORKMANSHIP

A) ALL WORK SHALL BE DONE IN A WORKMANLIKE MANNER. ANY WORKMANSHIP UNSATISFACTORY IN THE OPINION OF THE OWNER, SHALL BE REPLACED WITHOUT COST TO THE OWNER.

15. CLEAN-UP

A) DURING THE COURSE OF CONSTRUCTION, KEEP WORK AREA CLEAN AND DO NOT ALLOW AN ACCUMULATION OF DEBRIS RESULTING FROM YOUR WORK. UPON COMPLETION OF THE WORK, REMOVE ALL DEBRIS AND SURPLUS MATERIAL FROM THE SITE, LEAVING THE PREMISES IN A BROOM-CLEAN CONDITION.

16. TESTS

A) ALL EQUIPMENT AND ELECTRICAL SYSTEMS PROVIDED UNDER THIS SECTION SHALL BE TESTED TO ENSURE THAT THEY ARE FUNCTIONING PROPERLY. SUBMIT TO THE ENGINEER, GIVING ALL THE NECESSARY TEST DATA, A STATEMENT CERTIFYING THAT ALL EQUIPMENT IS FUNCTIONING PROPERLY, AND THAT THE WORK SPECIFIED AND/OR REQUIRED HAS BEEN COMPLETED.

17. GUARANTEE

A) SYSTEMS SHALL BE COMPLETE, TESTED AND READY FOR USE WITH ALL EQUIPMENT OPERATING SATISFACTORILY AND ALL FIXTURES LAMPED.

B) PROVIDE A CERTIFICATE OF GUARANTEE OF WORKMANSHIP, MATERIALS AND EQUIPMENT FOR ONE (1) YEAR AFTER SUBSTANTIAL COMPLETION. THIS DOES NOT SUPERSEDE WARRANTIES ON SPECIFIC ITEMS OF EQUIPMENT WHICH MAY BE FOR LONGER PERIODS, AND MANUFACTURER'S WARRANTIES SHALL BEGIN ON THE DATE OF THIS ACCEPTANCE; NOT WHEN THE PRODUCT WAS SHIPPED OR INSTALLED.

C) DEMONSTRATE TO THE OWNER'S REPRESENTATIVE THE PROPER OPERATING PROCEDURES AND PROVIDE TWO (2) COPIES OF OPERATING INSTRUCTIONS SUITABLY BOUND, TITLED AND BEARING THE CONTRACTOR'S COMPANY NAME, ADDRESS AND TELEPHONE NUMBER.

18. GROUNDING

A) ALL GROUNDING SHALL CONFORM TO THE CANADIAN ELECTRIC CODE AND PROVINCIAL REGULATIONS AND IN GENERAL ALL GROUND CONNECTION, COPPER TO COPPER AND COPPER TO STEEL SHALL BE "CADWELD" OR "BURNDY THERMOWELD" WELDED CONNECTIONS, UNLESS SPECIFIED OTHERWISE.

B) THE GROUND CONNECTION TO THE WATER PIPE AND THE GROUND CONDUCTOR SHALL BE BY MEANS OF A GROUND CONNECTOR "BURNDY" TYPE "GAR" SIZED FOR THE WATER PIPE AND THE CONDUCTOR OR HYGROUND FOR CABLE TO CABLE CONNECTIONS. PROVIDE GROUNDING RODS WHERE PLASTIC WATER MAIN IS USED. COMPLY WITH O.E.C. RULE 10-700.

19. WIRE AND CABLE

A) EXCEPT WHERE OTHERWISE SPECIFIED ON THE DRAWINGS, ALL WIRING IN CONCRETE WALLS, FLOORS AND CEILINGS SHALL BE RW90 INSULATED CABLE IN THINWALL CONDUIT WITH APPROVED FITTINGS. ALL BRANCH CIRCUIT WIRING SHALL BE COPPER.

B) BRANCH CIRCUIT WIRING IN FURRED SPACES, DROPPED CEILING SPACES, CONCRETE BLOCK WALLS, DROPPED CEILING SPACES, MAY BE WITH METALLIC ARMOURED CABLE (BX).

C) OUTDOOR WIRING TO HVAC UNITS SHALL BE TECK 90.

D) MINIMUM CABLE SIZE IN CIRCUIT WIRING SHALL BE NO. 12 AWG GAUGE.

E) ALL EXPOSED WIRING (EXCEPT WHERE OTHERWISE SPECIFIED ON THE DRAWINGS) SHALL BE IN THINWALL CONDUIT.

F) WHERE ALUMINUM SHEATHED OR PYROTENAX CABLES ARE USED, THEY SHALL BE INSTALLED IN COMPLETE ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS SO THAT THERE BE NO SHEATH CURRENT FLOWING. ALSO REFER TO CURRENT O.H.E.P.C. BULLETINS FOR DERATING FACTORS IF APPLICABLE.

G) FIRESTOPPING OF ALL CABLE SLEEVES SHALL BE DONE WITH ELECTROVERT "FLAMESEAL OR DOW CORNING "FIRESTOP" SEALANT. (H) WHERE EMERGENCY POWER FEEDERS, OR FIRE ALARM FEEDERS ARE INSTALLED IN HAZARDOUS AREA EXPOSED, THESE FEEDERS SHALL BE PROTECTED BY 1 HR. FIRE ENCLOSURE IN ACCORDANCE WITH OBC AND AUTHORITIES HAVING JURISDICTION. AS ALTERNATE TO FIREPROOFING, USE "PYROTENAX" CABLES.

20. CONDUITS

A) THE CONTRACTOR SHALL FURNISH AND INSTALL ALL RIGID STEEL, EMT, AND FLEXIBLE CONDUIT, AS REQUIRED. RIGID STEEL CONDUIT SHALL BE GALVANIZED. THE CONDUIT SHALL BE G.E. WHITE ZINC-COATED OR TRIANGLE HOT DIP OR EQUAL.

B) MINIMUM SIZE OF 12.7 mm (1/2") CONDUIT SHALL BE USED.

C) CONDUIT PASSING FROM THE INSIDE TO OUTSIDE AREAS SHALL BE SEALED WITH A COMPOUND SIMILAR TO JOHNS-MANVILLE DUXSEAL.

D) BENDS IN EXPOSED CONDUIT RUNS SHALL BE SITE MADE BENDS WHERE POSSIBLE; OTHERWISE JUNCTION BOXES, CONDULETS OR UNILETS SHALL BE USED.

E) CONDUIT FITTINGS SHALL BE GALVANIZED THREADED TYPE FOR RIGID STEEL CONDUITS. ALL CONDUIT WORK SHALL BE CLEANED AND DRIED INSIDE BEFORE THE INSTALLATION OF THE WIRES. NO OIL OR GREASE SHALL BE USED TO EASE DRAWING IN WIRES AND CABLES, OTHER THAN THOSE HAVING A LEAD OR COPPER SHEATH.

F) CONDUIT FITTINGS SHALL BE DRILLED FOR DRAINING WHERE CONDENSATION MAY COLLECT.

G) NO CONDUIT SHALL BE RUN WITHIN 152.4 mm (6") OF HOT WATER PIPES.

(H) CONDUIT RUNS THROUGH BUILDING STRUCTURE SHALL BE SLEEVED. CONTRACTOR SHALL PROVIDE SLEEVES IN ALL FLOORS. ALL SLEEVES SHALL BE SEALED, WITH JOHNS-MANVILLE DUXSEAL OR EQUAL.

I) LINES INDICATED ON DRAWINGS SHOWING CONDUIT RUNS ARE ONLY SCHEMATIC. IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO DETERMINE EXACT ROUTES OF CONDUITS TO CONFORM WITH STRUCTURAL ELEMENTS. THE EXPOSED CONDUIT SHALL BE NEATLY INSTALLED PARALLEL TO THE LINES OF THE BUILDING AND CLEAN AND FREE FROM KINKS AND IRREGULAR BENDS. FITTINGS SHALL BE USED AROUND CORNERS AND ALL CONDUITS SHALL BE KEPT TIGHT TO CEILINGS, WALLS, ETC.

J) FLEXIBLE CONDUIT SHALL BE USED WHERE THE CONDUIT WORK JOINS PLATFORM STRUCTURES OF MACHINERY, MOTORS, ETC., OR THROUGH EXPANSION JOINTS.

21. TELEPHONE & DATA & ALARM CONDUIT SYSTEMS

A) SUPPLY AND INSTALL A SYSTEM OF EMPTY CONDUIT, OUTLET BOXES AND OVERHEAD CONDUITS FOR TELEPHONE & DATA & ALARM INSTALLATION AS INDICATED ON THE DRAWINGS. PROVIDE FISH LINES IN ALL CONDUITS, UNDERGROUND DUCTS AND RUNS.

B) ALL TELEPHONE & ALARM TERMINALS SHALL BE EQUIPPED WITH 3/4" PLYWOOD BACKBOARDS, SUPPLIED, PAINTED AND INSTALLED UNDER THIS SECTION. PROVIDE A 110 VOLT DUPLEX "U" GROUND RECEPTACLE AT EACH TERMINAL FOR TELEPHONE UTILITY USE, CONNECTED TO ITS OWN CIRCUIT.

C) PROVIDE A GROUND WIRE FROM THE MAIN TELEPHONE & ALARM TERMINAL TO THE NEAREST COLD WATER LINE TO TELEPHONE UTILITY

D) WALL OUTLETS SHALL BE 4" SQUARE OUTLET BOXES, COMPLETE WITH SINGLE GANG COVER PLASTER RING.

E) COORDINATE ENTIRE INSTALLATION WITH VARIOUS PARTIES INVOLVED. SINGLE GANG COVER PLASTER RING.

22. OUTLETS AND JUNCTION BOXES

A) AN OUTLET BOX OF CODE QUALITY AND INDEPENDENTLY SUPPORTED SHALL BE INSTALLED FOR EACH LIGHT, SWITCH, DUPLEX RECEPTACLES, ETC.

B) WITHIN THE FINISHED LINES OF PLASTER. NO UNUSED OPENINGS SHALL BE LEFT IN OUTLET BOXES.

C) MOUNTING HEIGHTS ABOVE FINISHED FLOOR FOR OUTLET BOXES SHALL BE AS FOLLOWS, UNLESS OTHERWISE SHOWN OR REQUIRED BY THE OWNERS:

TELEPHONES – 12"
WALL SWITCHES – 48"
DUPLEX RECEPTACLES – GENERAL AREAS – 12"
FULL CIRCUIT KITCHEN RECEPTACLES ABOVE COUNTERS.
THERMOSTATS – 60"
PULL STATIONS – 48"
FIRE ALARM BELLS – 84"
EMERGENCY LIGHTING – 84"

D) ALL OUTLET BOXES SHALL BE CAST TYPE FS.

23. SWITCHES

A) LOCAL SWITCHES S.P.S.T., TOGGLE TYPE, 15A–120V, WHITE SPEC GRADE

24. RECEPTACLES

A) DUPLEX RECEPTACLES SHALL BE WHITE.

B) OUTSIDE WEATHERPROOF RECEPTACLES SPEC. GRADE SHALL HAVE COMMERCIAL GRADE W.P. COVERS, HUBBELL CWP8H, FOR USE WITH FLUSH BOXES AND COMMERCIAL GRADE 5206WO ATTACHMENT TO "F" TYPE BOXES CONTROLLED THROUGH GROUND FAULT CIRCUIT BREAKER IN PANELBOARD.

25. COVER PLATES

A) ALL ABOVE LISTED WIRING DEVICES SHALL HAVE TYPE FS COVER PLATES INSTALLED.

26. MOTORS

A) ALL MOTORS WILL BE SUPPLIED AND INSTALLED BY THE SUB-CONTRACTOR SUPPLYING THE EQUIPMENT DRIVEN BY THESE MOTORS. THE ELECTRICAL CONTRACTOR SHALL MAKE ALL ELECTRICAL CONNECTIONS BETWEEN PANEL BOARD, STARTERS AND MOTORS, EXCEPT WHERE NOTED.

27. MOTOR CONTROL WIRING

A) ALL CONTROL OR INTERLOCK CONTROL WIRING ON EQUIPMENT NECESSARY FOR THE OPERATION OF THE MECHANICAL EQUIPMENT SHALL BE DONE BY DIVISION 23, EXCEPT AS NOTED.

B) ONLY CONTROL WIRING DONE UNDER THE ELECTRICAL CONTRACT SHALL BE LINE VOLTAGE WIRING TO GAS FIRED HEATERS, UNIT HEATERS, HEATING & VENTILATING UNITS AND SMALL FRACTIONAL HORSEPOWER EXHAUST FANS AND A.C. UNIT THERMOSTATS, FAN COILS, ALSO CROSS REFERENCE TO MECHANICAL DESIGN DRAWINGS.

C) FOR GENERAL INFORMATION ONLY, MOTORS SHALL BE AS FOLLOWS, UNLESS SPECIFIED OTHERWISE ELSEWHERE: UP TO AND INCLUDING 1/3 H.P., 120 VOLTS, SINGLE PHASE, 60 CYCLES, 1/2 H.P. AND LARGER, 3 PHASE, 60 CYCLES, VOLTAGE OF THE PROJECT, TO BE CONFIRMED ON SITE WITH LOCAL UTILITY.

28. STARTERS & DISCONNECTS

A) LOCAL MOTOR DISCONNECT SWITCHES SHALL BE SUPPLIED AND INSTALLED AS SHOWN ON THE DRAWINGS AND AS NOTED ELSEWHERE. THE DISCONNECTS SHALL BE OF HORSEPOWER RATED TYPE AND WITH MECHANICAL INTERLOCK SO THAT THE DOORS CANNOT NORMALLY BE OPENED WITH THE HANDLE CLOSED.

B) ALL MOTOR STARTERS WILL BE SUPPLIED BY THE SUBCONTRACTOR SUPPLYING THE MOTORS. LABELS OR NAMEPLATES SHALL BE ENGRAVED PLASTIC AND SECURED TO THE PANEL FOR EACH STARTER. ALL POWER WIRING FOR MOTORS IS PART OF THIS SECTION AND IS GOVERNED BY APPROPRIATE PARAGRAPHS.

29. ELECTRICAL PANELS

A) LIGHTING PANELS SHALL BE TYPE NBA, WITH MAINS AND BREAKERS AS SHOWN COMPLETE WITH DOORS AND KEYED LOCKS.

B) ALL BRANCHES SHALL BE BOLT-ON TYPE FPE, ITE, SIEMENS, 22,000 A/C. SQUARE "D" OR WESTINGHOUSE. NO RUBEM OR DUPLEX BREAKERS SHALL BE USED.

C) A TYPEWRITTEN SCHEDULE SHALL BE INSTALLED ON THE BACK OF THE PANEL DOOR WHICH SHALL DESIGNATE CIRCUITS AND USES.

D) WHERE MODIFICATIONS HAVE TAKEN PLACE, EXISTING PANEL SCHEDULES ARE TO BE UPDATED AS IN NOTE (C).

D) RESIDENTIAL STYLE LOAD CENTERS OR PANELS WITH PLUG IN BREAKERS WILL NOT BE ACCEPTABLE.

30. LIGHTING FIXTURES

A) ELECTRICAL CONTRACTOR SHALL INSTALL AND WIRE ALL LIGHTING FIXTURES INDICATED IN THE SCHEDULE.

B) BEFORE PURCHASING ANY RECESSED LIGHTING FIXTURES, THIS SUBCONTRACTOR SHALL CHECK CEILING STRUCTURE AND ENSURE FIXTURE WILL SUIT TYPE OF CEILING. ADVISE ENGINEER.

C) COORDINATE INSTALLATION OF FIXTURES WITH HVAC CONTRACTOR.

31. FUSES

A) THIS SUBCONTRACTOR SHALL SUPPLY AND INSTALL ALL NECESSARY FUSES AND SPARE FUSES. ONE (1) SET OF EACH SIZE TO BE MOUNTED IN A SUITABLE CABINET IN THE ELECTRICAL ROOM.

B) ALL FUSES IN CIRCUITS UP TO 250 VOLTS AND IN SIZE UP TO AND INCLUDING 600 AMPERES SHALL BE HRC, FORM ⅄, A/T.

32. EMERGENCY LIGHTING

A) EMERGENCY LIGHTING SHALL BE PROVIDED AS SHOWN ON ELECTRICAL DRAWINGS.

B) PROVIDE AND INSTALL COMPLETE EMERGENCY LIGHTING SYSTEM TO COVER ALL PUBLIC AREAS USED AS MEANS OF EGRESS TO MAINTAIN ONE FOOTCANDLE LIGHTING LEVEL AS REQUIRED BY ONTARIO BUILDING CODE, O. REG. 549/84.

C) EMERGENCY BATTERY UNITS SHALL BE AS SHOWN ON DRAWINGS AND SHALL HAVE MINIMUM CAPACITY OF 200W FOR 1/2 HOUR OPERATION. ALL BATTERY UNITS SHALL BE C.S.A. C.22.2 NO. 141 PERFORMANCE STANDARD APPROVED.

D) EMERGENCY LIGHTING UNITS AND REMOTE HEADS AND WIRING SHALL BE PROVIDED BY ELECTRICAL CONTRACTOR. ALL UNITS SHALL BE LUMACELL INC. (SQUARE "D" CO.), EMERGI-LITE, DUAL LITE OR EQUAL APPROVED.

33. FIRE ALARM SYSTEM

A) EXISTING MIRCOM FA–1008K FIRE ALARM PANEL IS TO REMAIN.

B) EXISTING MIRCOM REMOTE ANNUNCIATOR IS TO REMAIN.

C) NEW FIRE ALARM DEVICES ARE TO BE ULC LISTED AND COMPATIBLE WITH THE EXISTING MIRCOM SYSTEM. DEVICES TO CONSIST OF: MANUAL PULL STATIONS – ENGLISH; HEAT DETECTORS (135 DEG. ROR/FT), (135 DEG. FT), (197 DEG. FT); IONIZATION SMOKE DETECTOR; PHOTOELECTRIC SMOKE DETECTOR; HORN/STROBE SIGNAL; MAGNETIC DOOR HOLDERS.

D) PROVIDE END OF LINE RESISTORS FOR BOTH SIGNAL AND ZONE CIRCUITS, MOUNT APPROXIMATELY 4'–11" A.F.F. FOR EASE OF ACCESS.

E) ALL FIRE ALARM WIRING TO BE IN A SEPARATE CONDUIT SYSTEM AND LABELED.

F) PROVIDE POWER FILTER EQUAL TO "TYCOR"

G) PROVIDE 15A BREAKER c/w A LOCK ON DEVICE. PAINT RED AND LABEL WITH A LAMACOID NAMEPLATE.

H) UPON COMPLETION OF INSTALLATION, PRINTED SYSTEM INSTRUCTIONS AND ASBUILT WIRING DRAWINGS SHALL BE FURNISHED TO THE OWNER.

I) FIRE ALARM SYSTEM SHALL BE VERIFIED AND TESTED BY MANUFACTURERS' SERVICE DIVISION.

ELECTRICAL GENERAL NOTES

1. ALL ELECTRICAL WORK TO BE CARRIED OUT IN ACCORDANCE WITH THE ONTARIO BUILDING CODE, THE ELECTRICAL SAFETY CODE, THE CAN/ULC STANDARDS, THE NFPA STANDARDS AND THOSE LOCAL AUTHORITIES HAVING JURISDICTION.
2. DIVISION 16 TO COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO AND DURING INSTALLATION. REPORT ANY CONFLICTS/DISCREPANCIES TO ARCHITECT/ENGINEER FOR RESOLUTION.
3. DIVISION 16 IS RESPONSIBLE FOR ALL POWER WIRING FOR ELECTRICAL EQUIPMENT BEING SUPPLIED BY DIVISION 15. DIVISION 16 TO REVIEW REQUIREMENTS WITH DIVISION 15.
4. DIVISION 16 TO PATCH AND MAKE GOOD ALL SURFACES AFFECTED BY REMOVALS, RELOCATIONS AND MODIFICATIONS OF ALL ELECTRICAL EQUIPMENT AND DEVICES.
5. DIVISION 16 SHALL MAINTAIN ALL ACTIVE SERVICES TO ALL PARTS OF BUILDING DURING CONSTRUCTION. IF NECESSARY, DIVISION 16 TO CARRY OUT WORK OUTSIDE OF NORMAL WORKING HOURS TO ACCOMODATE SCHEDULE IF NECESSARY. FIRE ALARM AND OTHER EMERGENCY SYSTEMS MUST BE MAINTAINED AT ALL TIMES. SEE SPECIFICATIONS.
6. ALL SLEEVES, INSERTS, CONCRETE BASES, CURBS, STEEL SUPPORTS, CUTTING & PATCHING, EXCAVATION AND BACKFILLING REQUIRED FOR THE ELECTRICAL INSTALLATION SHALL BE PROVIDED BY THIS CONTRACTOR.
7. IN THE EXISTING SCHOOL, ALL PENETRATIONS OF THE EXISTING SIPPOREX FLOOR IS TO BE COORDINATED WITH STRUCTURAL ENGINEER FOR SUPPORT DUE TO THE BRITTLE NATURE OF THE FLOOR. FLOORS ARE TO BE SCANNED PRIOR TO CUTTING.
8. IN THE NEW ADDITION AND WHERE CEILINGS ARE EXPOSED, ALL CONDUIT/PIPING IS TO ENTER ALL ROOMS AT ONE SINGLE LOCATION AND REDISTRIBUTE NEATLY ALONG PERIMETER WALLS. CONDUIT TO BE RUN 460mm MAX. FROM WALL. VERTICAL CONDUIT TO BE RECESSED INTO CONCRETE BLOCK. INSTALLATION TO BE COORDINATED WITH ARCHITECTURAL.
9. GENERALLY ALL WIRING SHALL BE RW90 OR AC90. ALL OUTDOOR WIRING SHALL BE TECK 90 OR EQUAL. MINIMUM SIZE WIRING TO BE 12 AWG.
10. CONTRACTOR TO CONFIRM WALL–TYPE CONSTRUCTION WITH ARCHITEC– TURAL DRAWINGS WHERE ELECTRICAL EQUIPMENT IS TO BE INSTALLED IN BLOCK WALL.
11. ALL OUTDOOR LIGHTING FIXTURES TO BE CONTROLLED BY A PHOTO–CELL AND A TIMECLOCK. REFER TO SPECIFICATIONS FOR MORE DETAILS.
12. LOCATION OF CEILING MOUNTED LIGHTING FIXTURES TO BE VERIFIED WITH REFLECTED CEILING PLAN ON ARCHITECTURAL DRAWING(S). CONFIRM LOCATION OF ALL CEILING MOUNTED LIGHTING FIXTURES WITH ARCHITECT PRIOR TO INSTALLATION.
13. CONTRACTOR IS TO REVIEW EXISTING PANELS FOR CIRCUIT AVAILABILITY ON SITE. REARRANGE OR ADD CIRCUITS AS NEEDED TO SUIT NEW LAYOUT AND ACCORDING TO ELECTRICAL PANEL SCHEDULES AS SHOWN ON THE DRAWINGS.
14. ALL RECEPTACLE CIRCUIT BREAKERS TO BE 15 AMP., LIGHTING TO BE 20 AMP.
15. MOUNTING HEIGHTS AND LOCATIONS FOR EQUIPMENT/DEVICES TO BE CONFIRMED WITH ARCHITECT. ARCHITECTURAL DRAWINGS TO BE REVIEWED FOR EXACT LOCATIONS.
16. DRAWINGS INDICATE INTENT AND PREFERRED LOCATIONS OF ALL DEVICES AND EQUIPMENT. ALL EQUIPMENT/DEVICES TO BE INSTALLED AS PER EACH GOVERNING CODE/STANDARD. SHOULD THERE BE ANY DISCREPANCIES, CONSULT ENGINEER.
17. PROVIDE/REUSE A DESIGNATED 15 AMP EXIT LIGHT BREAKER. PROVIDE A LOCK–ON DEVICE AND A LAMACOID NAMEPLATE.
18. ALL DUPLEX RECEPTACLES FOR BATTERY PAKS TO BE CONNECTED TO SAME BRANCH CIRCUITS WHICH FEEDS THE NORMAL LIGHTING IN THE AREA COVERED BY THAT BATTERY PAK.
19. LETTERS IN BRACKETS (A) INDICATE CONNECTION TO DESIGNATED BATTERY PAK UNIT.
20. LETTER AND NUMBER A(12) INDICATES BREAKER PANEL DESIGNATION AND CIRCUIT BREAKER CONNECTION.
21. ALL FIRE ALARM WIRING TO BE IN A SEPARATE CONDUIT SYSTEM AND LABELLED AS SUCH, UNLESS NOTED OTHERWISE.
22. PROVIDE/REUSE A DESIGNATED 15 AMP FIRE ALARM SYSTEM BREAKER, PROVIDE A LOCK–ON DEVICE, LAMACOID NAMEPLATE AND PAINT RED.
23. ALL END OF LINE RESISTORS TO BE MOUNTED APPROXIMATELY 4FT.– 11 IN. FOR EASE OF ACCESS. EACH RESISTOR TO BE LABELLED ON THE OUTSIDE OF EACH BOX IN A NEAT FASHION. PROVIDE END OF LINE RESISTORS FOR BOTH SIGNAL AND ZONE CIRCUITS.
24. ALL FIRE ALARM HEAT AND SMOKE DETECTORS TO BE MOUNTED WITH A MINIMUM CLEARANCE OF 2 FT. RADIUS FROM THE CENTER OF THE DETECTOR TO ANY AIR OUTLET FROM AN AIR DISTRIBUTING SYSTEM, AND MINIMUM 6 FT. RADIUS FROM ANY DETECTOR TO EDGE OF ANY CEILING MOUNTED DESTRATIFICATION FAN.
25. ALL MANUAL PULL STATIONS TO BE MOUNTED AT 48" (1.2m) ABOVE FINISHED FLOOR LEVEL, ALSO NOT MORE THAN 48" AWAY FROM EDGE OF ANY EGRESS DOOR TO CENTRE OF PULL STATION.
26. ALL FIRE ALARM HORN/STROBES SHALL BE MOUNTED AND SPACED AS PER MANUFACTURER'S INSTRUCTIONS.
27. DURING RETROFITTING AN EXISTING FIRE ALARM SYSTEM, CONTRACTOR TO BRING EXISTING FIRE ALARM EQUIPMENT/DEVICES UP TO CURRENT CODES.
28. DURING DEMOLITION CONSTRUCTION, ALL EXISTING EQUIPMENT/DEVICES TO BE REMOVED AND RELOCATED AS NOTED IN DRAWINGS/SPECS, OR AS SITE DIRECTED. COORDINATE NEW LOCATIONS WITH ARCHITECTURAL DRAWINGS. EXTEND WIRING AS REQUIRED.
29. DIVISION 16 TO VISIT SITE PRIOR TO CLOSE OF TENDERING PERIOD TO REVIEW DEMOLITION, REMOVALS, REROUTING AND EXTENTIONS TO ASCERTAIN EXTENT OF WORK. THERE IS SIGNIFICANT DEMOLITION AND REMOVAL COMPONENT TO DIVISION 16'S SCOPE OF WORK. SOME OF THIS WORK IS SHOWN ON THE DRAWINGS BUT A SIGNIFICANT AMOUNT IS NOT. THEREFORE CONTRACTOR IS REQUIRED TO VISIT SITE PRIOR TO TENDER CLOSING DATE TO DRAW HIS OWN CONCLUSIONS AS TO SCOPE OF WORK INVOLVED AND INCLUDE ALL COSTS. NO ALLOWANCE IN FAVOUR OF DIVISION 15/16 WILL BE ALLOWED AFTER CLOSE OF TENDERS.
30. ALL ELECTRICAL SERVICES/EQUIPMENT SERVING OTHER PARTS OF THE BUILDING BUT LOCATED IN RENOVATED AREA, SHALL BE PUT BACK INTO SERVICE. THIS WILL INVOLVE REROUTING, EXTENDING OR RELOCATING AS REQUIRED. DIVISION 15/16 RESPONSIBLE FOR ALL SUCH WORK.
31. ALL ABANDONED SERVICES SHALL BE CAPPED OFF AND MADE SAFE. WHERE PRACTICAL, REMOVE ALL SUCH SERVICES. REDUNDANT ELECTRICAL WIRING SHALL BE DISCONTINUED FROM POWER SOURCE.
32. ALL RELOCATIONS, REROUTING AND EXTENSIONS SHALL BE DONE IN A MANNER AS NOT TO BE OBSTRUCTIVE, ie CONCEALED AND HIDDEN IN FURRING OR BULKHEADS EXCEPT IN STORAGE OR UTILITY ROOMS.

FIRE ALARM/PROTECTION LEGEND

SYMBOL	DESCRIPTION
FACP	FIRE ALARM CONTROL PANEL
RAP	REMOTE ANNUNCIATOR PANEL
	135°F(57°C) RATE OF RISE/FIXED TEMP. HEAT DETECTOR
C	135°F(57°C) RATE OF COMPENSATION HEAT DETECTOR
	135°F(57°C) FIXED TEMPERATURE HEAT DETECTOR
2/3	197° F(92° C) DETECTORS TYPE AS SHOWN
P	PHOTOELECTRIC TYPE SMOKE DETECTOR
I	IONIZATION TYPE SMOKE DETECTOR
SC	SELF CONTAINED SMOKE DETECTOR
6	6" (150mm) FIRE ALARM BELL
	FIRE ALARM HORN (HS DENOTES HORN/STROBE)
	MANUAL PULL STATION
RT	REMOTE TROUBLE STATION
EOL	END OF LINE RESISTOR
	FIREFIGHTERS HANDSET
MH	MAGNETIC DOOR HOLDER
SV	SPRINKLER SYSTEM ELECTRICALLY SUPERVISED VALVE
FS	SPRINKLER SYSTEM FLOW SWITCH ELECTRICALLY MONITORED
FHC	FIRE HOSE CABINET
FE	FIRE EXTINGUISHER
	FIRE SUPPRESSION CYLINDER
	SPRINKLER HEAD
	WALL MOUNTED SPRINKLER HEAD
SP	SPRINKLER PIPING
	FIRE ALARM ZONE BOUNDARY LINES

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
A	LED LIGHTING FIXTURE (TYPE AS INDICATED)
B	CEILING MOUNTED LIGHTING FIXTURE (TYPE AS INDICATED)
C	WALL MOUNTED LIGHTING FIXTURE (TYPE AS INDICATED)
X	EXIT LIGHTING
	TRACK LIGHTING FIXTURE (TYPE AS INDICATED)
B NL	LIGHTING FIXTURE ON NIGHT LIGHT CIRCUIT (TYPE AS INDICATED)
S	LIGHTING MOTION SENSOR
PC	LIGHTING PHOTOCELL
	BATTERY PACK, HEADS AS SHOWN
	REMOTE EMERGENCY LIGHTING FIXTURE
	COMBINATION EXIT/EMERGENCY LIGHTING FIXTURE
	15A DUPLEX RECEPTACLE (F=FLOOR MTD, WP=WEATHERPROOF, TP=TAMPERPROOF)
	15A DUPLEX RECEPTACLE (MOUNTED ABOVE COUNTER)
IG	15A DUPLEX RECEPTACLE, ISOLATED GROUND
GFI	15A DUPLEX RECEPTACLE ON GROUND FAULT CIRCUIT
SR	15A DUPLEX RECEPTACLE SPLIT WIRED
	SPECIAL PURPOSE OUTLET AS NOTED
$	20A TOGGLE SWITCH (3,4=3 OR 4 WAY, PL=PILOT LIGHT S=SPEED CONTROL)
S	20A GANGED TOGGLE SWITCHES
$R	20A REMOTE CONTROL SWITCH
$D	DIMMER SWITCH, WATTAGE AS NOTED
$K	20A KEYED SWITCH
	TELEPHONE

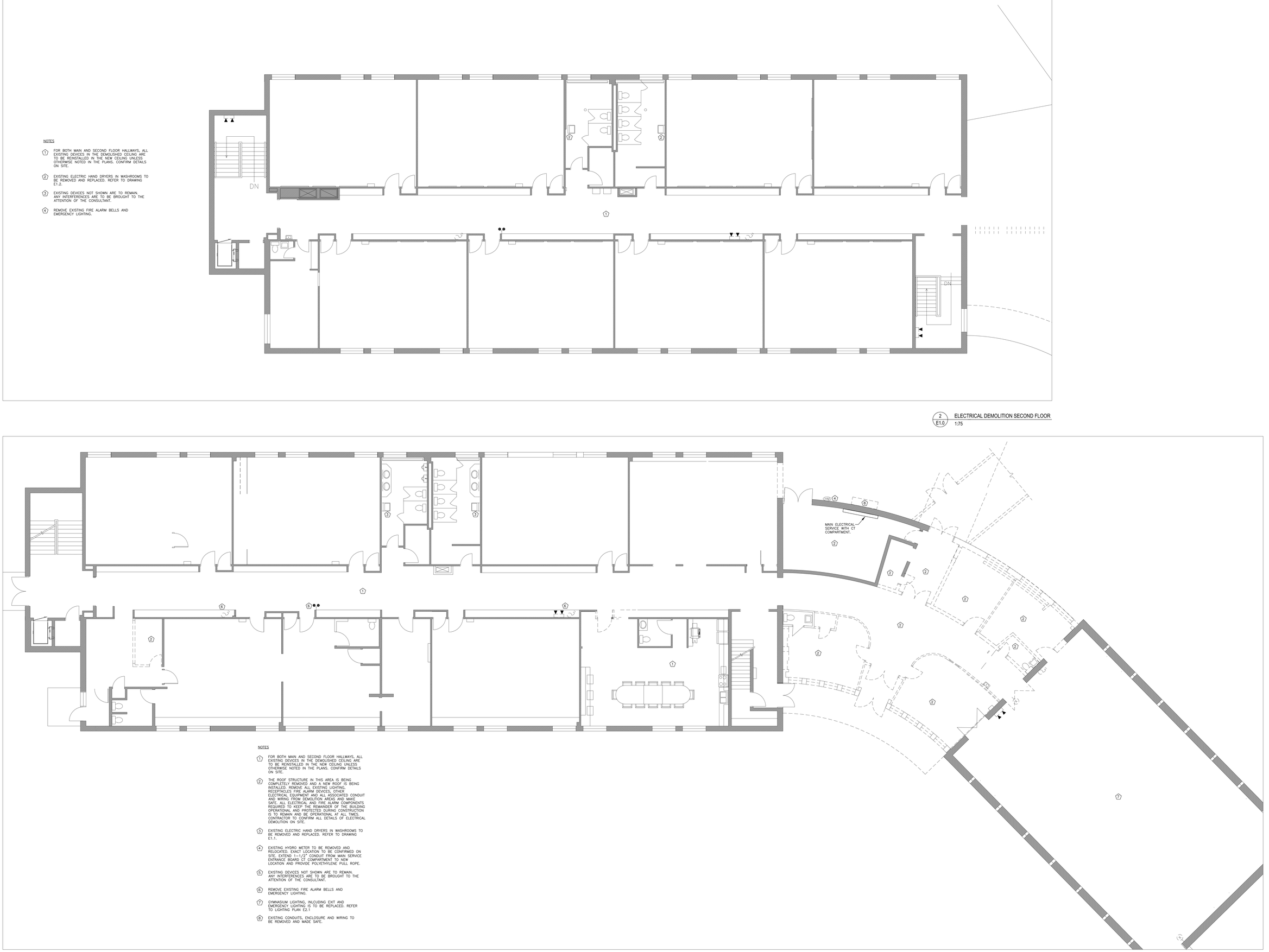
NOTES

1. FOR BOTH MAIN AND SECOND FLOOR HALLWAYS, ALL EXISTING DEVICES IN THE DEMOLISHED CEILING ARE TO BE REINSTALLED IN THE NEW CEILING UNLESS OTHERWISE NOTED IN THE PLANS. CONFIRM DETAILS ON SITE.
2. EXISTING ELECTRIC HAND DRYERS IN WASHROOMS TO BE REMOVED AND REPLACED. REFER TO DRAWING E1.2.
3. EXISTING DEVICES NOT SHOWN ARE TO REMAIN. ANY INTERFERENCES ARE TO BE BROUGHT TO THE ATTENTION OF THE CONSULTANT.
4. REMOVE EXISTING FIRE ALARM BELLS AND EMERGENCY LIGHTING.

2 E1.0 ELECTRICAL DEMOLITION SECOND FLOOR
1:75

NOTES

1. FOR BOTH MAIN AND SECOND FLOOR HALLWAYS, ALL EXISTING DEVICES IN THE DEMOLISHED CEILING ARE TO BE REINSTALLED IN THE NEW CEILING UNLESS OTHERWISE NOTED IN THE PLANS. CONFIRM DETAILS ON SITE.
2. THE ROOF STRUCTURE IN THIS AREA IS BEING COMPLETELY REMOVED AND A NEW ROOF IS BEING INSTALLED. REMOVE ALL EXISTING LIGHTING, RECEPTACLES FIRE ALARM DEVICES, OTHER ELECTRICAL EQUIPMENT AND ALL ASSOCIATED CONDUIT AND WIRING FROM DEMOLITION AREAS AND MAKE SAFE. ALL ELECTRICAL AND FIRE ALARM COMPONENTS REQUIRED TO KEEP THE REMAINDER OF THE BUILDING OPERATIONAL AND PROTECTED DURING CONSTRUCTION IS TO REMAIN AND BE OPERATIONAL AT ALL TIMES. CONTRACTOR TO CONFIRM ALL DETAILS OF ELECTRICAL DEMOLITION ON SITE.
3. EXISTING ELECTRIC HAND DRYERS IN WASHROOMS TO BE REMOVED AND REPLACED. REFER TO DRAWING E1.1.
4. EXISTING HYDRO METER TO BE REMOVED AND RELOCATED. EXACT LOCATION TO BE CONFIRMED ON SITE. EXTEND 1-1/2" CONDUIT FROM MAIN SERVICE ENTRANCE BOARD CT COMPARTMENT TO NEW LOCATION AND PROVIDE POLYETHYLENE PULL ROPE.
5. EXISTING DEVICES NOT SHOWN ARE TO REMAIN. ANY INTERFERENCES ARE TO BE BROUGHT TO THE ATTENTION OF THE CONSULTANT.
6. REMOVE EXISTING FIRE ALARM BELLS AND EMERGENCY LIGHTING.
7. GYMNASIUM LIGHTING, INLCUDING EXIT AND EMERGENCY LIGHTING IS TO BE REPLACED. REFER TO LIGHTING PLAN E2.1
8. EXISTING CONDUITS, ENCLOSURE AND WIRING TO BE REMOVED AND MADE SAFE.



1 E1.0 ELECTRICAL DEMOLITION MAIN FLOOR
1:75

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

[redacted]

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

JOHN R. HAMALAINEN ENGINEERING LTD.
Consulting Engineers
Since 1987
2166 Armstrong Street, Sudbury, ON P3E 5G9
Tel: (705)522-5745 Fax: (705)522-5600
info@consultingengineers.ca

REV	DESCRIPTION	DATE
3	ISSUED FOR PERMIT & TENDER	17.05.17
2	ISSUED FOR CLIENT REVIEW	17.05.08
1	ISSUED FOR CLIENT REVIEW	17.04.28

LICENSED PROFESSIONAL ENGINEER
2017-05-17
J.R.HAMALAINEN
100113
PROVINCE OF ONTARIO

BORTOLOTTO

PROJECT NUMBER
PF1701
JRHE 3203

DATE
17.05.17

SCALE
1:75

DRAWN BY
GK

ELECTRICAL
DEMOLITION PLAN

E1.0

NOTES

1. NEW PA/SCHOOL BELL/VIDEO CAMERA/CARD ACCESS SYSTEM SERVING ENTIRE SCHOOL.
2. REMOVE EXISTING I.T. EQUIPMENT FROM MECHANICAL ROOM. VOICE AND DATA CABLING FOR THE EXISTING SCHOOL TO BE TERMINATED IN CARETAKER ROOM 107. NEW I.T. RACK TO BE PROVIDED. PROVIDE POWER AND DATA AS REQUIRED BY I.T. PROVIDER.
3. SCHOOL ACCESS BUZZER
4. EXISTING EXHAUST FAN TO BE REPLACED. REUSE EXISTING POWER. REFER TO MECHANICAL DRAWINGS.
5. PA SPEAKER, CLOCK AND DATA TO BE LOCATED IN PA SYSTEM ENCLOSURE. PROVIDE POWER AND DATA AS NECESSARY.
6. ALL AUTOMATIC DOOR OPERATORS TO BE STANLEY MAGIC FORCE OR EQUAL, TYPICAL THROUGHOUT. COORDINATE LOCATIONS OF ALL PUSH BUTTONS WITH ARCHITECT.
7. REPLACE EXISTING ELECTRIC HAND DRYER WITH NEW. DYSON AIRBLADE AB14. COLOUR BY ARCHITECT. REUSE EXISTING POWER.
8. EXISTING FIRE ALARM CONTROL PANEL AND REMOTE ANNUNCIATOR PANEL TO REMAIN. EXISTING FACP IS MIRCOM MODEL FA-100BK.
9. REPLACE EXISTING RECEPTACLES WITH TAMPERPROOF RECEPTACLES. CONFIRM NUMBER AND LOCATIONS ON SITE.
10. ALL CCTV CAMERAS TO BE MOUNTED AT 3.6m (12'-0") ABOVE GRADE. TYPICAL.



NOTE:
DRAWINGS DO NOT SHOW THE FULL EXTENT OF THE OWNERS I.T. AND COMMUNICATION REQUIREMENTS. NEW DRAWINGS WITH THIS INFORMATION WILL BE ISSUED AT A LATER DATE ONCE ALL DETAILS HAVE BEEN FINALIZED.

1 / E1.1 POWER, DATA & FIRE ALARM LAYOUT - GROUND FLOOR PLAN - RENO
1:75

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultngengineers.ca

JOHN R. HAMALAINEN ENGINEERING LTD.
Consulting Engineers
Since 1987
2166 Armstrong Street, Sudbury, ON P3E 5G9
Tel: (705)522-5745 Fax: (705)522-5650
info@consultingengineers.ca

REV.	DESCRIPTION	DATE
3	ISSUED FOR PERMIT & TENDER	17.05.17
2	ISSUED FOR CLIENT REVIEW	17.05.08
1	ISSUED FOR CLIENT REVIEW	17.04.28

REGISTERED PROFESSIONAL ENGINEER
2017-05-17
J.R.HAMALAINEN
100113
PROVINCE OF ONTARIO

BORTOLOTTO

PROJECT NUMBER
P1701
JRHE 3203

DATE
17.05.17

SCALE
1:75

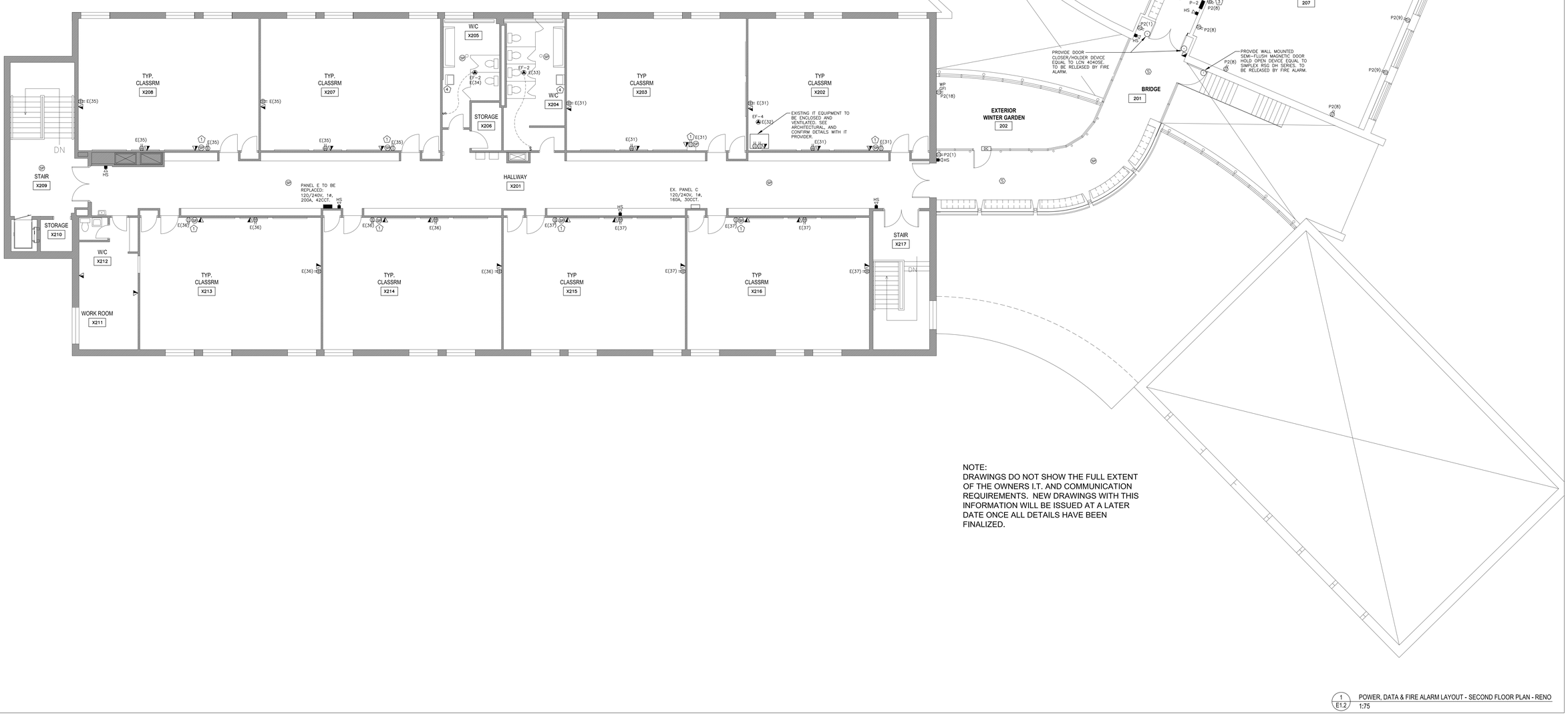
DRAWN BY
CR

GROUND FLOOR PLAN - RENO
POWER, DATA &
FIRE ALARM LAYOUT

E1.1

NOTES

1. PA SPEAKER, CLOCK AND DATA TO BE LOCATED IN PA SYSTEM ENCLOSURE. PROVIDE POWER AND DATA AS NECESSARY.
2. ROUGH-IN ONLY FOR PA SPEAKER, POWER FOR CLOCK AND DATA IN PA SYSTEM ENCLOSURE.
3. ROUGH-IN ONLY FOR POWER/DATA AS SHOWN.
4. REPLACE EXISTING ELECTRIC HAND DRYER WITH NEW. DYSON AIRBLADE AB14. COLOUR BY ARCHITECT. REUSE EXISTING POWER.
5. VOICE AND DATA CABLING FOR THE NEW ADDITION TO BE TERMINATED IN THIS ROOM. NEW I.T. RACK TO BE PROVIDED. PROVIDE POWER AND DATA AS REQUIRED BY IT PROVIDER.



NOTE:
DRAWINGS DO NOT SHOW THE FULL EXTENT OF THE OWNERS I.T. AND COMMUNICATION REQUIREMENTS. NEW DRAWINGS WITH THIS INFORMATION WILL BE ISSUED AT A LATER DATE ONCE ALL DETAILS HAVE BEEN FINALIZED.

1 / E1.2 POWER, DATA & FIRE ALARM LAYOUT - SECOND FLOOR PLAN - RENO
1:75

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

JOHN R. HAMALAINEN ENGINEERING LTD.
Consulting Engineers
Since 1987
2166 Armstrong Street, Sudbury, ON P3E 5G9
Tel: (705)522-5745 Fax: (705)522-5650
info@consultingengineers.ca

REV	DESCRIPTION	DATE
3	ISSUED FOR PERMIT & TENDER	17.05.17
2	ISSUED FOR CLIENT REVIEW	17.05.08
1	ISSUED FOR CLIENT REVIEW	17.04.28

REGISTERED PROFESSIONAL ENGINEER
J.R.HAMALAINEN
100113
PROVINCE OF ONTARIO

BORTOLOTTO

PROJECT NUMBER
PF1701
JRHE 3203

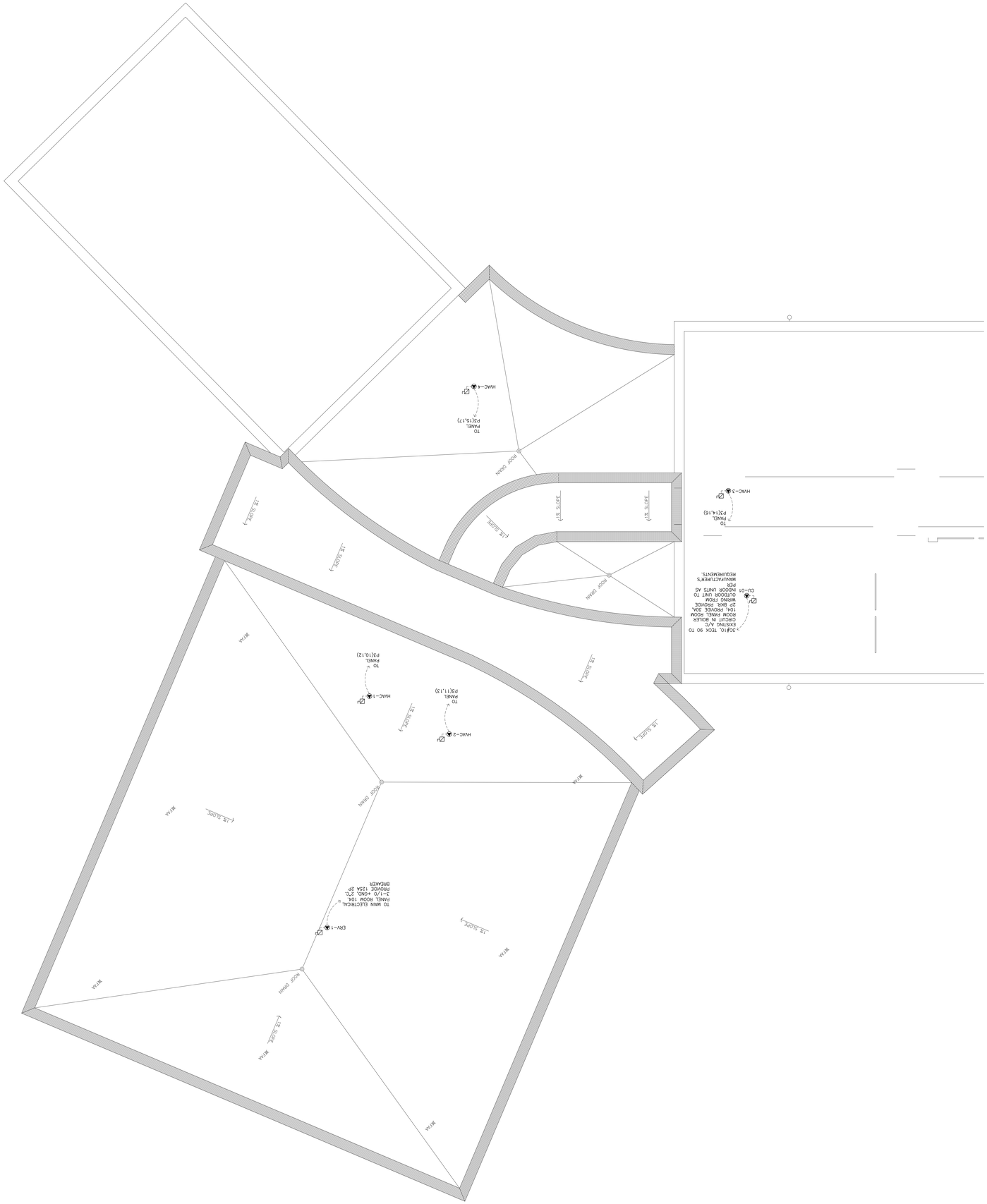
DATE
17.05.17

SCALE
1:75

DRAWN BY
GK

SECOND FLOOR PLAN - RENO
POWER, DATA &
FIRE ALARM LAYOUT

E1.2



1 POWER & DATA LAYOUT - ROOF PLAN E1.3 1:75

E1.3

ROOF PLAN
POWER & DATA LAYOUT

DRAWN BY
CR

SCALE
1:75

N

DATE
17.05.17

PROJECT NUMBER
PP1701
JUNE 2020

BORTOLOTTO

REGISTERED PROFESSIONAL ENGINEER
J.R. HAMALAINEN
2021-06-11
PROVINCE OF ONTARIO

REV	DESCRIPTION	DATE
3	ISSUED FOR PERMIT & TENDER	17.05.17
2	ISSUED FOR CLIENT REVIEW	17.05.08
1	ISSUED FOR CLIENT REVIEW	17.04.28

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#1721
Timmins, Ontario
287 Balsam Street North

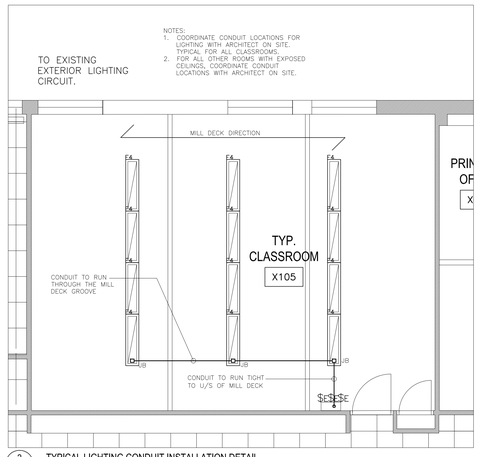
CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

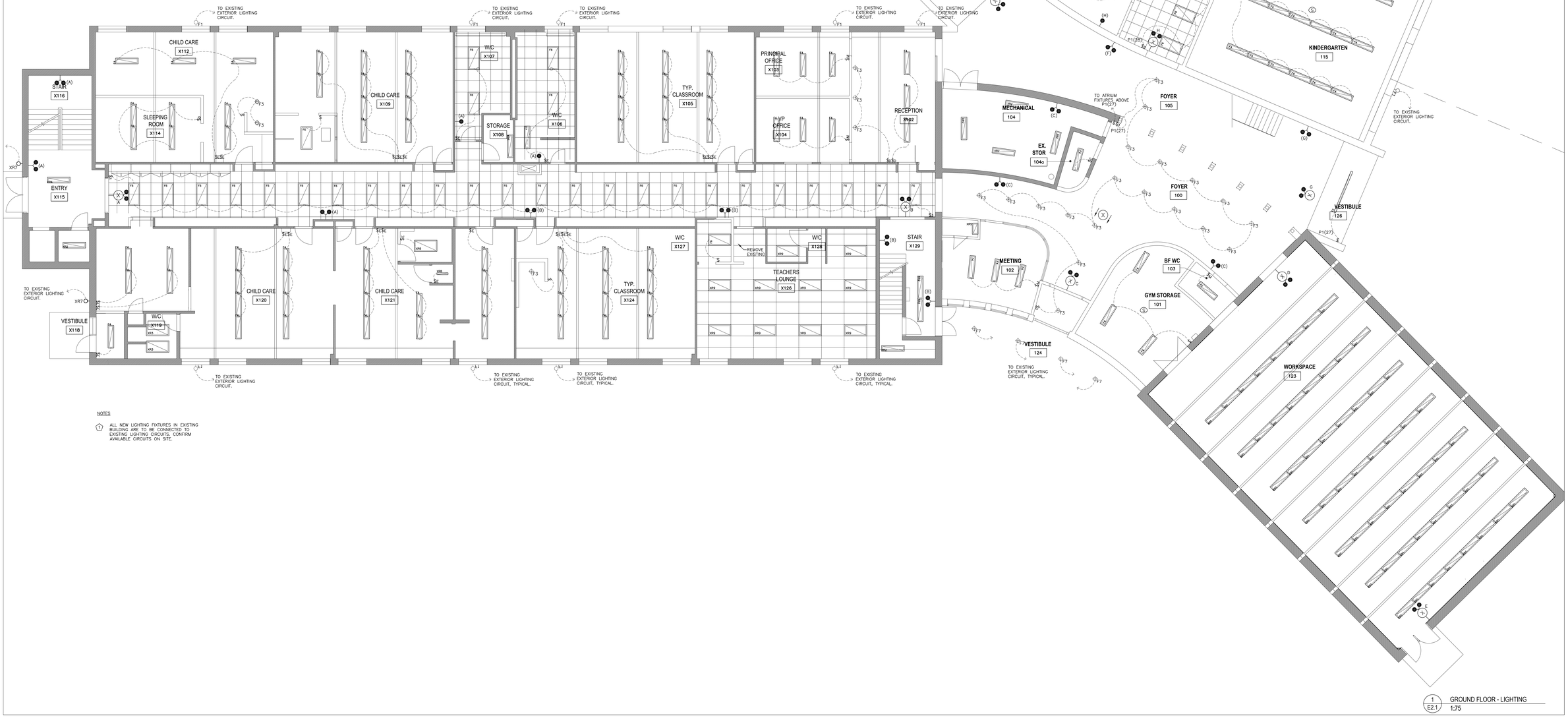
STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E. Suite 200
Toronto ON Canada M5A 1N8
Tel 416 599 5465 x128
englinkeng@bk.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

JOHN R. HAMALAINEN
ENGINEERING LTD.
Consulting Engineers
Serial 138
2166 Armstrong Street, Sudbury, ON P3E 5G9
Tel: (705)522-5745 Fax: (705)522-3450
www.consultingengineers.ca



2 / E2.1 TYPICAL LIGHTING CONDUIT INSTALLATION DETAIL
1:50



NOTES

1. ALL NEW LIGHTING FIXTURES IN EXISTING BUILDING ARE TO BE CONNECTED TO EXISTING LIGHTING CIRCUITS. CONFIRM AVAILABLE CIRCUITS ON SITE.

1 / E2.1 GROUND FLOOR - LIGHTING
1:75

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultingengineers.ca

JOHN R. HAMALAINEN
ENGINEERING LTD.
Consulting Engineers
Since 1987
2166 Armstrong Street, Sudbury, ON P3E 5G9
Tel: (705)522-5745 Fax: (705)522-5650
info@consultingengineers.ca

REV	DESCRIPTION	DATE
3	ISSUED FOR PERMIT & TENDER	17.05.17
2	ISSUED FOR CLIENT REVIEW	17.05.08
1	ISSUED FOR CLIENT REVIEW	17.04.28

REGISTERED PROFESSIONAL ENGINEER
2017-05-17
J.R.HAMALAINEN
100136903
PROVINCE OF ONTARIO

BORTOLOTTO

PROJECT NUMBER
PF1701
JRHE 3203

DATE
17.05.17

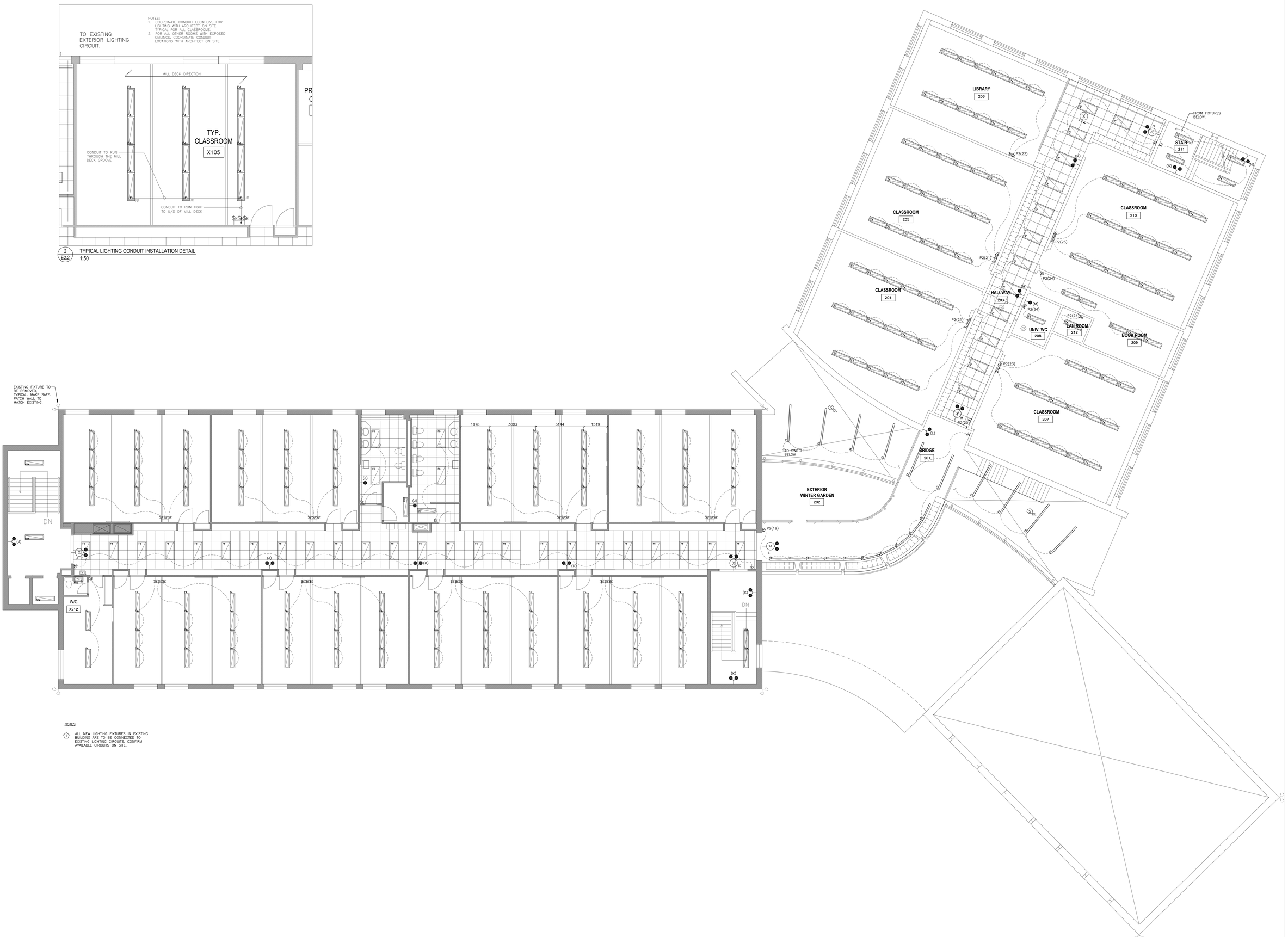
SCALE
1:75

DRAWN BY
CR

GROUND FLOOR
LIGHTING LAYOUT

E2.1

2 E2.2 TYPICAL LIGHTING CONDUIT INSTALLATION DETAIL
1:50



NOTES

1. ALL NEW LIGHTING FIXTURES IN EXISTING BUILDING ARE TO BE CONNECTED TO EXISTING LIGHTING CIRCUITS. CONFIRM AVAILABLE CIRCUITS ON SITE.

1 E2.2 SECOND FLOOR - LIGHTING
1:75

POPE FRANCIS ELEMENTARY
ADDITION & RENOVATION
PROJECT#R121

387 Balsam Street North
Timmins, Ontario

CONSULTANT TEAM

ARCHITECTS AND PRIME CONSULTANT
BORTOLOTTO DESIGN ARCHITECT INC.
533 College Street Suite 401
Toronto ON Canada M6G 1A8
Tel 416 324 9951
bortolotto.com

STRUCTURAL ENGINEER
ENGINEERING LINK
207 Adelaide St. E., Suite 200
Toronto ON Canada M5A 1N6
Tel 416 599 5465 x128
engineeringlink.ca

MECHANICAL & ELECTRICAL ENGINEER
JOHN HAMALAINEN
2166 Armstrong Street
Sudbury ON Canada P3E 5G9
Tel 705 522 5745 x22
consultngengineers.ca

JOHN R. HAMALAINEN ENGINEERING LTD.
Consulting Engineers
Since 1987
2166 Armstrong Street, Sudbury, ON P3E 5G9
Tel: (705)522-5745 Fax: (705)522-5650
info@consultngengineers.ca

REV	DESCRIPTION	DATE
3	ISSUED FOR PERMIT & TENDER	17.05.17
2	ISSUED FOR CLIENT REVIEW	17.05.08
1	ISSUED FOR CLIENT REVIEW	17.04.28

REGISTERED PROFESSIONAL ENGINEER
2017-05-17
J.R.HAMALAINEN
3203
PROVINCE OF ONTARIO

BORTOLOTTO

PROJECT NUMBER
PF1701
JRHE 3203

DATE
17.05.17

SCALE
1:75

DRAWN BY
DR

SECOND FLOOR
LIGHTING LAYOUT

E2.2