



**ST. CLAIR CATHOLIC**  
DISTRICT SCHOOL BOARD

*Lighting the Way ~ Rejoicing in Our Journey*

**REQUEST FOR TENDER: 619-CP2003**

**Renovations and Atrium Project**

**Our Lady of Fatima Catholic School**

**545 Baldoon Road, Chatham, ON**

**Submission Deadline and Location: Thursday**

**March 19, 2020**

**2:00:00 PM Local Time**

**Reception Desk, Catholic Education Centre**

**420 Creek Street, Wallaceburg, ON**

**ISSUED: February 19, 2020**

**Full Mechanical and Electrical Drawings and Specifications**  
**to be issued in Addendum #001 Friday, February 21, 2020**

**SPECIFICATIONS**

<u>SECTION</u>	<u>TITLE</u>	<u>NO. OF PAGES</u>
	Cover.....	1
	Index.....	5
	Bid Form & Instructions.....	26
	General Conditions.....	<b>to follow in Addendum #001</b>
	Supplementary Conditions.....	31
	Designated Substance Report.....	58
<b>Division 1 - General Requirements</b>		
Section 01 56 00	– Temporary Barriers and Enclosures	6
Section 01 90 00	– General Requirements for Building Envelope	3
<b>Division 2 - Site Work</b>		
Section 02 41 00	- Selective Demolition	4
<b>Division 3 - Concrete</b>		
Section 03 10 00	- Concrete Forms and Accessories	4
Section 03 20 00	- Concrete Reinforcement	4
Section 03 30 00	- Cast in Place Concrete	7
Section 03 35 00	- Concrete Finishing	3
Section 03 39 00	- Concrete Curing	1
<b>Division 4 - Masonry</b>		
Section 04 00 00	– Masonry Procedures	2
Section 04 05 12	– Mortar and Grout	3
Section 04 22 00	– Unit Masonry	14
<b>Division 5 – Metals</b>		
Section 05 12 25	– Structural Steel	8
Section 05 31 00	– Metal Roof and Deck	6
Section 05 41 10	– Light Gauge Metal Framing	9
Section 05 41 11	– Light Gauge Metal Framing Elevation	1
Section 05 50 00	– Metal Fabrications	4
<b>Division 6 - Wood and Plastic</b>		
Section 06 10 00	- Rough Carpentry	6
Section 06 20 00	– Finish Carpentry	4
Section 06 41 00	– Casework	5

**Division 7 - Thermal and Moisture Protection**

Section 07 21 13 – Board and Batt Insulation	5
Section 07 21 29 – Sprayed Insulation Polyurethane	8
Section 07 26 00 – Vapour and Air Barrier	6
Section 07 46 13 – Preformed Metal Siding & Soffit	6
Section 07 52 00 – 2 Ply Modified Bitumen Membrane Roofing	10
Section 07 53 23 – EPDM	8
Section 07 62 00 – Flashing and Sheet Metal	5
Section 07 72 23 – Roof Hatches	3
Section 07 84 00 – Fire Stopping and Smoke Seal	5
Section 07 92 13 – Joint Sealants	8

**Division 8 – Doors and Windows**

Section 08 11 00 – Metal Doors and Frames	8
Section 08 11 16 – Aluminum Doors and Frames	12
Section 08 35 00 – Sliding Grilles	5
Section 08 41 26 – All Glass Doors and Screens	8
Section 08 71 10 – Finishing Door Hardware & Schedule	19
Section 08 80 00 – Glazing	7

**Division 9 – Finishing**

Section 09 21 16 – Gypsum Board Assemblies	11
Section 09 30 13 – Ceramic Tiling	5
Section 09 51 13 – Acoustical Panel Ceilings	5
Section 09 61 00 – Preparation and repair of existing floors	3
Section 09 65 19 – Resilient Tile Flooring	6
Section 09 65 20 – Resilient Sports Flooring	5
Section 09 91 00 – Painting	14
Finish Schedule	1

**Division 10 - Specialties**

Section 10 11 00 – Visual Display Surfaces	4
Section 10 14 00 – Signage	2
Section 10 21 14 – Metal Toilet Compartments	5
Section 10 28 00 – Washroom Accessories	4
Section 10 51 11 – Lockers	4

**Division 11 - Equipment**

Section 11 61 23 – Retractable Stage	4
Section 11 67 00 – Athletic Equipment	3

**Division 31 – Site and Infrastructure**

Section 31 22 19 – Topsoil and Finish Grading	4
Section 31 23 00 – Excavation and Backfill	6
Section 31 66 15 – Helical Pier Foundations	6

**Mechanical and Electrical Specifications****To Follow in Addendum #001****DRAWING LIST****Architectural**

A000 – COVER PAGE  
A010 – LIFE SAFETY PLAN AND SITE PLAN  
A050 – ASSEMBLY TYPES  
AD100 – DEMOLITION FLOOR PLAN  
AD200 – DEMOLITION REFLECTED CEILING PLAN  
AD300 – DEMOLITION EXTERIOR AND INTERIOR ELEVATIONS  
A100 – CONSTRUCTION FLOOR PLAN  
A120 – FLOOR FINISH PLAN  
A150 – ENLARGED FLOOR PLANS – CLASSROOMS  
A151 – ENLARGED FLOOR PLANS  
A152 – WASHROOM GROUPS, FINISH PLANS, AND ELEVATIONS  
A153 – GYMNASIUM ENLARGED PLAN  
A175 – CONSTRUCTION ROOF PLAN  
A176 – DEMOLITION ROOF PLAN  
A177 – ROOFING DETAILS  
A178 – ROOFING DETAILS  
A200 – CONSTRUCTION REFLECTED CEILING PLAN  
A300 – CONSTRUCTION EXTERIOR ELEVATIONS  
A301 – CONSTRUCTION EXTERIOR ELEVATIONS  
A400 – BUILDING ELEVATIONS  
A401 – BUILDING ELEVATIONS  
A500 – WALL SECTIONS  
A501 – WALL SECTIONS  
A600 – PLAN DETAILS  
A601 – PLAN DETAILS  
A602 – PLAN DETAILS  
A650 – SECTION DETAILS  
A651 – SECTION DETAILS  
A652 – SECTION DETAILS  
A653 – SECTION DETAILS  
A654 – SECTION DETAILS  
A800 – TYPICAL CLASSROOM ELEVATIONS – NORTH WING  
A801 – TYPICAL CLASSROOM ELEVATIONS – SOUTH WING  
A802 – KINDERGARTEN AND KITCHENETTE INTERIOR ELEVATIONS  
A803 – INTERIOR ELEVATIONS – ATRIUM  
A804 – INTERIOR ELEVATIONS – CORRIDOR  
A805 – INTERIOR ELEVATIONS – CORRIDOR  
A806 – INTERIOR ELEVATIONS – GYMNASIUM  
A900 – MILLWORK DETAILS  
A901 – MILLWORK DETAILS  
A1000 – SCHEDULES  
A1001 – ROOM FINISH SCHEDULE  
A1002 – GLAZING ELEVATIONS

**Civil**

P4-SE1 – Site Servicing and Grading Plan

---

P4-SE2 – Notes and Details

**Mechanical – FULL DRAWING SET TO FOLLOW IN ADDENDUM #001**

M101 – MECHANICAL LEGEND AND DRAWING LIST  
M102 – SCHEDULES  
M103 – DETAILS  
M201 – PART GROUND FLOOR PLAN – DRAINAGE  
M202 – PART GROUND FLOOR PLAN – DRAINAGE  
M203 – PART GROUND FLOOR PLAN – PLUMBING  
M204 – PART GROUND FLOOR PLAN – PLUMBING  
M205 – PLUMBING DETAILS  
M301 – PART GROUND FLOOR PLAN – FIRE PROTECTION NORTH  
M302 – PART GROUND FLOOR PLAN – FIRE PROTECTION SOUTH  
M401 – PART GROUND FLOOR PLAN – HEATING  
M402 – PART GROUND FLOOR PLAN – HEATING  
M501 – PART GROUND FLOOR PLAN – AIR DISTRIBUTION  
M502 – PART GROUND FLOOR PLAN – AIR DISTRIBUTION  
M601 – MECHANICAL ROOF PLAN  
M602 – MECHANICAL ROOF PLAN DEMOLITION  
M701 – PART GROUND FLOOR PLAN – DRAINAGE DEMOLITION  
M702 – PART GROUND FLOOR PLAN – DRAINAGE DEMOLITION  
M703 – PART GROUND FLOOR PLAN – PLUMBING DEMOLITION  
M704 – PART GROUND FLOOR PLAN – PLUMBING DEMOLITION  
M705 – PART GROUND FLOOR PLAN – FIRE PROTECTION DEMOLITION  
M706 – PART GROUND FLOOR PLAN – FIRE PROTECTION DEMOLITION  
M707 – PART GROUND FLOOR PLAN – HEATING DEMOLITION  
M708 – PART GROUND FLOOR PLAN – HEATING DEMOLITION  
M709 – PART GROUND FLOOR PLAN – AIR DISTRIBUTION DEMOLITION  
M710 – PART GROUND FLOOR PLAN – AIR DISTRIBUTION DEMOLITION

**Electrical – FULL DRAWING SET TO FOLLOW IN ADDENDUM #001**

E101 – ELECTRICAL LEGEND, DRAWING LIST, SCHEDULES, ABBREVIATIONS, AND ELECTRICAL GENERAL NOTES  
E201 – PART GROUND FLOOR PLAN NORTH – LIGHTING AND FIRE ALARM  
E202 – PART GROUND FLOOR PLAN SOUTH – LIGHTING AND FIRE ALARM  
E301 – PART GROUND FLOOR PLAN NORTH – POWER AND SYSTEMS  
E302 – PART GROUND FLOOR PLAN SOUTH – POWER AND SYSTEMS  
E401 – ELECTRICAL RISERS  
E501 – ELECTRICAL DETAILS  
E502 – ELECTRICAL DETAILS  
E601 – PART GROUND FLOOR PLAN NORTH – LIGHTING AND FIRE ALARM DEMOLITION  
E602 – PART GROUND FLOOR PLAN SOUTH – LIGHTING AND FIRE ALARM DEMOLITION  
E701 – PART GROUND FLOOR PLAN NORTH – POWER AND SYSTEMS DEMOLITION  
E702 – PART GROUND FLOOR PLAN SOUTH – POWER AND SYSTEMS DEMOLITION

**Structural**

S100 – FOUNDATION PLAN  
S101 – ROOF FRAMING PLAN  
S200 – SCHEDULES  
S201 – ELEVATIONS  
S202 – JOIST REINFORCING

S301 – SECTIONS  
S302 – SECTIONS  
S303 – SECTIONS  
S304 – SECTIONS  
S305 – SECTIONS  
S306 – SECTIONS  
S400 – TYPICAL DETAILS  
S401 – TYPICAL DETAILS  
S402 – TYPICAL DETAILS  
S403 – TYPICAL DETAILS  
S404 – TYPICAL DETAILS  
S405 – TYPICAL DETAILS

**End of Section**

## Part 1: INTRODUCTION

### 1.1. **INTRODUCTION**

The St. Clair Catholic District School Board (hereafter referred to as the “SCCDSB” or the “Board”) invites interested parties to submit sealed submissions in response to this Request for Tender (“RFT”) document. The SCCDSB currently operates 25 elementary schools, 2 secondary schools, and an administrative office within the regions of Sarnia-Lambton and Chatham-Kent.

### 1.2. **PURPOSE**

The purpose of this RFT document is to provide interested parties with sufficient information to enable them to prepare and submit bids for consideration by the SCCDSB for the Scope of Work provided, subject to the terms and conditions described herein.

### 1.3. **INTERPRETATION AND DEFINITIONS**

The following words are used throughout the bid document and proponents should note these conditions when completing their RFT submission.

“ADDENDUM” means a written instruction and/or clarification issued to the RFT Document. The term addenda is to mean the same as Addendum.

“AGREEMENT” or “CONTRACT” means the final document including, but not limited to, the terms and conditions of this document.

“APPLICABLE LAW” and “APPLICABLE LAWS” means any common law requirement and all applicable and enforceable statutes, regulations, directives, policies, administrative interpretations, orders, by laws, rules, guidelines, approvals and other legal requirements of any government and/or regulatory authority in effect from time to time.

“BID IRREGULARITY” means a deviation between the requirements (terms, conditions, specifications, special instructions) of a bid response for the purposes of this bid; bid irregularities are further classified as major irregularities or minor irregularities. The classification of what is a major irregularity or a minor irregularity shall be the sole discretion of the SCCDSB.

“BID SUBMISSION” or “SUBMISSION” means all of the documentation and information submitted by a Proponent in response to this request.

“CONFLICT OF INTEREST” means any situation or circumstance where, in relation to performance of obligations under the RFT, the Proponent’s other commitments, relationships, or financial interests could result in a real, perceived, or potential unfair advantage to the Proponent.

“CONTRACTOR” means an entity that submits a bid in response to this tender document, as the context may suggest, refers to a potential Contractor.

“INFORMAL” shall mean bid submissions will be eliminated from further evaluation if the submission does not include the required information.

“MUST” shall mean proponents “must” include the required information in the bid submission. Failure to include the required information will deem the submission informal.

“PROPONENT” means an entity that submits a bid in response to this tender document, as the context may suggest, refers to a potential Proponent.

“SHOULD” shall mean proponents “should” include the required information in the bid submission.

“SUBCONTRACTOR” means the subcontractor and/or business who contracts to provide some service or material necessary for the performance of another’s contract.

[End of Part 1]



## PART 2: RFT PROCESS, INSTRUCTIONS, TERMS & CONDITIONS

### 2.1. RFT SCHEDULE

For the purposes of this RFT, the Board has established the following timing deadlines for the completion of the RFT process. All times listed are Local Time (Eastern Standard Time).

Event	Date & Time
<b>Notice of Project Issue Date:</b>	February 14, 2020
<b>Tender Issue Date:</b>	February 19, 2020
<b>Mandatory Site Visit:</b>	February 21, 2020 at 11:00 a.m.
<b>Question Deadline:</b>	March 10, 2020 at 2:00 p.m.
<b>Responses to Questions Received:</b>	March 12, 2020
<b>Closing Date and Time:</b>	March 19, 2020 at 2:00 p.m.

### 2.2. RFT CONTACT

Tony Prizio, Supervisor – Procurement  
St. Clair Catholic District School Board  
420 Creek Street, Wallaceburg, ON  
P: (519) 627-6762 x10256  
E: [tony.prizio@st-clair.net](mailto:tony.prizio@st-clair.net)

### 2.3. ACCEPTANCE OF TERMS

The submission of a bid by a Proponent represents that the Proponent has read and completely understands, and accepts all provisions contained within this RFT. Any bid that has alternative terms and conditions to those contained herewith may be considered a counteroffer to the Board’s request and may be rejected.

### 2.4. AGREEMENT TO ABIDE BY ESTABLISHED PROCESS

The following rules must be observed to protect the integrity of the competitive procurement process:

- All communications, including requests for information, must be between only the Representative of the Board and each Bidder who have been authorized and designated for that particular purpose.
- Apart from the communications between and among the designated representatives, there must be no communication between any other Board staff and any other representatives of the Bidder, and no giving of information with respect to the competitive procurement process and the final contract.
- Any attempt on the part of the Bidder, or any of its Employees, Agents, Vendors, or Representatives to contact any person(s) other than the designated SCCDSB representative(s) with respect to the competitive procurement process or any violation of the above requirements will

be grounds for disqualification. The Board may, at its discretion, in addition to any other rights or remedies available at law, reject any potential or actual submission submitted by that Bidder.

Bidders accepts and agrees to observe the conditions listed herein, inform their staff thereof, and ensure their compliance by submitting an executed Bid Submission in response to this RFT.

## **2.5. SCOPE OF WORK**

The St. Clair Catholic District School Board (Board) is seeking a Contractor to provide all necessary materials, equipment and labour to complete Renovations and Atrium Project at Our Lady of Fatima Catholic School, 545 Baldoon Road, Chatham, ON.

The project entails significant demolition to existing building components as indicated in the drawings. The project will include a structural buttressing with some accompanying rework of some site services. The structural work will integrate with extensive renovations and the construction of a new high volume atrium and main entry space. The existing gymnasium will be reconfigured along with ancillary spaces. The renovation work will require extensive foundation work and under floor servicing. Exterior work will include demolition of remaining existing exterior finishes to allow for reconstruction of some masonry facing, new windows, new curtainwall and new roof areas over the atrium and adjacent affected areas. Internal renovations are required throughout large portions of the school that will entail some demolition and reconstruction for required structural reinforcing and new walls. New mechanical HVAC, plumbing, electrical and controls work will be required through the majority of the school. New classroom millwork and finishes will be required.

## **2.6. EXAMINATION OF SITE & SITE VISIT**

Location: Our Lady of Fatima Catholic School, 545 Baldoon Rd, Chatham

Contact: Paul Lernout – Cell: 519-360-6262

Instructions: The site examination will be held at the date and time specified in Section 2.1 RFT Schedule. Attendees are required to report to the main office. A sign-in sheet will be available at the site examination. It is the attendee's responsibility to ensure they are signed-in at the meeting.

This is a MANDATORY SITE VISIT. Only contractors who attend the site visit will be permitted to submit a bid response. Attendance will be taken and will form part of the Bid Documents. Representatives of the Owner and Consultant will be in attendance.

In submitting a bid, it will be assumed that the bidders have carefully examined the drawings and have included in the bid price the complete cost of the work contemplated by the drawings and specifications and other bid documents.

## **2.7. TIMING OF PROJECT**

The schedule for the completion of the project is:

- Site Mobilization and construction commencement no earlier than July 20, 2020.
- Completion / Substantial Performance no later than April 30, 2021.

Work is to be completed during the hours of 7:00 a.m. to 6:00 p.m. Weekend work and after hours work can be done at the discretion of the Constructor at no additional cost to the owner, but must be in compliance to municipal noise and work hours by-laws.

## **2.8. COORDINATION WITH OCCUPANTS**

The Owner will not occupy site of the construction during entire construction period; however the Childcare Provider (YMCA) will occupy a small portion of the building which will be separated by hoarding from the main building. All services to the Childcare must be maintained for the duration of the project. The contractor will be completely responsible for the portion of the premises under construction during the length of the contract period until turned back over to the Owner.

Partial Occupancy: The YMCA will continue to operate the childcare and the area identified in the drawings and will occupy part of the site during entire construction period except for weekends and Statutory Holidays. The contractor is to cooperate with the Childcare Operator during construction operations to minimize conflicts and facilitate Childcare Operator usage. Perform the Work so as not to interfere with Childcare Operator's day-to-day operations. Maintain existing exits unless otherwise indicated.

- Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner, Childcare Operator and approval of authorities having jurisdiction.
- Notify Owner and Childcare Operator not less than 48 hours in advance of activities that will affect Childcare Operator operations.
- Restrict high noise operations (i.e. breaking and cutting concrete) to unoccupied periods. Include any overtime wages due to the condition stipulated.
- Power shutdowns will be scheduled during unoccupied periods. Include any overtime wages due to the condition stipulated.

## **2.9. BID SUBMISSION**

Bids shall be submitted with the project clearly identified on the sealed envelope:

**RFT Bid Package: 619-CP2003 Renovation & Atrium Project**

**Our Lady of Fatima Catholic School**

**Attention: Tony Prizio, Supervisor - Procurement**

The sealed Bid Submission must be returned to:

**Reception Desk, Catholic Education Centre**

**420 Creek Street, Wallaceburg, ON N8A 4C4**

**Bids MUST be received no later than the date and time specified in this tender document. Any bid submissions received after the deadline will be marked as late returned unopened to the bidder. It is the Bidder's responsibility to ensure their Bid Submission is received by the Board on or before the tender close. The Board will not take any responsibility for late submissions.**

If a Bidder chooses to deliver their Bid Submission via post or courier, the envelope or package must reference the project number and project description on the outermost layer.

Bids shall be filled out in ink or typed, signed in longhand by a duly authorized company official (having authority to bind) and sealed with a company corporate seal. One original of the fully completed Bid Form must be submitted. Failure to provide all of the requested information on the Bid Form may result in disqualification of the bid. Please refer to Appendix A: Bidder's Response Guide.

Bids by telephone, email, or fax will not be accepted.

After bid closing all submissions will be reviewed by the Board's evaluation team. Contractors submitting a bid are invited to stay for a public opening of Bids at the Catholic Education Centre following the submission deadline.

Supplier's Bid Submission, all Bid Documents and CCDC 2-2008 Stipulated Price Contract will form the agreement.

#### **2.10. CONTRACT PRICING**

Proponents must complete the Bid Form. Prices must include all travel, reimbursements, delivery (FOB Destination).

All charges must include the cost of the product or service. Prices quoted must be for products or services exactly as specified, unless otherwise noted or requested on the Bid Form.

#### **2.11. QUESTIONS AND REQUESTS FOR CLARIFICATION**

Proponents finding discrepancies, ambiguities or omissions in the RFT documents or having doubt as to the meaning or intent thereof, shall immediately notify the Procurement Department. The board is not responsible for any misunderstanding of the RFT on the part of a Proponent. Questions must be received by the date and time specified in the RFT Document. Responses will be provided in writing to Proponents through the same platform that the original RFT documents were issued.

All questions to be addressed in writing to: [Tony Prizio](mailto:tony.prizio@st-clair.net), Supervisor - Procurement  
St. Clair Catholic District School Board  
E-mail: [tony.prizio@st-clair.net](mailto:tony.prizio@st-clair.net)  
CC: [victoria.iaccino@st-clair.net](mailto:victoria.iaccino@st-clair.net)

For the purpose of this RFT, Proponents shall not contact anyone in the Board other than the designated contact listed in these bid documents. Any unauthorized communications may result in disqualification.

#### **2.12. ADDENDA**

Proponents may also, during the RFT Process, be advised by Addendum of any additions, deletions or alterations to RFT documents. All such Addenda shall become part of the RFT Documents.

If an addendum is issued, the document(s) will be made available to Proponents through the same platform that the original RFT documents were issued. Proponents are responsible for verifying before submitting its response that it has received all addenda that may have been issued.

Where a Bid Submission has been received by the Board prior to the publication of an Addendum or notice, the Board shall allow that Proponent to submit a revised Bid Submission prior to the closing date for the RFT or send written acknowledgement (which may be by email) to the RFT contact that the original Bid Submission still stands.

#### **2.13. WITHDRAWAL OF SUBMISSION**

A Proponent may alter, amend, or withdraw a submitted proposal if such request is received in writing by the contact person for this RFT prior to the closing date and time specified in this document. The last submission shall supersede and invalidate all previous submission by that Proponent as it applies to this bid. Such requests received after the closing date and time will not be permitted.

**2.14. BID ACCEPTANCE**

It shall be understood by all proponents, that the RFT submission shall be valid and subject to acceptance by the Board, and that no adjustments shall be made to the proposal for a period of up to and including sixty (60) days from the RFT Closing Date.

The Board reserves the right to determine the successful proponent at its sole discretion. The lowest cost may not be accepted. The Board reserves the right to decline any or all submissions, in whole or in part, at any time prior to making an award.

The successful proponent shall be required to enter into a formal contract with the Board, which will include the terms and conditions of the RFT documents, the Proponent's bid, and all other applicable documents.

**2.15. CANCELLATION**

The Board may cancel this RFT at its discretion at any time prior to an award. The Board may do so for budgetary reasons, for any other reason, or without providing reasons and issue a new request for tender, request for qualifications, or do nothing.

**2.16. CLARIFICATION**

The Board reserves the right to seek clarification from any Proponents without being obligated to all Proponents if it finds certain aspects of a bid unclear.

**2.17. BOARD'S RIGHT TO WAIVE MINOR IRREGULARITY**

The Board reserves the right to accept or waive a minor irregularity, or where practical to do so the Board may as a condition of bid acceptance request a Proponent to correct a minor irregularity with no change in bid price. Items of non-compliance on any bid submissions which do not strictly comply with the provisions, procedures and requirements of this bid, or are incomplete, ambiguous, or which contain errors, alterations, misleading information, omissions, or irregularities of any kind, may be rejected and disqualified at the discretion of the Board. All proponents agree to provide all such additional information as, and when requested, at their own expense, provided no proponent in supplying any such information shall be allowed, in any way to change the pricing or other cost quotations originally given in its bid submission or in any way materially alter or add to the solution originally proposed.

**2.18. ERRORS AND OMISSIONS**

The Board will not be held liable for any errors or omissions in any part of the RFT. While the Board has used considerable effort to ensure an accurate representation in the RFT, the information contained in the RFT is supplied solely as a guideline for the Proponents. The information is not guaranteed or warranted to be accurate by the Board, nor is it necessarily comprehensive or exhaustive.

**2.19. DOCUMENT AVAILABILITY**

RFT documents are available on the Board's Website [www.st-clair.net](http://www.st-clair.net) under Bid Opportunities or on Biddingo [www.biddingo.com](http://www.biddingo.com). Documents will also be provided to local construction associations: Sarnia Construction Association, Windsor Construction Association, Lambton Area Builders Exchange and the London & District Construction Association.

The Board assumes no responsibility for the proponent's failure to examine all of the RFT Documents.

**2.20. PROPONENT EXPENSES**

Any and all costs and expenses incurred by Proponents in the development, preparation, submission or presentation of their bids, or otherwise related to its participation in this RFT process will be borne by the Proponents. The selection of any bid, or the rejection of any or all bids, or the termination/cancellation of this RFT process, or initiation of a new RFT process shall not render the Board liable to pay or reimburse any such costs or damages incurred by any Proponent, or any partner or contractor of such Proponents.

**2.21. VOLUNTARY ALTERNATE & SEPARATE PRICES**

The bid amounts are to be based on the bid documents. Where there is any conflict within the bid documents, the bid amount shall include the higher cost alternative. Alternative proposals are encouraged and should be identified in the bid. Submit complete information including any impact on schedule to allow a full evaluation of the proposal including, as applicable, any particulars in which the alternate proposal is at variance with or unable to meet the specifications. Note also any impact on other trades if the alternative is accepted. Alternative proposals may be made without limitation, including for items specified as single sourced.

**2.22. BID INELIGIBILITY**

Bids may, at the discretion of the Owner, be declared informal for any of the following reasons:

- the bid is incomplete, unsigned, improperly signed or sealed, conditional, illegible, obscure, contains arithmetical errors, erasures, alterations, or irregularities of any kind, or
- the bid does not include the required bonding and/or consent of surety
- the Bid Forms and enclosures are improperly prepared, or
- the prices seem to be so unbalanced as to adversely affect the interests of the Owner, or
- the bid is based upon an unreasonable period of time for completion or delivery, or
- the bidder does not provide the required Proof of Insurance and/or WSIB coverage as specified in these Bid Documents

**2.23. AWARD**

The Board has the right to reject any or all bids. The lowest Bid will not necessarily be accepted. The invitation to bid does not constitute an offer by the Contractor to enter into a contract. In the event of a tie, a coin flip conducted by the Supervisor – Procurement (or designate) with a minimum of one other Board staff will determine the successful proponent.

Acceptance of the Bid and/or award is subject to the approval of the St. Clair Catholic District School Board.

The SCCDSB reserves the right to withdraw the award of the contract to a successful bidder(s) within 30 days of the award if, in the opinion of the SCCDSB, the successful bidder(s) is unable or unwilling to enter into a form of contract satisfactory to the SCCDSB. The SCCDSB shall be entitled to do so without any liability being incurred by the SCCDSB to the bidder.

**2.24. ENTITLEMENT TO A DEBRIEFING**

In accordance with the Broader Public Sector Procurement Directive unsuccessful Bidders are entitled to a debriefing, during which they will be provided with feedback regarding their Tender. In order to be debriefed, unsuccessful Bidders must contact the Owner representative identified in the Bid Documents in writing to request a debriefing within sixty (60) days from the date of the notification of award.

## **2.25. BID DISPUTE PROCEDURE**

In the event that a Bidder wishes to review the decision of the Board in respect of any material aspect of the Request for Tender process, the Bidder shall submit a protest in writing to the Board to the attention of the Supervisor – Procurement within ten (10) days of the closing date of the Tender.

Any protest in writing shall include the following:

- a) a specific identification of the provision and/or procurement procedure that is alleged to have been breached;
- b) a specific description of each act alleged to have breached the procurement process;
- c) a precise statement of the relevant facts;
- d) an identification of the issues to be resolved;
- e) the Bidder's arguments and supporting documentation;
- f) the Bidder's requested remedy.

## **2.26. INVOICING & PAYMENT**

The Board shall pay by electronic funds transfer (EFT), P-Card, or cheque within twenty eight (28) days after the receipt of a proper invoice. Invoices will be reviewed and certified by the Board's Consultant, if applicable, before the invoice is processed for payment. Invoices must include all back-up material for time and material charges, disbursements, and other fees. Please make reference to the Purchase Order number on the invoice.

Invoices should be sent digitally to the architect and be based upon the architect's approved format for invoicing with copies sent to [victoria.iaccino@st-clair.net](mailto:victoria.iaccino@st-clair.net). Digital invoices will be processed as an original. Please do not send duplicate copies by mail.

Note: Invoices should reflect a 10% holdback (final construction cost) which will be retained by Board through substantial completion of the project in accordance with relevant legislation and a 1.5% holdback (final construction cost) which will be retained until the warranty & close out documentation is received and approved by the Board.

## **2.27. TAXES**

Include in Bid all Taxes and all other Customs Duties and Excise Taxes which are in force at Bid date as detailed in General Conditions. Harmonized Sales Tax (H.S.T.) is **not** to be included in the bid. The H.S.T. amount and the Bidder's **H.S.T. Registration Number** are to be indicated on the Bid Form in the spaces provided.

## **2.28. CHANGE NOTICES, CHANGE ORDERS**

The following fee percentage and overhead charges shall be applied to additional work ordered by the Board:

- For work carried out by the Contractor's own forces – 10% for Overhead & Profit
- For work involving a subcontractor, the subcontractor may charge a maximum 10% fee. The General Contractor may charge a maximum of 5% in addition to subcontractor's fee.

## **2.29. PROJECT SPECIFIC REQUIREMENTS**

Any and all damages to facilities while under the control of the contractor shall be repaired at the contractor's cost. Please be advised that the Owner has a No Smoking Requirement on the Owners' property. Contractors shall provide their own washroom facilities for their employees; board washrooms will be off limits to the contractor's employees. Contractors are requested to ensure that employees and suppliers are advised of these Requirements. Contractor shall remove rubbish and debris from the site on a daily basis or as directed by the Board. On completion of the work, all debris shall be removed; the floor shall be thoroughly cleaned and swept; the site shall be left in a tidy condition (construction clean). Do not use the Board's equipment or facilities for cleaning or for any reason.

**2.30. SUBCONTRACTORS**

The successful Proponent(s) may not, at any time, subcontract any portions of its contract with the Board nor shall it assign the contract without the written permission of the Board. The successful Proponent(s) must not, at any time, change subcontractors approved by the Board without the written permission of the Board.

**2.31. GENERAL TERMS AND CONDITIONS**

The issuance of this bid document shall not constitute an obligation on the part of the Board to any proponent who submits a bid.

The laws of the Province of Ontario shall govern any dispute occasioned as a result of the performance or non-performance and/or workmanship of a contract issued pursuant to the bid and any dispute arising out of the issuance of and response to this bid document.

All SCCDSB policies, procedures and regulations must be adhered to by the successful bidder(s).

Some of the Board sites are equipped with video surveillance cameras.

The successful proponent(s) is obliged to cooperate with all recycling and environmental procedures and initiatives established by government, the Board and each school.

The successful bidder(s)' employees and contracted staff shall not be considered SCCDSB employees and shall not represent themselves as an agent of the SCCDSB nor be eligible for any of the benefits provided to SCCDSB employees.

The SCCDSB reserves the right to demand the removal of any successful bidder's employees or contracted staff engaged in this contract if, in the SCCDSB's opinion, their conduct has been of an unacceptable nature.

The successful bidder(s) will be responsible for ensuring that regular supervision is maintained over all working personnel. It is the bidder's responsibility to ensure that all their activities are properly coordinated with the SCCDSB's operations and modify assignments as required.

This bid document is being issued pursuant to the SCCDSB's Purchasing Policies and Procedures.

The acceptance of the bid by the successful proponent(s) and the award of the contract contemplated by this bid document may be subject to approval of the Board of Trustees.

**2.32. BONDING**

On bids exceeding \$100,000.00 (inclusive of all taxes) the following tender security / bonding is required and must accompany the bid:

- Agreement to Bond: 50% Performance and 50% Labour and Material
- Bid Bond: 10% of the bid price, payable to the St. Clair Catholic District School Board



If the bid amount is greater than \$100,000 and less than \$500,000 (inclusive of all taxes) the Surety or Bid Bond may be provided in the form of an irrevocable letter of credit, a certified cheque, or money order payable to the Board in the value of 10% of the bid amount.

Only bond and agreements to bond issued by a licenced Canadian surety company authorized to do business in the Province of Ontario will be accepted as stipulated by the Ontario Construction Act Form 31 & 32. Upon request, the successful Bidder will be required to present the bonds to the Purchasing Department. Failure to provide the proper surety to the Board upon award will result in rejection of that Bid. The cost of bonding shall be included in the Bid price and identified on the Tender Form, if applicable.

### **2.33. INSURANCE**

The successful Proponent(s) must maintain, at the Proponent's expense for the entire term of the Contract or as otherwise required, all insurance as set out below. Proof of insurance coverage must be received as part of their bid submission:

- Comprehensive General Liability and Property Damage with a limit of not less than **\$6,000,000.00 (six million dollars)**.
- Motor Vehicle Public Liability and Property Insurance on all owned and rented equipment with a limit of not less than **\$4,000,000.00 (four million dollars)**.

The Proponent agrees to indemnify, hold harmless, and defend the Board, its Consultants, agents or employees from and against any and all liability for loss, damage and expense, which the Board may suffer or for which the Board may be held liable by reason of injury (including death) or damage to any property arising out of negligence on the party of the proponent or any of its representatives, employees, or subcontractors in the execution of the work preformed or by way of ownership or operation of an automobile.

The successful Proponent shall provide the Board with a complete certified copy of all policies. Copies of renewed policies must be provided to the Board on or before the policy renewal date for projects that extend past the original policy term or for multi-year contracts. The successful Proponent must name the St. Clair Catholic District School Board as additional insured on their insurance policies.

### **2.34. WORKPLACE SAFETY INSURANCE BOARD (WSIB)**

Successful Proponent(s) must ensure that all workers are covered by the Workplace Safety and Insurance Board coverage for the duration of this contract. Proof of coverage must be as part of their bid submission.

Proponents must furnish a Certificate of Clearance from the Workplace Safety and Insurance Board as evidence that all returns have been made and all necessary assessments have been paid as required, or levied, by the Workplace Safety and Insurance Board.

Alternatively, if the Proponent is an Independent Operator and is not classified under Class G: Construction, the proponent must provide a letter from the Work Place Safety & Insurance Board confirming independent operator status and identification number under the WSIB Act.

### **2.35. PERMITS**

The Architect will apply and pay for a building permit if applicable. The contractor is to obtain all other permits as required to complete the project, including but not limited to ESA, hot work permit etc.

### **2.36. MEETINGS**

A Post Bid Meeting may be convened and chaired by the Board who will invite the Successful Proponent and his major Subcontractors to review the Contract Documents and Bid submitted. This meeting will be prior to the Board issuing a Letter of Intent or Contract. This meeting does not constitute or infer any contract award to the proposed contractor or any other contractor, nor that will the project proceed.

During the course of Work, scheduled progress meetings may be required at the call of the Project Leader.

### **2.37. WARRANTY**

The vendor/contractor warrants that all goods/services, materials and equipment supplied under contract are free of all defects in manufacture and workmanship for a period of not less than 1 year from date of delivery, installation or performance (whichever is the later) whether or not any portion or trade has been sublet.

The vendor/contractor shall promptly remedy any defect or deficiency in any goods/services, materials and equipment supplied under contract to the satisfaction of the Board within seven (7) calendar days following notice to do so from the Board at no additional cost to the Board, unless otherwise specified.

In the event that the vendor/contractor doesn't promptly honour the above warranties to the satisfaction of the Board, the Board may, at the sole cost of the vendor/contractor do whatever it deems necessary and advisable to remedy, rectify or replace the defective, deficient or non-compliant goods, services, materials or equipment. The Board shall inform the vendor/contractor in advance of the approximate cost of such work to be done by the Board.

All goods/services and/or equipment furnished or supplied pursuant to the contract shall be installed or attached in such a manner as to preserve all manufacturer's and vendor/contractor's warranties, which shall, together with all parts and components, become the property of the Board after the successful and satisfactory installation or attachment.

### **2.38. GUARANTEE**

The vendor/contractor guarantees that all goods/services, materials and equipment supplied under contract are new manufacture. The products must not contain re-manufactured parts and/or accessories and must not have been used under contract with any other customer(s) unless specified by the Board. The submissions will be of the latest design and technology at the time of submission by the vendor.

The vendor/contractor represents and warrants that the goods and/or services supplied pursuant to this bid will be manufactured and/or supplied under such conditions that do not contravene the Ontario Human Right Code or the minimum standards of Ontario workplace legislation and regulations or are otherwise unethical. In the event in the opinion of the Board, the bidder is in breach of the foregoing representation and warranty, the Board may cancel the award or any such subsequent contract entered into between the Board and bidder pursuant thereto.

### **2.39. SCHEDULE**

The Contractor will be required to perform the work in accordance with the Schedule dates provided in 2.7. Timing of Project. Ordering of major and long delivery items shall begin immediately upon successful bidder's receipt of contract award. The Contractor will provide a construction schedule within five (5) days of being awarded the project.

*Time is of the essence.* Bidders are to include adequate manpower, overtime and shift work necessary to meet or improve the schedule, and to make up any time lost to weather or normal delays. Include travel,

room and board costs for out of town workers, shop overtime and other premiums to expedite material and equipment, shipping premiums and any incentive costs required to meet the schedule.

**2.40. CONTRACTED SERVICES PROGRAM**

Contractors performing work on Board property must complete the Contracted Services Program. The Contracted Services Program is a joint program with Lambton Kent District School Board. This program has three basic components that **must** be met before the bid is awarded. Contractors who cannot meet the minimum requirements of this program will not be awarded this tender. Program information can be found on the Board's web site at [www.st-clair.net](http://www.st-clair.net) or through the Board contact identified previously in this document. If the contractor has already been pre-qualified by LKDSB they must provide proof of completion. Identification badges can be used on SCCDSB or LKDSB property. All Insurance and WSIB certificates must be up to date under the Contracted Services Program.

**2.41. HEALTH and SAFETY**

The Occupational Health and Safety Act describes the responsibilities of an employer. The Board requires Contractors to maintain procedures, training, and enforcement so that the responsibilities are carried out in the workplace. The Contractor shall abide by and strictly adhere to the regulations and conditions set out and laid down by the most current versions of the Occupational Health and Safety Act. All staff employed or hired by the Contractor and working on the Board's premise **MUST** be trained in WHMIS in accordance with Occupational Health and Safety Act and Regulations. They **MUST** adhere to all of the Board's Health and Safety Procedures and Guidelines and to Municipal By-Laws.

Contractor will submit proof of its health and safety program, procedures and training as detailed above upon request by the Board.

The Contractor shall appoint a Competent Person as the Supervisor of this project. The Competent Person shall be as defined in Section 1 of the Occupational Health and Safety Act.

The successful Contractor shall conform to the Ontario "Occupational Health and Safety Act" and all regulations made under said act and assume full responsibility for contraventions of same.

All workplace injuries or accidents on Board property **MUST** be reported by the Contractor to the Board's representative within 24 hours.

Any workplace injury that is defined under the Occupational Health and Safety Act as a "Critical Injury" must be reported to the Board's representative **IMMEDIATELY**.

**2.42. ELECTRICAL AND SAFETY APPROVALS**

All electrical/electronic components supplied by the vendor/contractor must be CSA, ULC and/or Ontario Hydro/Ontario Electrical Safety Authority approved. Appropriate labels must be affixed to the equipment prior to delivery. The vendor/ contractor is responsible for ensuring goods or services supplied to the Board must comply with the Occupational Health and Safety Act and Regulations of Industrial Establishments.

**2.43. DESIGNATED SUBSTANCES**

The contractor shall conduct work in recognition of the most current regulations related to Designated Substances. The contractor is required to review the site specific designated substances report to ascertain potential for exposure to designated materials and notify the board of instances where the scope of work under this contract will require remediation. If the report does not schedule designated materials in the

attached report and should the contractor uncover material which is believed to be asbestos, work is to cease immediately and the Board staff are to be contacted immediately.

**2.44. SAFE SCHOOL PROCEDURES**

Contractor's staff is required to report to the main office of the site where work will be carried out during regular school hours and notify the school office staff of the purpose of the visit. The Contractor is required to adhere to all school specific procedures if applicable.

It is the responsibility of the Contractor's staff to sign in and sign out of the Log Book, which is located in the main office area, while performing their duties.

The following information must be recorded in a legible manner:

Date  
Company Name  
Employee Name  
Employee Signature  
Reason for Visit  
Time Entering Building  
Time Leaving Building

**2.45. HOISTING, SCAFFOLDS, ELEVATED WORK PLATFORMS**

The Contractor is responsible for all hoisting and other equipment necessary to facilitate their work if required.

**2.46. TEMPORARY POWER**

A source of electric power will be designated by the Board. The Board will allow a tie-in connection with fuse or breaker protection for the Contractor's estimated load requirements. The Contractor must provide the power connections and all extensions from the point to the job site. All electrical connections and extensions must meet ESA requirements and must be approved by the Board. The Contractor's estimated load requirements must not be exceeded without the Owner's permission.

**2.47. NOISE AND TRAFFIC CONTROL**

Bidders shall comply with all applicable **noise by-laws** (or local requirements governing same) and traffic routing that may be in effect during the life of the Project.

This **may** limit some activities to restricted time periods. Where the schedule requires for after hour work, the Contractor shall include all costs associated with obtaining the necessary permits to work such time periods.

The Contractor shall be responsible for all costs associated with providing a traffic officer as necessary to facilitate construction.

**2.48. SITE ACCESS AND EGRESS**

Contractors will be required to sign out a master key and will be assigned an access code for the alarm system. Successful Contractor will be responsible for building security during working hours and locking up the facility at night, which includes setting the alarm.

Any false alarms generated by the Contractor's workforce will result in a back charge for the costs incurred to the Board.

The Contractor shall make good any damage to roads, curbs, sidewalks, fencing, or grass damaged by vehicles or equipment during the course of construction.

**2.49. PARKING**

Contractors must park within the designated areas and allow for provisions to and from the designated parking area onto the job site.

**2.50. CONTRACTOR'S PERSONNEL**

The Contractor shall, at its own expense, provide all the personnel required to take a proactive role in managing the project as it relates to their work and its coordination with other trades. This will include but is not limited to the following:

- Competent supervision of the work of the Contract and coordination with the work of other Subcontractors. This includes being responsible for and properly supervising any subcontractors of this subcontractor.
- All layout work required to complete the work of the trade contract.
- Competent supervision of the work of the trade contract to ensure work is done in accordance with the OHSA and any other applicable regulations.
- Expediting the procurement of material and equipment to ensure delivery by their required dates.
- Submission of Requests for Information where required in a timely manner and wherever possible providing the Board with information to assist in the answering of these requests.
- Submission in a timely manner of all required shop drawings and samples and assistance to the Board required to obtain approvals to suit the schedule. All shop drawings are to be reviewed by the Contractor prior to submitting for approval.
- Attendance at all construction coordination meetings when requested by the Board.
- Provision of all necessary information requested by the Board for cost control and billing purposes.
- Inspection of the work of the Trade Contract for defects and deficiencies and cooperation with the Board and other inspection authorities to allow their inspections to take place.
- Submission of pricing for all changes to the work within five (5) working days after receipt of change documentation including the breakdown and backup necessary to allow checking and approval.

**2.51. ACCESSIBILITY FOR ONTARIANS WITH DISABILITIES ACT**

The Purchaser is committed to the highest possible standards for accessibility. Proponent(s) must be capable to recommend and deliver, as appropriate for each Deliverable, accessible and inclusive Services consistent with the Ontario Human Rights Code (OHRC), the Ontarians with Disabilities Act, 2001 (ODA) and Accessibility for Ontarians with Disabilities Act, 2005 (AODA) and its regulations in order to achieve accessibility for Ontarians with disabilities.

In accordance with Ontario Regulation 429-07 made under the Accessibility for Ontarians with Disabilities Act, 2005 (Accessibility Standards for Customer Service), the Purchaser has established policies, practices and procedures governing the provision of its services to persons with disabilities.

Proponents are required to comply with the Purchaser's accessibility standards, policies, practices, and procedures, which may be in effect during the Term of the Agreement and which apply to the Deliverables to be provided by the Proponent.

**2.52. CANADA'S ANTI-SPAM LEGISLATION**

Please note that vendors are required to comply with all applicable laws, including CASL, in providing goods or services to the Board. This also extends to communications sent on the Boards behalf. The successful proponent(s) will be required to indemnify the Board for any failure by the successful proponent(s) to comply with CASL, to the extent that the successful proponent(s) action, or inaction, could expose the Board to liability.

**2.53. CONFIDENTIAL INFORMATION**

All correspondence, documentation, and information of any kind provided to any Proponent in connection with or arising out of this Request for Tender or the acceptance of any Bid:

- Remains the property of the Purchaser and shall be removed from the Purchaser's premises only with the prior written consent of the Purchaser.
- Must be treated as confidential and shall not be disclosed except with the prior written consent of the Purchaser.
- Must not be used for any purpose other than for replying to this RFT and for the fulfilment of any related subsequent agreement.
- Must be returned to the Purchaser upon request.

Except as provided otherwise in this request, or as may be required by Applicable Laws, the Purchaser shall treat the Proponents' Proposals and any information gathered in any related process as confidential, provided that such obligation shall not include any information that is or becomes generally available to the public other than as a result of disclosure by the Purchaser.

During any part of this Request for Tender process, the Purchaser or any of its representatives or agents shall be under no obligation to execute a confidentiality agreement.

All correspondence, documentation, and information provided in response to or because of this RFT may be reproduced for the purposes of evaluating the Proponent's Bid Submission.

If a portion of a Proponent's Bid Submission is to be held confidential, such provisions must be clearly identified in the Bid.

The Purchaser reserves the right to require any Proponent to enter into a non-disclosure and/or confidentiality agreement satisfactory to the Purchaser.

**2.54. CONFLICT OF INTEREST**

Proponents must declare all conflicts of interest or any situation that may reasonably be perceived as a conflict of interest in relation to the Project that exists now or may exist in the future. The Board, at its sole discretion, waive any and all actual, potential, or perceived conflicts of interest, on such terms and conditions and the Board, at its sole discretion, considers to be appropriately managed, mitigated, and minimized. In this regard the Board may require the Proponent to implement measures or take steps to manage or mitigate the impact of any actual, potential, or perceived conflict of interest.

**2.55. MUNICIPAL FREEDOM OF INFORMATION AND PROTECTION OF PRIVACY ACT**

The *Municipal Freedom of Information and Protection of Privacy Act* (Ontario) applies to information provided by Proponents. A Proponent should identify any information in its Quotation or any accompanying documentation supplied in confidence for which confidentiality is to be maintained by the Purchaser. The confidentiality of such information will be maintained by the Purchaser, except as otherwise required by law or by order of a court, tribunal, or the Ontario Privacy Commissioner.

By submitting a Bid, including any Personal Information requested in this RFT, Proponents agree to the use of such information for the evaluation process, for any audit of this procurement process, and for contract management purposes.

**2.56. PERSONAL INFORMATION PROTECTION AND ELECTRONIC DOCUMENTS ACT**

The Proponent represents and warrants that if the Proponent becomes subject to any private sector privacy legislation in responding hereto, or in carrying out its obligations under any subsequent agreement, the bidder will be solely responsible with such legislation. Without limitation, the Proponent represents and warrants that if the Proponent is subject to the *Personal Information Protection and Electronic Documents Act* (PIPEDA) the Proponent shall ensure compliance of all PIPEDA Protected Information that the Bidder:

- Collects directly from the individuals or indirectly from the Board or others;
- Uses or discloses in the course of responding hereto or in performing its obligations under and subsequent agreement; or
- Transfers or discloses to the Board

**2.57. TRADE AGREEMENTS**

Proponents should note that procurements within the scope of either Chapter 5 of the Canadian Free Trade Agreement, Chapter 19 of the Comprehensive Economic and Trade Agreement, within the scope of the Trade and Cooperation Agreement between Quebec and Ontario or any other applicable agreement not listed herein are subject to such agreements, although the rights and obligations of the parties shall be governed by the specific terms of this RFT.

**2.58. WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM**

The Proponent should provide Workplace Hazardous Materials Information System (WHMIS) material safety data sheets (MSDS) for all Services. Additionally, the Proponent should provide the Purchaser's personnel WHMIS training, as it relates to the Services, in accordance with the Ontario Occupational Health and Safety Act.

**2.59. VENDOR PERFORMANCE**

Where the Contractor fails to comply with any of its obligations under the Contract, the Board may issue a notice setting out the manner and time-frame for rectification. Within seven (7) Business Days of receipt of that notice or in a timeframe as otherwise agreed to, the Contractor shall either: (a) comply with that rectification notice; or (b) provide a rectification plan satisfactory to the Board. If the Contractor fails to either comply with that rectification notice or provide a satisfactory rectification plan, the Board may immediately terminate the Contract. Where the Contractor has been given a prior rectification notice, the same subsequent type of non-compliance by the Contractor may allow the Board to immediately terminate the Contract and result in the suspension of bidding privileges to the Board for up to two years at the sole unfettered discretion of the Board.

## **2.60. TERMINATION OF CONTRACT**

Either party may terminate the Agreement on written notice to the other where such other party neglects or fails to perform or observe any material term or obligation of the Agreement and such failure has not been cured within 30 Days of written notice being provided.

If the Proponent fails to execute the work properly or otherwise fails to comply with the requirements of the contract to a substantial degree, the Board may correct such default and deduct the cost thereof from any payment then or thereafter due to the contractor.

The Board shall be entitled to terminate the Agreement immediately, without liability, cost, or penalty on written notice to the Proponent:

- if any proceeding in bankruptcy, receivership, liquidation, or insolvency is commenced against the Proponent or its property;
- if the Proponent makes an assignment for the benefit of its creditors, becomes insolvent, commits an act of bankruptcy, ceases to carry on its business or affairs as a going concern, files a notice of intention or a proposal, or seeks any arrangement or compromise with its creditors under any statute or otherwise;
- following the occurrence of any material change in the Board's requirements which results from a regulatory or funding changes, or recommendations issued by a Governmental Authority;
- in the event of a breach of the representation regarding conflict of interest;
- in the event of a misrepresentation or material breach;
- if the proponent uses, destroys, exploits, or discloses any Board Confidential Information to any Personal Information contrary to this Agreement; and
- in accordance with any provision of the Agreement that provides for early termination;

The Board reserves the right to terminate the Agreement, without cause, upon sixty (60) days' prior written notice to the Proponent.

The Board, at its sole and unfettered discretion, may extend the timelines for termination if it is deemed to be in the Board's best interest to do so.

Any termination of the Agreement shall not in any respect limit any of either party's rights or remedies either in law or in equity or relieve either party of any obligation incurred prior to the effective date of such termination.

[End of Part 2]



## **APPENDIX A: Bidder's Response Guide**

Each bid submission should be structured using only the criteria identified in this bid document.

1. A completed copy of APPENDIX B: Bid Form **must** be included in your bid submission.
2. Proof of WSIB Coverage and proof of insurance **must** be included in your bid submission as specified in the Bid Documents.
3. Bonding **must** be included in your bid submission as specified in the Bid Documents.
4. Supplemental material will not qualify as substitutes for direct responses to the bid's requirements, except for specifically requested material.
5. The successful contractor must be prequalified under the contracted services program before an award is made.

## **APPENDIX B: Bid Form**

Submitted By: \_\_\_\_\_

To:

St. Clair Catholic District School Board  
619-CP2003 Renovation and Addition  
Our Lady of Fatima Catholic School, Chatham, ON

### **B1. Base Bid Price**

The Drawings, Specifications and other Contract Documents for this Project have been examined, as well as the premises and job site conditions affecting the work. The undersigned hereby offers to complete the work in accordance with the Contract Documents for the following bid price, except as defined below for HST:

\_\_\_\_\_  
\_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

in Canadian funds EXCLUDING HST. HST will be added to the bid price.

In submitting this Bid, the undersigned recognizes and accepts the right of the Owner to accept any Bid, which is deemed the most advantageous to the Owner, (or any part thereof), at the price submitted, or to reject any or all Bids. Acceptance of the Bid and/or award of the contract is subject to the approval of the Board.

In the event that a discrepancy arises between the written bid price and the associated numerical price, the written bid price will be deemed to be correct.

### **B2. Harmonized Sales Tax (HST)**

The bidder shall not include the applicable HST in the bid price. The successful contractor will indicate on each application for payment as a separate amount the appropriate HST the Owner is obliged to pay.

HST Registration # \_\_\_\_\_

### **B3. Cash Allowances**

1. Include a Stipulated Sum of Eighty Five Thousand Dollars (\$85,000.00) to cover over the following items from which the Consultant shall direct payment for services, labour, and material.

- a. Hardware supply and installation including door operators by ProAble Hardware Specialists.
2. Include a Stipulated Sum of Six Thousand Five Hundred Dollars (\$6,500.00) to cover over the following items from which the Consultant shall direct payment for services, labour, and material.
    - a. Supply and installation of Fob Readers for access control by JPW Systems.
  3. Include a Stipulated Sum of Five Thousand Dollars (\$5,000.00) to cover over the following items from which the Consultant shall direct payment for services, labour, and material.
    - a. Related to unforeseen minor asbestos abatement.
  4. Include a Stipulated Sum of Fifteen Thousand Dollars (\$15,000.00) to cover over the following items from which the Consultant shall direct payment for services, labour, and material.
    - a. Testing & Inspection.

The General Contractor is to coordinate and ensure that all cash allowances specified in Division 23, 24 and Division 25 are fully accounted for in the base price.

The General Contractor is to coordinate and ensure that all cash allowances specified in Division 26 are fully accounted for in the base price.

Time and Materials rates to be applied against Cash Allowance work. Final reconciliation will adjust the cash allowance as credit to the SCCDSB for unexpended amounts and extra to the contractor for over expenditure. The contractor shall mark-up sub-trade time and materials billing for this portion of work at 10% only.

#### **B4. Itemized Prices**

The following prices have been included in the Base Bid amount. The following prices, if accepted by the owner, shall include all labour, material, tools, equipment, overhead and profit, but exclude H.S.T. No other cost consideration shall be added to the contract for the scope of this work if accepted by the owner. The owner retains the right to cancel any or all of the sites for any reason.

Itemized Price #1: None at this Time

#### **B5. Alternate Prices**

It is accepted that the intent of alternate prices is to allow the Owner to select an alternative scope of work at a price which is declared below, and solely at the owner's discretion. All prices submitted take into consideration and allow for changes and adjustments in other work as may be necessary to provide a finished functional result, unless specifically indicated otherwise.

The following alternate prices are for work which is not included in the stipulated bid price listed on the bid form but which may be substituted by the Owner for work which is included (no price listed shall mean no change in cost) and the Owner has the right to accept or reject any or all of the prices quoted. The following prices, if accepted by the owner, shall include all labour, material, tools, equipment, overhead and profit, but exclude H.S.T. No other cost consideration shall be added to the contract for the scope of this work if accepted by the owner.

Alternate Price #1:

Quartz Tile QT1 310 x 310 in lieu of VCT 1 \$ \_\_\_\_\_ (extra)

Alternate Price #2

Quartz Tile QT2 610 x 610 in lieu of VCT 1 \$ \_\_\_\_\_ (extra)

Alternate Price #3

Interflor DuraMultisport in lieu of Tarket Omnisport 7.1 \$ \_\_\_\_\_ (credit)

**B6. Separate Prices**

It is accepted that the intent of separate prices is to allow the Owner to select a separate scope of work at a price which is declared below, and solely at the owner's discretion.

The following price has not been included in the Base Bid amount. The following prices, if accepted by the owner, shall include all labour, material, tools, equipment, overhead and profit, but exclude H.S.T. No other cost consideration shall be added to the contract for the scope of this work if accepted by the owner.

Separate Price #1: None at this Time

**B7. List of Subcontractors**

Civil Contractor \_\_\_\_\_

Mechanical Contractor \_\_\_\_\_

Electrical Contractor \_\_\_\_\_

Masonry Contractor \_\_\_\_\_

Glass and Glazing Contractor \_\_\_\_\_

Acoustics and Drywall Contractor \_\_\_\_\_

Structural Steel Contractor \_\_\_\_\_

Flooring Contractor \_\_\_\_\_

Painting Contractor \_\_\_\_\_

**B8. Project Superintendent / Supervisor**

The Owner requires the General Contractor provide a full time site supervisor for the duration of the project. A minimum of 5 years supervisory experience is required. List proposed personnel and their experience in the table below. Supervisory experience with firms other than the Bidder is acceptable to include on the list. The General Contractor shall indicate the person chosen in writing to the Owner within 5 days of contract award.

Name	Firm/Position	Qualifications/ Experience

**B9. Conflict of Interest**

I /We confirm that: (please check one)

\_\_\_\_\_ There is not nor was there any actual or perceived Conflict of Interest or any other type of unfair advantage in our submitting this Proposal or performing or observing the contractual obligations of the Contractor in the Agreement.

OR

\_\_\_\_\_ Complete with this bid submission is a declaration on company letterhead of situations which may be a Conflict of Interest or an instance of unfair advantage or appears as potentially a Conflict of Interest or unfair advantage in our company submitting this Proposal or the contractual obligations of the Contractor under the Agreement.

*Please note that the Board has the right to waive an actual or perceived conflict of interest as described in section 2.54 CONFLICT OF INTEREST.*

**B10. Agreement of Terms**

I/We hereby acknowledge and agree that I/we have read, accepted, and completed all Contract Terms and Conditions and Appendices.

It is the SCCDSB's intention to use a CCDC 2-2008 Stipulated Price Contract when establishing a contract with the successful proponent(s).

The undersigned acknowledges receipt of Addenda Numbers \_\_\_\_\_ through \_\_\_\_\_ inclusive, and that the price, or adjustment thereof, for all work required therein is included in this submission.

**This page must be signed below and returned with your submission for your bid to be accepted.**

I/We the undersigned are duly authorized to execute this Bid Submission on behalf of:

Company:

\_\_\_\_\_

Address:

\_\_\_\_\_

Name:

\_\_\_\_\_

Title:

\_\_\_\_\_

Signature:

\_\_\_\_\_

Date:

\_\_\_\_\_

Phone:

\_\_\_\_\_

Fax:

\_\_\_\_\_

Email:

\_\_\_\_\_

*Please refer to Appendix A: Bidder's Response Guide to ensure you include all necessary documentation with your bid submission*



**CCDC 2- 2008**

**Stipulated Price Contract**

**Supplementary Conditions**

November 10, 2009

2<sup>nd</sup> Revision: 1 February 2013

3<sup>rd</sup> Revision: 3 July 2013

---



## CCDC 2- 2008 Stipulated Price Contract

### Supplementary Conditions

The Canadian Construction Documents Committee (CCDC) issued their most current Stipulated Price Contract in 2008 (CCDC 2-2008) which has become a standard construction contract agreement for the majority of school boards in Ontario. However, owners and project architects generally customize the standard CCDC 2 -2008 document as presented for a number of reasons including risk management, biased language or because of ‘lessons learned’ from prior projects, and there are a number of clauses in the CCDC 2 -2008 document that require amending to meet the needs of school boards in managing their school construction contracts.

In 2009, the Simcoe Muskoka Catholic District School Board developed a set of CCDC 2 Supplementary Conditions based on a review of Supplementary Condition documents from numerous Ontario school boards and other owners. These Supplementary Conditions were reviewed by a specialist construction lawyer and were then shared with the Ministry of Education’s Capital Standards’ Expert Panel and the Operations, Maintenance and Construction (OMC) Committee.

Since 2009, several school boards have adopted the Supplementary Conditions and have used them with positive results. There, however, have been general contractors together with their construction associations that have objected to these terms. So to address these concerns, it was agreed that it would be beneficial to meet with the contractors and their representatives –the Ontario General Contractors Association (OGCA) . The Ontario Architects Association (OAA) also expressed an interest in working on the review committee.

Through the OMC’s Construction Practices Working Group –represented by Gerry Cullen –Halton DSB, Fred Chrystal – Ottawa Catholic DSB, Bryce Eldridge –York Catholic DSB, Allen Morrison –Simcoe Muskoka Catholic DSB and Glenn Clarke –Simcoe Muskoka Catholic DSB, two meetings were held with the senior representatives from the OGCA and general contracting firms and the OAA in November 2012 and January 2013.

The meetings were very productive in discussing concerns from all parties with the terms in the Supplementary Conditions template and from these reviews a new Supplementary Conditions template has been prepared. The template was not fully endorsed by all parties; however, there is now an understanding as to the rationale for the various terms in the Supplementary Conditions template.

The attached CCDC 2-2008 Supplementary Conditions document is being shared on a without prejudice basis for the considered use by other Ontario school boards with their construction contracts. Any school boards using these Supplementary Conditions are to review the document together with their legal counsel and project architect prior to use.

Should there be any questions or comments pertaining to these CCDC 2 -2008 Supplementary Conditions please contact Glenn Clarke at SMCDSB

Gerry Cullen, C.E.T.  
Chair –OMC Committee

Glenn Clarke, P.Eng  
OMC Construction Practices



The Standard Construction Document CCDC 2 2008 for a Stipulated Price Contract, 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:

## AGREEMENT BETWEEN OWNER AND CONTRACTOR

### ARTICLE A-3 – CONTRACT DOCUMENTS

3.1 Add the following to the list of *Contract Documents* in paragraph 3.1:

- Amendments to CCDC 2 – 2008
- *Drawings*
- *Specifications*
- Performance Bond
- Labour and Material Payment Bond

### ARTICLE A-5 – PAYMENT

5.1.3 Amend paragraph 5.1.3, in the first line, by deleting the words “...the issuance of the...” and replacing them with “...receipt of the *Consultant's*...”

5.3.1 Delete paragraph 5.3.1 in its entirety and replace it with the following:

Interest

.1 Should either party fail to make payments as they become due under the terms of the Contract or in an award by arbitration or court, interest shall also become due and payable on such unpaid amounts at 0% above the prime rate. Such interest shall be compounded on a monthly basis. The prime rate shall be the rate of interest quoted by the Bank of Canada for prime business loans, as it may change from time to time.

### ARTICLE A-9 – CONFLICT OF INTEREST

Add new Article A-9 – Conflict of Interest:

- 9.1 The *Contractor*, all of the *Subcontractors* and *Suppliers* and any of their respective advisors, partners, directors, officers, employees, agents, and volunteers shall not engage in any activity or provide any services where such activity or the provision of such services creates a conflict of interest (actually or potentially, in the sole opinion of the *Owner*) with the provision of the *Work* pursuant to the *Contract*. The *Contractor* acknowledges and agrees that a conflict of interest, as described in this Article A-9, includes, but is not limited to, the use of *Confidential Information* where the *Owner* has not specifically authorized such use.
- 9.2 The *Contractor* shall disclose to the *Owner*, in writing, without delay, any actual or potential situation that may be reasonably interpreted as either a conflict of interest or a potential conflict of interest, including the retention of any *Subcontractor* or *Supplier* that is directly or indirectly affiliated with or related to the *Contractor*.
- 9.3 The *Contractor* covenants and agrees that it will not hire or retain the services of any employee or previous employee of the *Owner* where to do so constitutes a breach by such employee or previous employee of the *Owner's* conflict of interest policy, as it may be amended from time to time, until after completion of the *Work* under the *Contract*.
- 9.4 It is of the essence of the *Contract* that the *Owner* shall not have direct or indirect liability to any *Subcontractor* or *Supplier*, and that the *Owner* relies on the maintenance of an arm's-length relationship between the *Contractor* and its *Subcontractors* and *Suppliers*. Consistent with this fundamental term of the *Contract*, the *Contractor* will not enter into any agreement or understanding with any *Subcontractor* or *Supplier*, whether as part of any contract or any written or oral collateral agreement, pursuant to which the parties thereto agree to cooperate in the presentation of a claim for payment against the *Owner*, directly or through the *Contractor*, where such claim is, in whole or in part, in respect of a disputed claim by the *Subcontractor* or *Supplier* against the *Contractor*, where the payment to the *Subcontractor* or *Supplier* by the *Contractor* is agreed to be conditional or contingent on the ability to recover those amounts or a portion thereof from the *Owner*, failing which the *Contractor* shall be saved harmless from all or a portion of those claims. The *Contractor* acknowledges that any such agreement would undermine the required arm's-length relationship and constitute a conflict of

interest. For greater certainty, the *Contractor* shall only be entitled to advance claims against the *Owner* for amounts pertaining to *Subcontractor* or *Supplier* claims where the *Contractor* has actually paid or unconditionally acknowledged liability for those claims or where those claims are the subject of litigation or binding arbitration between the *Subcontractor* or *Supplier* and the *Contractor* has been found liable for those claims.

- 9.5 Notwithstanding paragraph 7.1.2 of GC 7.1 - OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK, SUSPEND THE WORK OR TERMINATE THE CONTRACT, a breach of this Article by the *Contractor*, any of the *Subcontractors*, or any of their respective advisors, partners, directors, officers, employees, agents, and volunteers shall entitle the *Owner* to terminate the *Contract*, in addition to any other rights and remedies that the *Owner* has in the *Contract*, in law, or in equity.

## DEFINITIONS

Add the following new definitions:

### 27. Confidential Information

*Confidential Information* means all the information or material of the *Owner* that is of a proprietary or confidential nature, whether it is identified as proprietary or confidential or not, including but not limited to information and material of every kind and description (such as drawings and move-lists) which is communicated to or comes into the possession or control of the *Contractor* at any time, but *Confidential Information* shall not include information that:

- 1) is or becomes generally available to the public without fault or breach on the part of the *Contractor*, including without limitation breach of any duty of confidentiality owed by the *Contractor* to the *Owner* or to any third party, but only after that information becomes generally available to the public;
- 2) the *Contractor* can demonstrate to have been rightfully obtained by the *Contractor* from a third party who had the right to transfer or disclose it to the *Contractor* free of any obligation of confidence;
- 3) the *Contractor* can demonstrate to have been rightfully known to or in the possession of the *Contractor* at the time of disclosure, free of any obligation of confidence; or
- 4) is independently developed by the *Contractor* without use of any *Confidential Information*.

### 28. Construction Schedule

*Construction Schedule* means the schedule for the performance of the *Work* provided by the *Contractor* pursuant to GC 3.5, including any amendments to the *Construction Schedule* made pursuant to the *Contract Documents*.

### 29. Force Majeure

*Force Majeure* means any cause, beyond the *Contractor's* control, other than bankruptcy or insolvency, which prevents the performance by the *Contractor* of any of its obligations under the *Contract* and the event of *Force Majeure* was not caused by the *Contractor's* default or active commission or omission and could not be avoided or mitigated by the exercise of reasonable effort or foresight by the *Contractor*. *Force Majeure* includes *Labour Disputes*, fire, unusual delay by common carriers or unavoidable casualties, civil disturbance, acts, orders, legislation, regulations or directives of any government or other public authority, acts of a public enemy, war, riot, sabotage, blockage, embargo, lightning, earthquake, or acts of God.

### 30. Install

*Install* means install and connect. *Install* has this meaning whether or not the first letter is capitalized.

**31. Labour Dispute**

*Labour Dispute* means any lawful or unlawful labour problems, work stoppage, labour disruption, strike, job action, slow down, lock-outs, picketing, refusal to work or continue to work, refusal to supply materials, cessation or work or other labour controversy which does, or might, affect the *Work*.

**32. Overhead**

*Overhead* means all site and head office operations and facilities, all site and head office administration and supervision; all duties and taxes for permits and licenses required by the authorities having jurisdiction at the *Place of the Work*; all requirements of Division 1, including but not limited to submittals, warranty, quality control, calculations, testing and inspections; meals and accommodations; and, tools, expendables and clean-up costs.

**33. Request for Information/RFI**

*Request for Information* or *RFI* means written documentation sent by the *Contractor* to the *Owner* or to the *Owner's* representative or the *Consultant* requesting written clarification(s) and/or interpretation(s) of the *Drawings* and/or *Specifications*, *Contract* requirements and/or other pertinent information required to complete the *Work* of the *Contract* without applying for a change or changes to the *Work*.

**16. Amend Definition 16 by adding the following to the end of the Definition:**

*Provide* has this meaning whether or not the first letter is capitalized.

**GENERAL CONDITIONS OF THE STIPULATED PRICE CONTRACT**

1.0 Where a General Condition or paragraph of the General Conditions of the *Contract* is deleted by these amendments, the numbering of the remaining General Conditions or paragraphs shall remain unchanged, unless stated otherwise herein, and the numbering of the deleted item will be retained, unused.

**GC 1.1 CONTRACT DOCUMENTS**

1.1.6 Add the following to the end of paragraph 1.1.6:

The *Specifications* are divided into divisions and sections for convenience but shall be read as a whole and neither such division nor anything else contained in the *Contract Documents* will be construed to place responsibility on the *Owner* or the *Consultant* to settle disputes among the *Subcontractors* and *Suppliers* with respect to such divisions. The *Drawings* are, in part, diagrammatic and are intended to convey the scope of the *Work* and indicate general and appropriate locations, arrangements and sizes of fixtures, equipment and outlets. The *Contractor* shall obtain more accurate information about the locations, arrangements and sizes from study and coordination of the *Drawings*, including *Shop Drawings* and shall become familiar with conditions and spaces affecting those matters before proceedings with the *Work*. Where site conditions require reasonable minor changes where the change requires only the additional labour of one half hour or less, the *Contractor* shall make such changes at no additional cost to the *Owner*. Similarly, where known conditions or existing conditions interfere with new installation and require relocation, the *Contractor* shall include such relocation in the *Work*. The *Contractor* shall arrange and install fixtures and equipment in such a way as to conserve as much headroom and space as possible. The schedules are those portions of the *Contact Documents*, wherever located and whenever issued, which compile information of similar content and may consist of drawings, tables and/or lists.

1.1.7 Amend paragraph 1.1.7.1 by adding “Amendments to CCDC 2 – 2008” before “the Agreement between the Owner and the Contractor” and deleting the reference to “Supplementary Conditions”.

Add new paragraphs 1.1.7.5, 1.1.7.6, 1.1.7.7 and 1.1.7.8 as follows:

.5 noted materials and annotations on the *Drawings* shall govern over the graphic representation of the *Drawings*.

.6 finishes in the room finish schedules shall govern over those shown on the *Drawings*.

.7 architectural drawings shall have precedence over structural, plumbing, mechanical, electrical and landscape drawings insofar as outlining, determining and interpreting conflicts over the required design intent of all architectural layouts and architectural elements of construction, it being understood that the integrity and installation of the systems designed by the *Consultant* or its sub-*Consultants* are to remain with each of the applicable drawing disciplines.

.8 should reference standards contained in the *Specifications* conflict with the *Specifications*, the *Specifications* shall govern. Should reference standards and *Specifications* conflict with each other or if certain requirements of the *Specifications* conflict with other requirements of the *Specifications*, the more stringent requirements shall govern.

1.1.8 Delete paragraph 1.1.8 in its entirety and substitute as follows:

The *Consultant*, on behalf of the *Owner* shall provide the *Contractor* without charge, twelve (12) copies of the *Contract Documents*, exclusive of those required by jurisdictional authorities and the executed *Contract Documents*. Additional copies can be purchased by the *Contractor* at the *Consultant*'s cost of reproduction, handling and sales tax.

### GC 1.3 RIGHTS AND REMEDIES

1.3.2 Delete the word “No” from the beginning of paragraph 1.3.2 and substitute the words:

“Except with respect to the requirements set out in paragraphs 2.2.13, 6.4.1, 6.5.4, 6.6.1 and 8.2.2, no...”

### GC 1.4 ASSIGNMENT

Delete paragraph 1.4.1 in its entirety and replace with the following:

1.4.1 The *Contractor* shall not assign the *Contract*, or any portion thereof, without the prior written consent of the *Owner*. The *Owner* shall be entitled to assign the *Contract* to a corporation, partnership or other entity (the “Assignee”). Upon the assumption by the Assignee of the *Owner*'s obligations under the *Contract*, the *Owner* shall be released from its obligations under the *Contract*.

### GC 1.5 EXAMINATION OF DOCUMENTS AND SITE

Add new GC 1.5 – EXAMINATION OF DOCUMENTS AND SITE as follows:

1.5.1 The *Contractor* declares and represents that in tendering for the *Work*, and in entering into a *Contract* with the *Owner* for the performance of the *Work*, it has investigated for itself the character of the *Work* to be done, based on information generally available from a site visit. The *Contractor* has assumed and does hereby assume all risk of conditions now existing or arising in the course of the *Work* which might or could make the *Work*, or any items thereof more expensive in character, or more onerous to fulfil, than was contemplated or known when the tender was made or the *Contract* signed.

1.5.2 The *Contractor* also declares that in tendering for the *Work* and in entering into this *Contract*, the *Contractor* did not and does not rely upon information furnished by the *Owner* or any of its agents or servants respecting the nature or confirmation of the ground at the site of the *Work*, or the location, character, quality or quantity of the materials to be removed or to be employed in the construction of *Work*, or the character of the construction machinery and equipment or facilities needed to perform the *Work*, or the general and local performance of the work under the *Contract* and expressly waives and releases the *Owner* from all claims with respect to the said information with respect to the *Work*.

### GC 1.6 TIME IS OF THE ESSENCE OF THE CONTRACT

Add new GC 1.6 - TIME IS OF THE ESSENCE OF THE CONTRACT as follows:

1.6.1 All time limits stated in the *Contract Documents* are of the essence of the *Contract*.

### GC 2.2 ROLE OF THE CONSULTANT

2.2.7 Delete the words “Except with respect to GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER” .

2.2.13 Amend paragraph 2.2.13 by the addition of the following to the end of that paragraph:

If, in the opinion of the *Contractor*, the *Supplemental Instruction* involves an adjustment in the *Contract Price* or in the *Contract Time*, it shall, within ten (10) *Working Days* of receipt of a *Supplemental Instruction*, provide the *Consultant* with a notice in writing to that effect. Failure to provide written notification within the time stipulated in this paragraph 2.2.13 shall be deemed an acceptance of the *Supplemental Instruction* by the *Contractor*, without any adjustment in the *Contract Price* or *Contract Time*.

2.2.19 Add new paragraph 2.2.1.9 as follows:

The *Consultant* or the *Owner*, acting reasonably, may from time to time require the *Contractor* to remove from the *Project* any personnel of the *Contractor*, including project managers, superintendents or *Subcontractors*. Such persons shall be replaced by the *Contractor* in a timely fashion to the satisfaction of the *Consultant* or the *Owner*, as the case may be, at no cost to the *Owner*.

### GC 2.3 REVIEW AND INSPECTION OF THE WORK

2.3.2 Amend paragraph 2.3.2 by adding the words “and *Owner*” after the words “*Consultant*” in the second and third lines.

2.3.3 Delete paragraph 2.3.3 in its entirety and replace it with the following:

The *Contractor* shall furnish promptly two copies to the *Consultant* and one copy to the *Owner* of all certificates and inspection reports relating to the *Work*.

2.3.4 Insert the word “review” after the word “inspections” in the first line of paragraph 2.3.4.

2.3.5 In the first line after “*Consultant*”, add “or the *Owner*”.

2.3.8 Add a new paragraph 2.3.8 as follows:

The *Consultant* will conduct periodic reviews of the *Work* in progress, to determine general conformance with the requirements of the *Contract Documents*. Such reviews, or lack thereof, shall not give rise to any claims by the *Contractor* in connection with construction means, methods, techniques, sequences and procedures, nor in connection with construction safety at the *Place of Work*, responsibility for which belongs exclusively to the *Contractor*.

### GC 2.4 DEFECTIVE WORK

2.4.1 Amend GC 2.4.1 by inserting “, the *Owner* and/or its agent” in the first sentence following “rejected by the *Consultant*”.

Add new paragraphs 2.4.1.1 and 2.4.1.2:

2.4.1.1 The *Contractor* shall rectify, in a manner acceptable to the *Consultant* and to the *Owner through 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 through the Consultant*, adversely affects the day to day operations of the *Owner* or which, in the sole discretion of the *Consultant*, adversely affects the progress of the *Work*.

2.4.2 Delete paragraph 2.4.2 in its entirety and replace it with the following:

The *Contractor* shall promptly pay the *Owner* for costs incurred by the *Owner*, the *Owner's* own forces or the *Owner's* other contractors, for work destroyed or damaged or any alterations necessitated by the *Contractor's* removal, replacement or re-execution of defective work.

Add new paragraph 2.4.4 as follows:

- 2.4.4 Neither acceptance of the *Work* by the *Consultant* or the *Owner*, nor any failure by the *Consultant* or the *Owner* to identify, observe or warn of defective *Work* or any deficiency in the *Work* shall relieve the *Contractor* from the sole responsibility for rectifying such defect or deficiency at the *Contractor's* sole cost, even where such failure to identify, observe or warn is negligent.

### **GC 3.1 CONTROL OF THE WORK**

3.1.3 Add a new paragraph 3.1.3 as follows:

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 exact locations are not apparent, the *Contractor* shall immediately notify the *Consultant* in writing and obtain written instructions from the *Consultant* before proceedings with any part of the affected *Work*.

3.1.4 Add a new paragraph 3.1.4 as follows:

Notwithstanding the provisions of paragraphs 3.1.1 and 3.1.2, the *Owner* shall have access to the site at all times to monitor all aspects of construction. Such access shall in no circumstances affect the obligations of the *Contractor* to fulfill its contractual obligations.

### **GC 3.2 CONSTRUCTION BY OWNER OR OTHER CONTRACTORS**

3.2.2.1 Delete paragraph 3.2.2.1 in its entirety.

3.2.2.2 Delete paragraph 3.2.2.2 in its entirety.

3.2.2.3 Delete paragraph 3.2.2.3 in its entirety.

3.2.2.4 Delete paragraph 3.2.2.4 in its entirety.

3.2.3.2 Delete paragraph 3.2.3.2 and replace it with the following:

Co-ordinate and schedule the activities and work of other contractors and *Owner's* own forces with the *Work* of the *Contractor* and connect as specified or shown in the *Contract Documents*.

3.2.3.4 Add new paragraph 3.2.3.4 as follows:

Subject to GC 9.4 CONSTRUCTION SAFETY, for the *Owner's* own forces and for other contractors, assume overall responsibility for compliance with all aspects of the applicable health and safety legislation in force at the *Place of the Work*, including all of the responsibilities of the "constructor", pursuant to the *Occupational Health and Safety Act* (Ontario)..

### **GC 3.3 TEMPORARY WORK**

3.3.2 In paragraph 3.3.2, in the second line after the words "where required by law", insert "or the *Consultant*".

### **GC 3.4 DOCUMENT REVIEW**

3.4.1 Delete paragraph 3.4.1 in its entirety and substitute new paragraph 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 be undertaken 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 Documents*. Provided it has exercised the degree of care and skill described in this paragraph 3.4.1, 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 through the exercise of the required standard of care.

3.4.2 Add new paragraph 3.4.2. as follows:

If, at any time, the *Contractor* finds errors, inconsistencies, or omissions in the *Contract Documents* or has any doubt as to the meaning or intent of any part thereof, including laying out of the *Work*, the *Contractor* shall immediately notify the *Consultant*, and request instructions, a *Supplemental Instruction*, *Change Order*, or *Change Directive*, as the case may require, and the *Contractor* shall not proceed with the work affected until the *Contractor* has received such instructions, a *Supplemental Instruction*, *Change Order* or *Change Directive*. Neither the *Owner* nor the *Consultant* will be responsible for the consequences of any action of the *Contractor* based on oral instructions.

3.4.3 Add new paragraphs 3.4.3 as follows:

Errors, inconsistencies and/or omissions in the *Drawings* and/or *Specifications* which do not allow completion of the *Work* of the *Contract* shall be brought to the *Consultant's* attention prior to the execution of the *Contract* by means of an *RFI*.

### GC 3.5 CONSTRUCTION SCHEDULE

3.5.1 Delete paragraph 3.5.1 in its entirety and replace with the following:

The *Contractor* shall:

.1 within five (5) calendar days of receiving written confirmation of the award of the *Contract*, prepare and submit to the *Owner* and the *Consultant* for their review and acceptance, a construction schedule in the format indicated below that indicates the timing of the activities of the *Work* and provides sufficient detail of the critical events and their inter-relationship to demonstrate the *Work* will be performed in conformity with the *Contract Time* and in accordance with the *Contract Documents*. Such schedule is to include a delivery schedule for *Products* whose delivery is critical to the schedule for the *Work* or are required by the *Contract* to be included in a *Products* delivery schedule. The *Contractor* shall employ construction scheduling software, being the latest version of "Microsoft Project", that permits the progress of the *Work* to be monitored in relation to the critical path established in the schedule. The *Contractor* shall provide the schedule and any successor or revised schedules in both electronic format and hard copy. Once accepted by the *Owner* and the *Consultant*, the construction schedule submitted by the *Contractor* shall become the baseline construction schedule; and,

.2 provide the expertise and resources, such resources including manpower and equipment, as are necessary to maintain progress under the accepted baseline construction schedule or revised schedule accepted by the *Owner* pursuant to GC 3.5 CONSTRUCTION SCHEDULE; and,

.3 monitor the progress of the *Work* on a weekly basis relative to the baseline construction schedule, or any revised schedule accepted by the *Owner* pursuant to GC 3.5 CONSTRUCTION SCHEDULE, update and submit to the *Consultant* and *Owner* the electronic and hard copy schedule on a monthly basis, at a minimum, or as required by the *Consultant* and advise the *Consultant* and the *Owner* weekly in writing of any variation from the baseline or slippage in the schedule; and,

.4 provide overtime work without change to the *Contract Price* if such work is deemed necessary to meet the schedule; and,

.5 ensure that the *Contract Price* shall include all costs required to phase or stage the *Work*.

3.5.2 Add new paragraph 3.5.2 as follows:

If, at any time, it should appear to the *Owner* or the *Consultant* that the actual progress of the *Work* is behind schedule or is likely to become behind schedule, or if the *Contractor* has given notice of such to the *Owner* or the *Consultant* pursuant to

subparagraph 3.5.1.3, the *Contractor* shall, either at the request of the *Owner* or the *Consultant*, or following giving notice pursuant to subparagraph 3.5.1.3, take appropriate steps to cause the actual progress of the *Work* to conform to the schedule or minimize the resulting delay. Within five (5) calendar days of the request by the *Owner* or the *Consultant* or the notice being given pursuant to subparagraph 3.5.1.3, the *Contractor* shall produce and present to the *Owner* and the *Consultant* a plan demonstrating how the *Contractor* will achieve the recovery of the last accepted schedule.

- 3.5.3 The *Contractor* is responsible for performing the *Work* within the *Contract Time*. Any schedule submissions revised from the accepted baseline construction schedule or revised schedule accepted by the *Owner* pursuant to GC 3.5 CONSTRUCTION SCHEDULE, during construction are not deemed to be approved extensions to the *Contract Time*. All extensions to the *Contract Time* must be made in accordance with the *Contract Documents*.

### GC 3.6 SUPERVISION

Delete paragraph 3.6.1 in its entirety and replace with the following:

- 3.6.1 The *Contractor* shall employ a competent full-time superintendent, acceptable to the *Owner* and *Consultant*, who shall be in full time attendance at the *Place of Work* while the *Work* is being performed. The superintendent shall not be changed by the *Contractor* without valid reason which shall be provided in writing and shall not be changed without prior consultation with and agreement by the *Owner* and the *Consultant*. The *Contractor* shall replace the superintendent within 7 *Working Days* of the *Owner's* written notification, if the superintendent's performance is not acceptable to the *Owner*. The *Contractor* shall provide the *Owner* and the *Consultant* with the names, addresses and telephone numbers of the superintendent referred to in this paragraph 3.6.1 and other responsible persons who may be contacted for emergency and other reasons during non-working hours.

Delete paragraph 3.6.2 in its entirety and replace with the following:

- 3.6.2 The superintendent, and any project manager appointed by the *Contractor*, shall represent the *Contractor* at the *Place of Work* and shall have full authority to act on written instructions given by the *Consultant* and/or the *Owner*. Instructions given to the superintendent or the project manager shall be deemed to have been given to the *Contractor* and both the superintendent and any project manager shall have full authority to act on behalf of the *Contractor* and bind the *Contractor* in matters related to the *Contract*.

- 3.6.3 Add new paragraph 3.6.3 , 3.6.4, 3.6.5 and 3.6.6 as follows:

The *Owner* may, at any time during the course of the *Work*, request the replacement of the appointed representative(s). Immediately upon receipt of the request, the *Contractor* shall make arrangements to appoint an acceptable replacement, which is approved by the *Owner*.

- 3.6.4 The supervisory staff assigned to the *Project* shall also be fully competent to implement efficiently all requirements for scheduling, coordination, field engineering, reviews, inspections and submittals defined in the *Specifications*, and have minimum 5 years documented "Superintendent/Project Management" experience.
- 3.6.5 The *Consultant and Owner* shall reserve the right to review the record of experience and credentials of supervisory staff assigned to the *Project* prior to commencement of the *Work*.
- 3.6.6 A superintendent assigned to the *Work* shall be "Gold Seal Certified" as per the Canadian Construction Association; or a superintendent that can demonstrate the requisite experience and success related to the *Project* to the sole satisfaction of the *Owner*.

### GC 3.7 SUBCONTRACTORS AND SUPPLIERS

- 3.7.1.1 In paragraph 3.7.1.1 add to the end of the second line "including any warranties and service agreements which extend beyond the term of the *Contract*."
- 3.7.1.2 In subparagraph 3.7.1.2 after the words "the *Contract Documents*" insert the words "including any required surety bonding".

Delete paragraph 3.7.2. in its entirety and replace with the following:



- 3.7.2 Substitution of any *Subcontractor* and/or *Suppliers* after submission of the *Contractor's* bid will not be accepted unless a valid reason is given in writing to and approved by the *Owner*, whose approval may be arbitrarily withheld. The reason for substitution must be provided to the *Owner* and to the original *Subcontractor* and/or *Supplier* and the *Subcontractor* and/or *Supplier* shall be given the opportunity to reply to the *Contractor* and *Owner*. The *Contractor* shall be fully aware of the capability of each *Subcontractor* and/or *Supplier* included in its bid, including but not limited to technical ability, financial stability and ability to maintain the proposed construction schedule.

Add new paragraphs 3.7.7 and 3.7.8 as follows:

- 3.7.7 Where provided in the *Contract*, the *Owner* may assign to the *Contractor*, and the *Contractor* agrees to accept, any contract procured by the *Owner* for *Work* or services required on the *Project* that has been pre-tendered or pre-negotiated by the *Owner*, and upon such assignment, the *Owner* shall have no further liability to any party for such contract.
- 3.7.8 The *Contractor* covenants that each subcontract or supply contract which the *Contractor* enters into for the purpose of performing the *Work* shall expressly provide for the assignment thereof to the *Owner* (at the option of the *Owner*) and the assumption by the *Owner* of the obligations of the *Contractor* thereunder, upon the termination of the *Contract* and upon written notice by the *Owner* to the other parties to such subcontracts or supply contracts, without the imposition of further terms or conditions; provided, however, that until the *Owner* has given such notice, nothing herein contained shall be deemed to create any contractual or other liability upon the *Owner* for the performance of obligations under such subcontracts or supply contracts and the *Contractor* shall be fully responsible for all of its obligations and liabilities (if any) under such subcontracts and supply contracts.

### GC 3.8 LABOUR AND PRODUCTS

- 3.8.2 Delete paragraph 3.8.2 and substitute with the following:

*Products* provided shall be new and shall conform to all current applicable specifications of the Canadian Standards Association, Canadian Standards Board or General Standards Board, ASTM, National Building Code, provincial and municipal building codes, fire safety standards, and all governmental authorities and regulatory agencies having jurisdiction at the *Place of the Work*, unless otherwise specified. *Products* which are not specified shall be of a quality consistent with those specified and their use acceptable to the *Consultant*. *Products* brought on to the *Place of the Work* by the *Contractor* shall be deemed to be the property of the *Owner*, but the *Owner* shall be under no liability for loss thereof or damage thereto arising from any cause whatsoever. The said *Products* shall be at the sole risk of the *Contractor*. Workmanship shall be, in every respect, first class and the *Work* shall be performed in accordance with the best modern industry practice.

- 3.8.3 Amend paragraph 3.8.3 by adding the words, "..., agents, *Subcontractors* and *Suppliers*..." after the word "employees" in the first line.

Add new paragraphs 3.8.4, 3.8.5, 3.8.6, 3.8.7, 3.8.8 and 3.8.9 as follows:

- 3.8.4 Upon receipt of a written notice from the *Owner*, the *Contractor* shall immediately remove from the *Place of the Work*, tradesmen and labourers whose conduct jeopardizes the safety of the *Owner's* operations. Immediately upon receipt of the request, the **Contractor** shall make arrangements to appoint an acceptable replacement.
- 3.8.5 Upon receipt of written notice from the *Consultant*, the *Contractor* shall remove from the *Place of Work*, tradesmen and labourers whose *Work* is unsatisfactory to the *Consultant* or who are considered by the *Consultant* to be unskilled or otherwise objectionable.
- 3.8.6 The *Contractor* shall cooperate with the *Owner* and its representatives and shall take all reasonable and necessary actions to maintain stable and harmonious labour relations with respect to the *Work* at the *Place of the Work*, including cooperation to attempt to avoid *Work* stoppages, trade union jurisdictional disputes and other *Labour Disputes*. Any costs arising from labour disputes shall be at the sole expense of the *Contractor*.
- 3.8.7 The cost for overtime required beyond the normal *Working Day* to complete individual construction operations of a continuous nature, such as pouring or finishing of concrete or similar work, or *Work* that the *Contractor* elects to perform at overtime rates without the *Owner* requesting it, shall not be chargeable to the *Owner*.

- 3.8.8 All manufactured *Products* which are identified by their proprietary names or by part or catalogue number in the *Specifications* shall be used by the *Contractor*. No substitutes for such specified *Products* shall be used without the written approval of the *Owner* and the *Consultant*. Substitutes will only be considered by the *Consultant* when submitted in sufficient time to permit proper review and investigation. When requesting approval for the use of substitutes, the *Contractor* shall include in its submission any proposed change in the *Contract Price*. The *Contractor* shall use all proprietary *Products* in strict accordance with the manufacturer's directions. Where there is a choice of proprietary *Products* specified for one use, the *Contractor* may select any one of the *Products* so specified for this use.
- 3.8.9 Materials, appliances, equipment and other *Products* are sometimes specified by reference to brand names, proprietary names, trademarks or symbols. In such cases, the name of a manufacturer, distributor, *Supplier* or dealer is sometimes given to assist the *Contractor* to find a source *Supplier*. This shall not relieve the *Contractor* from its responsibility from finding its own source of supply even if the source names no longer supplies the *Product* specified. If the *Contractor* is unable to obtain the specified *Product*, the *Contractor* shall supply a substitute product equal to or better than the specified *Product*, as approved by the *Consultant* with no extra compensation. Should the *Contractor* be unable to obtain a substitute *Product* equal to or superior to the specified *Product* and the *Owner* accepts a different *Product*, the *Contract Price* shall be adjusted accordingly, as approved by the *Consultant*.

### **GC 3.9 DOCUMENTS AT THE SITE**

- 3.9.1 Delete paragraph 3.9.1 in its entirety and substitute the following:

The *Contractor* shall keep one copy of the current *Contract Documents*, *Supplemental Instructions*, contemplated *Change Orders*, *Change Orders*, *Change Directives*, cash allowance disbursement authorizations, reviewed *Shop Drawings*, submittals, reports and records of meeting at the *Place of the Work*, in good order and available to the *Owner* and *Consultant*.

### **GC 3.10 SHOP DRAWINGS**

- 3.10.1 Delete paragraph 3.10.1 in its entirety and replace with the following:

The *Contractor* shall provide shop drawings as described in the *Contract Documents* and as the *Consultant* may reasonably request.

- 3.10.9 Delete paragraph 3.10.9 in its entirety and substitute the following:

At the time of providing *Shop Drawings*, the *Contractor* shall advise the *Consultant* in writing of any deviations in *Shop Drawings* from the requirements of the *Contract Documents*. The *Consultant* shall indicate the acceptance of such deviation expressly in writing. Where manufacturers' literature is submitted in lieu of scaled drawings, it shall be clearly marked in ink, to indicate the specific items for which review is requested.

Add new paragraphs 3.10.13, 3.10.14, 3.10.15, 3.10.16, 3.10.17 and 3.10.18 as follows:

- 3.10.13 Reviewed *Shop Drawings* shall not authorize a change in the *Contract Price* and/or the *Contract Time*.
- 3.10.14 The *Contractor* shall prepare a *Shop Drawings* schedule acceptable to the *Owner* and the *Consultant* prior to the first application for payment. A draft of the proposed *Shop Drawings* schedule shall be submitted by the *Contractor* to the *Consultant* and the *Owner* for approval. The draft *Shop Drawings* schedule shall clearly indicate the phasing of *Shop Drawings* submissions. The *Contractor* shall periodically re-submit the *Shop Drawings* schedule to correspond to changes in the construction schedule.
- 3.10.15 Except where the parties have agreed to a different *Shop Drawings* schedule pursuant to paragraph 3.10.3, the *Contractor* shall comply with the requirements for *Shop Drawings* submissions stated in the *Specifications*.
- 3.10.16 The *Contractor* shall not use the term "by others" on *Shop Drawings* or other submittals. The related trade, *Subcontractor* or *Supplier* shall be stated.
- 3.10.17 Certain *Specifications* sections require the *Shop Drawings* to bear the seal and signature of a professional engineer. Such professional engineer must be registered in the jurisdiction of the *Place of the Work* and shall have expertise in the area of practice reflected in the *Shop Drawings*.

- 3.10.18 The *Consultant* will review and return *Shop Drawings* and submittals in accordance with the schedule agreed upon in paragraph 3.10.3, The *Contractor* shall allow the *Consultant* a minimum of 10 *Working Days* to review *Shop Drawings* from the date of receipt. If resubmission of *Shop Drawings* is required, a further 10 *Working Day* period is required for the *Consultant's* review.

### GC 3.11 USE OF THE WORK

- 3.11.1 In the second line between the words “permits and “or” add”, by direction of the *Owner* or *Consultant*.
- 3.11.3 Add new paragraph 3.11.3 as follows:

The *Owner* shall have the right to enter or occupy the *Work* in whole or in part for the purpose of placing fittings and equipment, or for other use before *Substantial Performance of the Work*, if, in the opinion of the *Consultant*, such entry and occupation does not prevent or substantially interfere with the *Contractor* in the performance of the *Contract* within the *Contract Time*. Such entry or occupation shall neither be considered as acceptance of the *Work*, nor in any way relieve the *Contractor* from its responsibility to complete the *Contract*.

### GC 3.12 CUTTING AND REMEDIAL WORK

Add new paragraphs 3.12.5 and 3.12.6 as follows:

- 3.12.5 Unless specifically stated otherwise in the *Specifications*, the *Contractor* shall do all cutting and making good necessary for the proper installation and performance of the *Work*.
- 3.12.6 To avoid unnecessary cutting, the *Contractor* shall lay out its work and advise the *Subcontractors*, when necessary, where to leave holes for installation of pipes and other work.

### GC 3.13 CLEAN UP

- 3.13.1 At the end of the paragraph 3.13.1, add the following:

Remove accumulated waste and debris at least once a week as a minimum or as required by the nature of the *Work*.

- 3.13.2 In paragraph 3.13.2, in the fourth line add the word “materials” between the word “tools” and the words “*Construction Equipment*”.
- 3.13.3 In paragraph 3.13.3, in the first and second lines add the word “materials” between the word “tools” and the words “*Construction Equipment*”.

Add new paragraphs 3.13.4, 3.13.5 and 3.13.6 as follows:

- 3.13.4 The *Contractor* shall clean up garbage during and after construction, and maintain the site in a neat and orderly condition on a daily basis. Prior to leaving the site at the end of construction, the *Contractor* shall make good all damage to the building and its components caused by the performance of the *Work* or by any *Subcontractor* or *Supplier*. The *Contractor* shall leave the site in a clean and finished state; remove all equipment and materials; remove all paint, stains, labels, dirt, etc. from the *Work*; and touch up all damaged painted areas.
- 3.13.5 Without limitation to or waiver of the *Owner's* other rights and remedies, the *Owner* shall have the right to back charge to the *Contractor* the cost of damage to the site caused by transportation in and out of the site by the *Contractor*, *Subcontractors* or *Suppliers*, if not repaired before final payment.
- 3.13.6 The *Contractor* shall dispose of debris at location and in a manner acceptable to the *Owner*, and authorities having jurisdiction in the area of the *Work* and the disposal area, and cover containers with tarpaulins tied in place to prevent scattering of debris on site and during transport.

### GC 3.14 CONTRACTOR STANDARD OF CARE

Add a new General Condition 3.14 – CONTRACTOR STANDARD OF CARE as follows:

- 3.14.1 In performing its services and obligations under the *Contract*, the *Contractor* shall exercise the 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 performance of the *Contractor's* obligations, duties and responsibilities shall be judged against this standard. The *Contractor* shall exercise the same standard of care, skill and diligence in respect of any *Products*, personnel or procedures which it may recommend to the *Owner*.
- 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 any of its appointed representatives, subject to the *Owner's* approval, in the event of death, incapacity, removal or resignation; and
  - .3 there are no pending, threatened or anticipated claims, liabilities or contingent liabilities that would have a material effect on the financial ability of the *Contractor* to perform its work under the *Contract*.

### GC 3.15 OCCUPANCY OF THE WORK

- 3.15.1 The *Owner* reserves the right to take possession of and use for any intended purpose any portion or all of the undelivered portion of the *Project* even though the *Work* may not be substantially performed, provided that such taking possession and use will not interfere, in any material way, with the progress of the *Work*. The taking of possession or use of any such portion of the *Project* shall not be deemed to be the *Owner's* acknowledgement or acceptance of the *Work* or the *Project*, nor shall it relieve the *Contractor* of any of its obligations under the *Contract*.
- 3.15.2 Whether the *Project* contemplates *Work* by way of renovations in buildings which will be in use or be occupied during the course of the *Work* or where the *Project* involves *Work* that is adjacent to a structure which is in use or is occupied, the *Contractor*, without in any way limiting its responsibilities under the *Contract*, shall take all reasonable steps to avoid interference with fire exits, building access and egress, continuity of electric power and all other utilities, to suppress dust and noise and to avoid conditions likely to propagate mould or fungus of any kind and all other steps reasonably necessary to promote and maintain the safety and comfort of the users and occupants of such structures or adjacent structures.

### GC 4.1 CASH ALLOWANCES

- 4.1.1 Delete the second sentence in paragraph 4.1.1
- 4.1.4 Delete paragraph 4.1.4 in its entirety and substitute the following:

Where the actual cost of the *Work* under any cash allowance exceeds the amount of the allowance, any unexpended amounts from other cash allowances shall be reallocated, at the *Consultant's* direction, to cover the shortfall, and, in that case, there shall be no additional amount added to the *Contract Price* for overhead and profit. Only where the actual cost of the *Work* under all cash allowances exceeds the total amount of all cash allowances shall the *Contractor* be compensated for the excess incurred and substantiated, plus an amount for overhead and profit on the excess only, as set out in the *Contract Documents*.

- 4.1.5 Delete paragraph 4.1.5 in its entirety and substitute the following:

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* without any adjustment for the *Contractor's* overhead and profit on such amount.

Add new paragraphs 4.1.8 and 4.1.9 as follows:

- 4.1.8 The *Owner* reserves the right to call, or to have the *Contractor* call, for competitive bids for portions of the *Work*, which are to be paid for from cash allowances.
- 4.1.9 Cash allowances cover the net cost to the *Contractor* of services, *Products*, *Construction Equipment*, freight, unloading, handling, storage, installation, provincial sales tax, and other authorized expenses incurred in performing any *Work*

stipulated under the cash allowances but does not include any *Value Added Taxes* payable by the *Owner* and the *Contractor*.

#### **GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER**

5.1.1 Delete paragraph 5.1.1 in its entirety.

5.1.2 Delete paragraph 5.1.2 in its entirety.

#### **GC 5.2 APPLICATIONS FOR PROGRESS PAYMENT**

Delete paragraph 5.2.2 in its entirety and substitute the following:

5.2.2 Applications for payment shall be dated the last day of each payment period, which is the last day of the month or an alternative day of the month agreed in writing by the parties. The amount claimed shall be for the value, proportionate to the amount of the *Contract*, or work performed and *Products* delivered and incorporated into the *Work* at that date. No amount claimed shall include products delivered and incorporated into the work, unless the products are free and clear of all security interests, liens and other claims of third parties.

Each application for payment, except the first, shall include a statutory declaration, in the current CCDC 9A form, up to the date of the application for payment. Each application for payment (including the first the holdback upon Substantial Performance, and final payments), shall also include:

.1 A certificate, issued by an agency or firm providing workers' compensation insurance to the *Contractor*, verifying that coverage is in force at the time of making the application for payment, and that coverage will remain in force for at least sixty (60) days thereafter.

.2 A declaration by the *Contractor* verifying that the performance of the *Work* is in compliance with all applicable regulatory requirements respecting environmental protection, first safety, public safety and occupational health and safety.

.3 A pre-approved schedule of values, supplied by the *Contractor*, for Divisions 1 through 14 of the *Work*, aggregating the total amount of the *Contract Price*.

.4 A separate pre-approved schedule of values, supplied by each *Subcontractor*, for each of Division 15, 16, and 17 of the *Work*, aggregating the total amount of the *Contract Price*.

.5 Invoices to support all claims against the cash allowance.

.6 An acceptable construction schedule pursuant to GC 3.5.

5.2.3 Amend paragraph 5.2.3 by adding the following to the end of that paragraph:

No amount claimed shall include *Products* delivered to the *Place of the Work* unless the *Products* are free and clear of all security interests, liens, and other claims of third parties.

5.2.7 Delete existing paragraph 5.2.7:

Add new paragraphs 5.2.7, and 5.2.8 as follows:

5.2.7 The *Contractor* shall prepare and maintain current as-built drawings which shall consist of the *Drawings* and *Specifications* revised by the *Contractor* during the *Work*, showing changes to the *Drawings* and *Specifications*, which current as-built drawings shall be maintained by the *Contractor* and made available to the *Consultant* for review with each application for progress payment. The *Consultant* shall retain a reasonable amount for the value of the as-built drawings not presented for review.

5.2.8 Prior to each application for payment, the *Contractor* and the *Consultant* shall jointly review the progress of the *Work*.

#### **GC 5.3 PROGRESS PAYMENT**

5.3.1.2 In the first sentence amend as follows: After the words “issue to the *Owner*” delete “and copy to the *Contractor*”. After the words “after the receipt of the” add “complete”.

5.3.1.3 Delete subparagraph 5.3.1.3 in its entirety and substitute as follows:

the *Owner* shall make payment to the *Contractor* on account as provided in Article A-5 of the Agreement – PAYMENT no later than 20 calendar days after the date of a complete certificate of payment is issued by the *Consultant*

Add new paragraphs 5.3.2 and 5.3.3 as follows:

5.3.2 If the *Contractor* fails to provide all documentation as required by GC 5.2 – APPLICATIONS FOR PROGRESS PAYMENT, the *Contractor* or *Owner* shall be entitled to return the application for progress payment to the *Contractor* for completion. The 10 day review period by the *Consultant* and 20 day payment period by the *Owner* will commence upon receipt of a complete application for progress payment.

5.3.3 Payment will be mailed to the *Contractor*. The payment date shall be the date the cheque is mailed. Delay resulting from mail shall not be used in calculating payment date.

#### **GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK**

5.4.2 Delete paragraph 5.4.2 in its entirety and substitute the following:

The *Consultant* will review the *Work* to verify the validity of the application and shall promptly, and in any event, no later than 30 calendar days after receipt of the *Contractor's* complete deficiency list and application, the *Consultant* shall:

.1 prepare a final deficiency list incorporating all items to be completed or corrected. Each item is to have an indicated value for correction or completion. Determination of the value is defined in GC 5.10 – DEFICIENCY HOLDBACK. The final deficiency list complete with values is to be included with the *Consultant's* draft verification and shall be reviewed with the *Owner* prior to 5.4.2.2.

.2 having completed 5.4.2.1, the *Consultant* shall:

.1 advise the *Contractor* in writing that the *Work* or the designated portion of the *Work* is not substantially performed and give reasons why, or

.2 state the date of *Substantial Performance of the Work* in a certificate and issue a copy of that certificate to each the *Owner* and the *Contractor*.

5.4.3 Delete paragraph 5.4.3 in its entirety and substitute the following:

Following the issuance of the certificate of *Substantial Performance of the Work*, the following shall apply to completing the *Work*:

.1 *Contractor* is to complete the *Work* within sixty (60) calendar days.

.2 No payments will be processed between *Substantial Performance of the Work* and the completion of the *Work*.

.3 The *Owner* reserves the right to contract out any or all unfinished *Work* if it has not been completed within sixty (60) days of *Substantial Performance of the Work* without prejudice to any other right or remedy and without affecting the warranty period. The cost of completing the *Work* shall be deducted from the *Contract Price*.

Add new paragraphs 5.4.4, 5.4.5 and 5.4.6:

5.4.4 Within the time prescribed by the construction/builder's lien legislation in force at the *Place of the Work*, or where there is no legislation or no time prescribed, within a reasonable time of receiving a copy of the certificate of *Substantial Performance of the Work* signed by the *Consultant*, the *Contractor* shall take whatever steps are required to publish or post a signed copy of the certificate, as is required by such legislation. If the *Contractor* fails to comply with this provision, the *Owner* may take the required steps pursuant to the legislation and charge the *Contractor* for any costs so incurred.

5.4.5 Prior to submitting its written application for *Substantial Performance of the Work*, the *Contractor* shall submit to the *Consultant* all:

.1 guarantees;

- .2 warranties;
- .3 certificates;
- .4 final testing and balancing reports;
- .5 distribution system diagrams;
- .6 spare parts;
- .7 maintenance manuals;
- .8 samples;
- .9 reports and correspondence from authorities having jurisdiction in the *Place of the Work*;
- .10 shop drawings;
- .11 inspection certificates;
- .12 red-lined record drawings from the construction trailer in two copies.

and other materials or documentation required to be submitted under the *Contract*, together with written proof acceptable to the *Owner* and the *Consultant* that the *Work* has been substantially performed in conformance with the requirements of municipal, governmental, and utility authorities having jurisdiction in the *Place of the Work*. The *Consultant* shall refuse to certify *Substantial Performance of the Work* if the submittals referred to in this paragraph 5.4.5 are not provided by the *Contractor*.

- 5.4.6 The *Owner* shall withhold, from amounts otherwise payable to the *Contractor*, an amount not to exceed one (1) percent of the *Contract Price* as security for the obligation of the *Contractor* to deliver two copies of the red-lined record drawings.

#### **GC 5.5 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK**

Add new subparagraph 5.5.1.3 as follows

- 5.5.1.3 submit a statement that no written notices of liens have been received by it

- 5.5.2 Amend paragraph 5.5.2 by adding the following sentence to the end of that paragraph:

A reserve fund may be retained by the *Owner* to secure the correction of deficiencies and/or warranty claims. Included in the reserve fund would be all *Consultant* and *Owner* costs related to the correction of deficiencies and/or warranty claims.

- 5.5.3 Delete paragraph 5.5.3 in its entirety.

- 5.5.5 Delete paragraph 5.5.5 in its entirety.

#### **GC 5.6 PROGRESSIVE RELEASE OF HOLDBACK**

Delete GC 5.6 in its entirety.

#### **GC 5.7 FINAL PAYMENT**

- 5.7.1 Delete paragraph 5.7.1 in its entirety and substitute as follows:

When the *Contractor* considers that the *Work* is completed, as defined in the lien legislation applicable to the *Place of the Work* or if such definition does not exist, in accordance with other applicable legislation, industry practice or provisions which may be agreed to between the parties, the *Contractor* shall submit an application for final payment. The *Contractor's* application for final payment shall be accompanied by any documents or materials not yet delivered pursuant to paragraph 5.4.5, together with complete and final as-built drawings and:

- .1 the *Contractor's* written request for release of the deficiency holdback, including a statement that no written notices of lien have been received by it;
- .2 a Statutory Declaration CCDC 9A-2001.

The *Work* shall be deemed not to be completed until all of the aforementioned documents have been delivered, and the *Owner* may withhold payment in respect of the delivery of any documents in an amount determined by the *Consultant* in accordance with the provisions of GC 5.8 - WITHHOLDING OF PAYMENT.

5.7.2 Delete from the first line of paragraph 5.7.2 the words, “calendar days” and substitute the words “*Working Days*”.

5.7.4 Delete from the second line of paragraph 5.7.4 the words, “ 5 calendar days after the issuance” and substitute the words “30 calendar days after receipt of”.

## **GC 5.8 WITHHOLDING OF PAYMENT**

Delete paragraph 5.8.1 and replace with the following:

5.8.1 If because of conditions reasonably beyond the control of the *Contractor*, there are items of work that cannot be performed, payment in full for that portion of the *Work* which has been performed as certified by the *Consultant* shall not be withheld or delayed by the *Owner* on account thereof, but the *Owner* may withhold, until the remaining portion of the *Work* is finished, only such an amount that the *Consultant* determines is sufficient and reasonable to cover the cost of performing such remaining work.

## **GC 5.10 DEFICIENCY HOLDBACK**

Add a new General Condition 5.10 as follows:

5.10.1 Notwithstanding any provisions contained in the *Contract Documents* concerning certification and release of monies to the *Contractor*, the *Owner* reserves the right to establish a deficiency holdback, at the time of the review for *Substantial Performance*, based on a 200% dollar value of the deficiencies listed by the *Consultant*. The value of work outstanding for the calculation of *Substantial Performance of the Work* under the *Construction Lien Act* (Ontario) shall utilize the 100% dollar value. No individual deficiency will be valued at less than two hundred dollars (\$200.00). The *Owner* shall retain the entire deficiency holdback amount until completion of all of the deficiencies listed by the *Consultant* to the satisfaction of the *Consultant*.

## **GC 6.1 OWNER’S RIGHT TO MAKE CHANGES**

Add new paragraphs 6.1.3, 6.1.4, 6.1.5, 6.1.6, 6.1.7 and 6.1.8 as follows:

6.1.3 The *Contractor* agrees that changes resulting from construction coordination, including but not limited to, site surface conditions, site coordination, and *Subcontractor and Supplier* coordination are included in the *Contract Price* and the *Contractor* shall be precluded from making any claim for a change in the *Contract Price* as a result of such changes.

6.1.4 Labour costs shall be actual, prevailing rates at the *Place of the Work* paid to workers, plus statutory charges on labour including WSIB, unemployment insurance, Canada pension, vacation pay, hospitalization and medical insurance. The *Contractor* shall provide these rates, when requested by the *Consultant*, for review and/or agreement.

6.1.5 Quotations for changes to the *Work* shall be accompanied by itemized breakdowns together with detailed, substantiating quotations or cost vouchers from *Subcontractors* and *Suppliers*, submitted in a format acceptable to the *Consultant* and including any costs associated with extensions in *Contract Time*.

6.1.6 When both additions and deletions covering related *Work* or substitutions are involved in a change to the *Work*, payment, including *Overhead* and profit, shall be calculated on the basis of the net difference, if any, with respect to that change in the *Work*.

6.1.7 No extension to the *Contract Time* shall be granted for changes in the *Work* unless the *Contractor* can clearly demonstrate that such changes significantly alter the overall construction schedule submitted at the commencement of the *Work*. Extensions of *Contract Time* and all associated costs, if approved pursuant to GC 3.4.2, are to be included in the relevant *Change Order*.



6.1.8 When a change in the *Work* is proposed or required, the *Contractor* shall within 10 calendar days submit to the *Consultant* for review a claim for a change in *Contract Price* and/or *Contract Time*. Should 10 calendar days be insufficient to prepare the submission, the *Contractor* shall within 5 calendar days, advise the *Consultant* in writing of the proposed date of submission of the claim. Claims submitted after the dates prescribed herein will not be considered.

## GC 6.2 CHANGE ORDER

6.2.1 Add after the last sentence in the paragraph:

The adjustment in the *Contract Time* and the *Contract Price* shall include an adjustment, if any, for delay or for the impact that the change in the *Work* has on the *Work* of the *Contractor*, and once such adjustment is made, the *Contractor* shall be precluded from making any further claims for delay or impact with respect to the change in the *Work*.

Add new paragraph 6.2.3 as follows:

6.2.3 The value of a change shall be determined in one or more of the following methods as directed by the *Consultant*.

- .1 by estimate and acceptance of a lump sum;
- .2 by negotiated unit prices which include the *Contractor's Overhead* and profit, or;
- .3 by the actual cost to the *Owner*, such costs to be the actual cost after all credits included in the change have been deducted, plus the following ranges of mark-up on such costs:
  - .1 for *Change Orders* with a value of \$0 to \$15,000 the total *Subcontractor/Supplier* mark-up including *Overhead* and profit shall be 10% and the total *Contractor* mark-up including overhead and profit shall be 5%.
  - .2 For *Change Orders* in excess of \$15,000, the total *Subcontractor/Supplier* mark-up including *Overhead* and profit shall be 5% and the total *Contractor* mark-up including *Overhead* and profit shall be 3%.

Add new paragraph 6.2.4 as follows:

6.2.4 All quotations will be submitted in a complete manner listing:

- .1 quantity of each material,
- .2 unit cost of each material,
- .3 man hours involved,
- .4 cost per hour,
- .5 *Subcontractor* quotations submitted listing items 1 to 4 above and item 6 below.
- .6 mark-up

Add new paragraph 6.2.5 as follows:

6.2.5 The *Owner* and the *Consultant* will not be responsible for delays to the *Work* resulting from late, incomplete or inadequately broken down valuations submitted by the *Contractor*.

## GC 6.3 CHANGE DIRECTIVE

6.3.6.1 Amend paragraph 6.3.6.1 by deleting the final period and adding as follows:

- .1 Ten percent (10%) for profit plus five percent (5%) for overhead on work by the *Contractor's* own forces up to the value of \$15,000 and five percent (5%) for profit plus three percent (3%) for *Overhead* on work by the *Contractor's* own forces in excess of \$15,000 and,
- .2 Ten percent (10%) fee on amounts paid to *Subcontractors* or *Suppliers* under subparagraph 6.3.7.9 for changes up to the value of \$15,000 and five percent (5%) on changes over \$15,000.

Unless a *Subcontractor's* or *Supplier's* price has been approved by the *Owner*, the *Subcontractor* or *Supplier* shall be entitled to its actual net cost as determined in accordance with paragraph 6.3.7, plus ten percent (10%) for profit and five percent (5%) for *Overhead* on such actual net cost for changes in the *Work*, up to the value of \$15,000 and five percent (5%) for profit and three percent (3%) for overhead on such actual net cost changes in the *Work* in excess of \$15,000.

6.3.6.2 Delete paragraph 6.3.6.2 and replace it with the following:

If a change in the *Work* results in a net decrease in the *Contract Price* in excess of \$15,000 the amount of the credit shall be the net cost, with deduction for *Overhead* and profit. If a change in the *Work* results in a net decrease in the *Contract Price* of \$15,000 or less, the amount of the credit shall be the net cost, without deduction for *Overhead* or profit.

6.3.7.1 In subparagraph 6.3.7.1 insert “while directly engaged in the work attributable to the change” after the words “in the direct employ of the *Contractor*”.

6.3.7 At the end of paragraph 6.3.7 add the following:

All other costs attributable to the change in the *Work* including the costs of all administrative or supervisory personnel are included in *Overhead* and profit calculated in accordance with the provisions of paragraph 6.1.5 of GC6.1 – OWNER'S RIGHT TO MAKE CHANGES.

#### **GC 6.4 CONCEALED OR UNKNOWN CONDITIONS**

6.4.1 Delete paragraph 6.4.1 and replace with the following:

6.4.1.1 Prior to the submission of the bid on which the *Contract* was awarded, the *Contractor* confirms that it carefully investigated the *Place of the Work* and carried out such tests as it deemed appropriate and, in doing so, applied to that investigation the degree of care and skill required by paragraph 3.14.1.

6.4.1.2 No claim by the *Contractor* will be considered by the *Owner* or the *Consultant* in connection with conditions which could reasonably have been ascertained by such investigation or other due diligence undertaken prior to the execution of the *Contract*.

6.4.2 Amend paragraph 6.4.2 by adding a new first sentence as follows:

Having regard to paragraph 6.4.1, if the *Contractor* believes that the conditions of the *Place of the Work* differ materially from those reasonably anticipated, differ materially from those indicated in the *Contract Documents* or were concealed from discovery notwithstanding the conduct of the investigation described in paragraph 6.4.1, it shall provide the *Owner* and the *Consultant* with *Notice in Writing* no later than five (5) *Working Days* after the first observation of such conditions.

Amend the existing second sentence of paragraph 6.4.2 in the second line, following the word “materially” by adding the words “or were concealed from discovery notwithstanding the conduct of the investigation described in paragraph 6.4.1,”

6.4.3 Delete paragraph 6.4.3 in its entirety and substitute the following:

If the *Consultant* makes a finding pursuant to paragraph 6.4.2 that no change in the *Contract Price* or the *Contract Time* is justified, the *Consultant* shall report in writing the reasons for this finding to the *Owner* and the *Contractor*.

Add new paragraph 6.4.5 as follows:

6.4.5 No claims for additional compensation or for an extension of *Contract Time* shall be allowed if the *Contractor* fails to give *Notice in Writing* to the *Owner* or *Consultant*, as required by paragraph 6.4.2.

#### **GC 6.5 DELAYS**

6.5.1 Delete the words after the word “for” in the fourth line of paragraph 6.5.1, and add the words “...reasonable direct costs directly flowing from the delay, but excluding any consequential, indirect or special damages (including, without limitation, loss of profits, loss of opportunity or loss of productivity).”

6.5.2 Delete the words after the word “for” in the fourth line of paragraph 6.5.2, and add the words “...reasonable direct costs directly flowing from the delay, but excluding any consequential, indirect or special damages (including, without limitation, loss of profits, loss of opportunity or loss of productivity).”

6.5.3 Delete paragraph 6.5.3 in its entirety and replace with the following:

If the *Contractor* is delayed in the performance of the *Work by Force Majeure*, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. The extension of time shall not be less than the time lost as a result of the event causing the delay, unless the *Contractor* agrees to a shorter extension. The *Contractor* shall not be entitled to payment for costs incurred by such delays unless such delays result from the actions of the *Owner*.

Delete paragraph 6.5.4 in its entirety and replace with the following:

6.5.4 No extension or compensation shall be made for delay or impact on the *Work* unless notice in writing of a claim is given to the *Consultant* not later than ten (10) *Working Days* after the commencement of the delays or impact on the *Work*, provided however, that, in the case of a continuing cause of delay or impact on the *Work*, only one notice of claim shall be necessary.

Add new paragraphs 6.5.6, 6.5.7 and 6.5.8 as follows:

6.5.6 If the *Contractor* is delayed in the performance of the *Work* by an act or omission of the *Contractor* or anyone directly or indirectly employed or engaged by the *Contractor*, or by any cause within the *Contractor’s* control, then the *Contract Time* may be extended for such reasonable time as the *Owner* may decide in consultation with the *Consultant* and 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, but not limited to, the cost of all additional services required by the *Owner* from the *Consultant* or any sub-consultants, project managers, or others employed or engaged by the *Owner*, and in particular, the costs 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 provision of these General Conditions, and any later or actual date of *Substantial Performance of the Work* achieved by the *Contractor*.

6.5.7 Without limiting the obligations of the *Contractor* described in GC 3.2 – CONSTRUCTION BY OWNER OR OTHER CONTRACTORS or GC 9.4 – CONSTRUCTION SAFETY, the *Owner* or *Consultant* may, by notice in writing, direct the *Contractor* to stop the *Work* where the *Owner* or *Consultant* determines that there is an imminent risk to the safety of persons or property at the *Place of the Work*. In the event that the *Contractor* receives such notice, it shall immediately stop the *Work* and secure the site. The *Contractor* shall not be entitled to an extension of the *Contract Time* or to an increase in the *Contract Price* unless the resulting delay, if any, would entitle the *Contractor* to an extension of the *Contact Time* or the reimbursement of the *Contractor’s* costs as provided in paragraphs 6.5.1, 6.5.2 or 6.5.3.

6.5.8 No claim for delay shall be made and the *Contract Time* shall not be extended due to climatic conditions or arising from the *Contractor’s* efforts to maintain the *Contract* schedule.

#### **GC 6.6 CLAIMS FOR A CHANGE IN THE CONTRACT PRICE**

Delete GC 6.6 in its entirety.

#### **GC 7.1 OWNER’S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR’S RIGHT TO CONTINUE WITH THE WORK OR TERMINATE THE CONTRACT**

Revise the heading to read “**OWNER’S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR’S RIGHT TO CONTINUE WITH THE WORK, SUSPEND THE WORK OR TERMINATE THE CONTRACT**”

Add a new subparagraph 7.1.3.4 as follows:

7.1.3.4 An “acceptable schedule” as referred to in subparagraph 7.1.3.2. means a schedule approved by the *Consultant* and the *Owner* wherein the default can be corrected within the balance of the *Contract Time* and shall not cause delay to any other

aspect of the *Work* or the work of other contractors, and in no event shall it be deemed to give a right to extend the *Contract Time*.

7.1.4.1 Delete sentence and replace with the following:

Correct such default and deduct the cost, including *Owner's* expenses, thereof from any payment then or thereafter due the *Contractor*.

7.1.5.3 In subparagraph 7.1.5.3 delete the words: "however, if such cost of finishing the *Work* is less than the unpaid balance of the *Contract Price*, the *Owner* shall pay the *Contractor* the difference;"

Delete paragraph 7.1.6 in its entirety and add new paragraphs 7.1.6, 7.1.7, 7.1.8, 7.1.9 and 7.1.10 as follows:

7.1.6 In addition to its right to terminate the Contract set out herein, the *Owner* may terminate this *Contract* at any time for any other reason and without cause upon giving the *Contractor* fifteen (15) *Working Days Notice in Writing* to that effect. In such event, the *Contractor* shall be entitled to be paid for all *Work* performed including reasonable profit, for loss sustained upon *Products* and *Construction Equipment*, and such other damages as the *Contractor* may have sustained as a result of the termination of the *Contract*, but in no event shall the *Contractor* be entitled to be compensated for any loss of profit on unperformed portions of the *Work*, or indirect, special, or consequential damages incurred.

7.1.7 The *Owner* may suspend *Work* under this *Contract* at any time for any reason and without cause upon giving the *Contractor Notice in Writing* to that effect. In such event, the *Contractor* shall be entitled to be paid for all *Work* performed to the date of suspension and be compensated for all actual costs incurred arising from the suspension, including reasonable profit, for loss sustained upon *Products* and *Construction Equipment*, and such other damages as the *Contractor* may have sustained as a result of the suspension of the *Work*, but in no event shall the *Contractor* be entitled to be compensated for any indirect, special, or consequential damages incurred. In the event that the suspension continues for more than thirty (30) calendar days, the *Contract* shall be deemed to be terminated and the provisions of paragraph 7.1.6 shall apply.

7.1.8 In the case of either a termination of the *Contract* or a suspension of the *Work* under GC 7.1 - OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK, SUSPEND THE WORK, OR TERMINATE THE CONTRACT or GC 7.2 - CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the *Contractor* shall use its best commercial efforts to mitigate the financial consequences to the *Owner* arising out of the termination or suspension, as the case may be.

7.1.9 Upon the resumption of the *Work* following a suspension under GC 7.1 - OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK, SUSPEND THE WORK OR TERMINATE THE CONTRACT or GC 7.2 - CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the *Contractor* will endeavour to minimize the delay and financial consequences arising out of the suspension.

7.1.10 The *Contractor's* obligations under the *Contract* as to quality, correction, and warranty of the *Work* performed by the *Contractor* up to the time of termination or suspension shall continue after such termination of the *Contract* or suspension of the *Work*.

## **GC 7.2 CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT**

7.2.3.1 Delete subparagraph 7.2.3.1 in its entirety.

7.2.3.4 In subparagraph 7.2.3.4, delete the words "except for GC 5.1 - FINANCING INFORMATION REQUIRED OF THE OWNER".

Renumber paragraph 7.2.5 as paragraph 7.2.6. Add a new paragraph 7.2.5 as follows:

7.2.5 If the default cannot be corrected within the 5 *Working Days* specified in paragraph 7.2.4, the *Owner* shall be deemed to have cured the default if it:

- .1 commences correction of the default within the specified time;
- .2 provides the *Contractor* with an acceptable schedule for such correction; and,
- .3 completes the correction in accordance with such schedule.

Delete paragraph 7.2.6 entirely and replace with the following:

- 7.2.6 If the *Contractor* terminates the *Contract* under the conditions described in GC 7.2 – CONTRACTOR’S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the *Contractor* shall be entitled to be paid for all *Work* performed to the date of termination, as determined by the *Consultant*. The *Contractor* shall also be entitled to recover the direct costs associated with termination, including the costs of demobilization and losses sustained on *Products* and *Construction Equipment*. The *Contractor* shall not be entitled to any recovery for any special, indirect or consequential losses, including loss of profit.

Add new paragraphs 7.2.7, 7.2.8 and 7.2.9 as follows

- 7.2.7 The *Contractor* shall not be entitled to give notice of the *Owner’s* default or terminate the *Contract* in the event the *Owner* withholds certificates or payment or both in accordance with the *Contract* because of:
- (a) the *Contractor’s* failure to pay all legitimate claims promptly, or
  - (b) the failure of the *Contractor* to discharge construction liens which are registered against the title to the *Place of the Work*.
- 7.2.8 The *Contractor’s* obligations under the *Contract* as to quality, correction and warranty of the *Work* performed by the *Contractor* up to the effective date of termination shall continue in force and shall survive termination by the *Contractor* in accordance with paragraph 7.2.4.
- 7.2.9 If the *Contractor* suspends the *Work* or terminates the *Contract* as provided for in GC 7.2 – CONTRACTOR’S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the *Contractor* shall ensure the site and the *Work* are left in a safe, secure condition as required by authorities having jurisdiction at the *Place of the Work* and the *Contract Documents*.

## GC 8.2 NEGOTIATION, MEDIATION AND ARBITRATION

- 8.2.1 Amend paragraph 8.2.1 by changing part of the second line from “shall appoint a *Project Mediator*” to “may appoint a *Project Mediator*, except that such an appointment shall only be made if both the *Owner* and the *Contractor* agree.”
- 8.2.4 Amend paragraph 8.2.4 by changing part of the second line from “the parties shall request the *Project Mediator*” to “and subject to paragraph 8.2.1 the parties may request the *Project Mediator*”.

Delete paragraphs 8.2.6, 8.2.7 and 8.2.8 in their entirety.

Add new paragraph 8.2.6 as follows:

- 8.2.6 The dispute may be finally resolved by arbitration under the Rules for Arbitration of Construction Disputes as provided in CCDC 40 in effect at the time of bid closing, provided that both the *Contractor* and the *Owner* agree. If the *Contractor* and the *Owner* agree to resolve the dispute by arbitration, the arbitration shall be conducted in the jurisdiction of the *Place of the Work*.

## GC 9.1 PROTECTION OF WORK AND PROPERTY

Delete subparagraph 9.1.1.1 in its entirety and substitute the following:

- 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;

Delete paragraph 9.1.2 in its entirety and substitute as follows:

- 9.1.2 Before commencing any *Work*, the *Contractor* shall determine the locations of all underground or hidden utilities and structures indicated in or inferable from the *Contract Documents*, or that are inferable from an inspection of the *Place of the Work* exercising the degree of care and skill described in paragraph 3.14.1.

Add new paragraph 9.1.5 as follows:

- 9.1.5 With respect to any damage to which paragraphs 9.1.3 or 9.1.4 apply, the *Contractor* shall neither undertake to repair or replace any damage whatsoever to the work of other contractors, or to adjoining property, nor acknowledge that the same was caused or occasioned by the *Contractor*, without first consulting the *Owner* and receiving written instructions as to the course of action to be followed from either the *Owner* or the *Consultant*. Where, however, there is danger to life, the environment, or public safety, the *Contractor* shall take such emergency action as it deems necessary to remove the danger.

## **GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES**

Add a new subparagraph 9.2.5.5 as follows:

- 9.2.5.5 in addition to the steps described in subparagraph 9.2.5.3, take any further steps it deems necessary to mitigate or stabilize any conditions resulting from encountering toxic or hazardous substances or materials.

- 9.2.6 Add the following to paragraph 9.2.6, after the word “responsible” in the second line:

...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 damages to the property of the *Owner* or others,...

- 9.2.8 Add the following to paragraph 9.2.8, after the word “responsible” in the second line:

...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 damages to the property of the *Owner* or others,...

Add new paragraph 9.2.10 as follows:

- 9.2.10 The *Contractor*, *Subcontractors* and *Suppliers* shall not bring on to the *Place of the Work* any toxic or hazardous substances and materials except as required in order to perform the *Work*. If such toxic or hazardous substances or materials are required, storage in quantities sufficient to allow work to proceed to the end of any current work week only shall be permitted. All such toxic and hazardous materials and substances shall be handled and disposed of only in accordance with all laws and regulations that are applicable at the *Place of the Work*.

## **GC 9.4 CONSTRUCTION SAFETY**

Delete paragraph 9.4.1 in its entirety and substitute as follows:

- 9.4.1 The *Contractor* shall be solely responsible for construction safety at the *Place of the Work* and for compliance with the rules, regulations, and practices required by the applicable construction health and safety legislation and shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the *Work*.

Add new paragraphs 9.4.2 to 9.4.10 as follows:

- 9.4.2 Prior to the commencement of the *Work*, the *Contractor* shall submit to the *Owner*:

.1 the evidence of workers’ compensation compliance required by GC 10.4.1;

- .2 copies of the *Contractor's* insurance policies having application to the *Project* or certificates of insurance, at the option of the *Owner*;
  - .3 documentation setting out the *Contractor's* in-house safety programs;
  - .4 copies of any documentation or notices to be filed or delivered to the authorities having jurisdiction for the regulation of occupational health and safety at the *Place of the Work*.
- 9.4.3 The *Contractor* shall indemnify and save harmless the *Owner*, its agents, trustees, officers, directors, employees, consultants, successors, appointees, and assigns from and against the consequences of any and all safety infractions committed by the *Contractor* under the occupational health and safety legislation in force at the *Place of the Work* including the payment of legal fees and disbursements on a substantial indemnity basis.
- 9.4.4 The *Owner* undertakes to include in its contracts with other contractors and in its instructions to its own forces the requirement that the other contractor or its own forces, as the case may be, comply with the policies and procedures of and the directions and instructions from the *Contractor* with respect to occupational health and safety and related matters.
- 9.4.5 If the *Owner* is of the reasonable opinion that the *Contractor* has not taken such precautions as are necessary to ensure compliance with the requirements of paragraph 9.4.1, the *Owner* may take any remedial measures which it deems necessary, including stopping the performance of all or any portion of the *Work*, and the *Owner* may use its employees, the *Contractor*, any *Subcontractor* or any other contractors to perform such remedial measures.
- 9.4.6 The *Contractor* shall file any notices or any similar document required pursuant to the *Contract* or the safety regulations in force at the *Place of the Work*. This duty of the *Contractor* will be considered to be included in the *Work* and no separate payment therefore will be made to the *Contractor*.
- 9.4.7 Unless otherwise provided in the *Contract Documents*, the *Contractor* shall develop, maintain and supervise for the duration of the *Work* a comprehensive safety program that will effectively incorporate and implement all required safety precautions. The program shall, at a minimum, respond fully to the applicable safety regulations and general construction practices for the safety of persons or property, including, without limitation, any general safety rules and regulations of the *Owner* and any workers' compensation or occupational health and safety statutes or regulations in force at the *Place of the Work*.
- 9.4.8 The *Contractor* shall provide a copy of the safety program described in paragraph 9.4.7 hereof to the *Consultant* for delivery to the *Owner* prior to the commencement of the *Work*, and shall, ensure, as far as it is reasonably practical to do so, that every employer and worker performing work in respect of the *Project* complies with such program.
- 9.4.9 The *Contractor* shall arrange regular safety meetings, and shall supply and maintain, at its own expense, at its office or other well-known place at the job site, safety equipment necessary to protect the workers and general public against accident or injury as prescribed by the authorities having jurisdiction at the *Place of the Work*, including, without limitation, articles necessary for administering first-aid to any person and an emergency procedure for the immediate removal of any injured person to a hospital or a doctor's care.
- 9.4.10 The *Contractor* shall promptly report in writing to the *Owner* and the *Consultant* all accidents of any sort arising out of or in connection with the performance of the *Work*, whether on or adjacent to the job site, giving full details and statement of witnesses. If death or serious injuries or damages are caused, the accident shall be promptly reported by the *Contractor* to the *Owner* and the *Consultant* by telephone or messenger in addition to any reporting required under the applicable safety regulations.

## GC 10.1 TAXES AND DUTIES

- 10.1.2 Amend paragraph 10.1.2 by adding the following sentence to the end of the paragraph:

For greater certainty, the *Contractor* shall not be entitled to any mark-up for overhead or profit on any increase in such taxes and duties and the *Owner* shall not be entitled to any credit relating to mark-up for overhead or profit on any decrease in such taxes. The *Contractor* shall provide a detailed breakdown of additional taxes if requested by the *Owner* in a form satisfactory to the *Owner*.

Add new paragraph 10.1.3 as follows:

- 10.1.3 Where the *Owner* is entitled to an exemption or a recovery of sales taxes, customs duties, excise taxes or *Value Added Taxes* applicable to the *Contract*, the *Contractor* shall, at the request of the *Owner*, assist with the application for any exemption, recovery or refund of all such taxes and duties and all amounts recovered or exemptions obtained shall be for the sole benefit of the *Owner*. The *Contractor* agrees to endorse over to the *Owner* any cheques received from the federal or provincial governments, or any other taxing authority, as may be required to give effect to this paragraph.

#### **GC 10.2 LAWS, NOTICES, PERMITS, AND FEES**

- 10.2.5 Amend paragraph 10.2.5 by addition the words “Subject to paragraph 3.4” at the beginning of the paragraph. Add the following to the end of the second sentence:

...and no further *Work* on the affected components of the *Contract* shall proceed until these directives have been obtained by the *Contractor* from the *Consultant*.

- 10.2.6 Amend paragraph 10.2.6 by adding the following sentence to the end of the paragraph:

In the event the *Owner* suffers loss or damage as a result of the *Contractor's* failure to comply with paragraph 10.2.5 and notwithstanding any limitations described in paragraph 12.1.1, the *Contractor* agrees to indemnify and to hold harmless the *Owner* and the *Consultant* from and against any claims, demands, losses, costs, damages, actions suits or proceedings resulting from such failure by the *Contractor*.

Add new paragraph 10.2.8 as follows:

- 10.2.8 The *Contractor* shall furnish all certificates that are required or given by the appropriate governmental authorities as evidence that the *Work* as installed conforms with the laws and regulations of authorities having jurisdiction, including certificates of compliance for the *Owner's* occupancy or partial occupancy. The certificates are to be final certificates giving complete clearance of the *Work*, in the event that such governmental authorities furnish such certificates.

#### **GC 10.4 WORKERS' COMPENSATION**

- 10.4.1 Delete paragraph 10.4.1 and replace with the following:

Prior to commencing the *Work*, and with each and every application for payment thereafter, including the *Contractor's* application for payment of the holdback amount following *Substantial Performance of the Work* and again with the *Contractor's* application for final payment, the *Contractor* shall provide evidence of compliance with workers' compensation legislation in force at the *Place of the Work*, including payments due thereunder.

#### **GC 11.1 INSURANCE**

Delete entirety of general condition and CCDC 41 and replace with the following:

- 11.1** Without restricting the generality of GC 12 – INDEMNIFICATION, the *Contractor* shall provide, maintain, and pay for the insurance coverages specified in GC 11.1 – INSURANCE. Unless otherwise stipulated, the duration of each insurance policy shall be from the date of commencement of the *Work* until the expiration of the warranty periods set out in the *Contract Documents*. Prior to commencement of the *Work* and upon the placement, renewal, amendment, or extension of all or any part of the insurance, the *Contractor* shall promptly provide the *Owner* with confirmation of coverage and, if required, a certified true copy of the policies certified by an authorized representative of the insurer together with copies of any amending endorsements.

##### **.1 General Liability Insurance**

General liability insurance shall be in the name of the *Contractor*, with the *Owner* and the *Consultant* named as additional insureds, with limits of not less than \$5,000,000.00 inclusive per occurrence for bodily injury, death, and damage to



property, including loss of use thereof, for itself and each of its employees, *Subcontractors* and/or agents. The insurance coverage shall not be less than the insurance required by IBC Form 2100, or its equivalent replacement, provided that IBC Form 2100 shall contain the latest edition of the relevant CCDC endorsement form. To achieve the desired limit, umbrella, or excess liability insurance may be used. All liability coverage shall be maintained for completed operations hazards from the date of *Substantial Performance of the Work*, as set out in the certificate of *Substantial Performance of the Work*, on an ongoing basis for a period of 6 years following *Substantial Performance of the Work*. Where the *Contractor* maintains a single, blanket policy, the addition of the *Owner* and the *Consultant* is limited to liability arising out of the *Project* and all operations necessary or incidental thereto. The policy shall be endorsed to provide the *Owner* with not less than 30 days' notice, in writing, in advance of any cancellation and of change or amendment restricting coverage.

#### **.2 Automobile Liability Insurance**

Automobile liability insurance in respect of licensed vehicles shall limits of not less than \$2,000,000.00 inclusive per occurrence for bodily injury, death and damage to property, covering all licensed vehicles *owned* or leased by the *Contractor*, and endorsed to provide the *Owner* with not less than 30 days' notice, in writing, in advance of any cancellation, change or amendment restricting coverage. Where the policy has been issued pursuant to a government-operated automobile insurance system, the *Contractor* shall provide the *Owner* with confirmation of automobile insurance coverage for all automobiles registered in the name of the *Contractor*.

#### **.3 Aircraft and Watercraft Liability Insurance [NTD: This can come out if N/A]**

Where determined necessary by the *Contractor*, acting reasonably, aircraft and watercraft liability insurance will be obtained in accordance with the provisions of paragraph 11.1.3. Aircraft and watercraft liability insurance with respect to owned or non-owned aircraft and watercraft if used directly or indirectly in the performance of the *Work*, including use of additional premises, shall be subject to limits of not less than \$2,000,000.00 inclusive per occurrence for bodily injury, death and damage to property, including loss of use thereof and limits of not less than \$2,000,000.00 for aircraft passenger hazard. Such insurance shall be in a form acceptable to the *Owner*. The policies shall be endorsed to provide the *Owner* with not less than 30 days' notice, in writing, in advance of cancellation, change or amendment restricting coverage.

#### **.4 Property and Boiler and Machinery Insurance**

(1) Builder's Risk property insurance shall be in the name of the *Contractor* with the *Owner* and the *Consultant* named as additional insureds. The policy shall insure against all risks of direct physical loss or damage to the property insured which shall include all property included in the *Work*, whether owned by the *Contractor* or the owner or owned by others, so long as the property forms part of the *Work*. The property insured also includes all materials and supplies necessary to complete the work, whether installed in the work temporarily or permanently, in storage on the project site, or in transit to the project site, as well as temporary buildings, scaffolding, falsework forms, hoardings, excavation, site preparation and similar work. The insurance shall be for not less than the sum of the amount of the contract price and the full value of products that are specified to be provided by the owner for incorporation into the work, if applicable, with the deductible of \$10,000.00 payable by the contractor. The insurance shall include the foregoing and, otherwise, shall not be less than the insurance required by IBC Form 4042 or its equivalent replacement provided that the IBC Form 4042 shall include the latest addition of the relevant CCDC endorsement form. The coverage shall be based on a completed value form and shall be maintained continuously until ten (10) days after the date of the final certificate of payment.

(2) Boiler and machinery insurance shall be in the name of the *Contractor*, with the *Owner* and the *Consultant* named as additional insureds, for not less than the replacement value of the boilers, pressure vessels and other insurable objects forming part of the *Work*. The insurance provided shall not be less than the insurance provided by the "Comprehensive Boiler and Machinery Form" and shall be maintained continuously from commencement of use or operation of the property insured and until 10 days after the date of the final certificate for payment.

(3) The policies shall allow for partial or total use or occupancy of the *Work*.

(4) The policies shall provide that, in the case of a loss or damage, payment shall be made to the *Owner* and the *Contractor* as their respective interests may appear. The *Contractor* shall act on behalf of the *Owner* for the purpose of adjusting the amount of such loss or damage payment with the insurers. When the extent of the loss or damage is determined, the *Contractor* shall proceed to restore the *Work*. Loss or damage shall not affect the rights and obligations of either party under the *Contract* except that the *Contractor* shall be entitled to such reasonable extension of the *Contract Time*, relative to the extent of the loss or damage, as determined by the *Owner*, in its sole discretion.

(5) The *Contractor* shall be entitled to receive from the *Owner*, in addition to the amount due under the *Contract*, the amount at which the *Owner's* interest in restoration of the *Work* has been appraised, such amount to be paid as the restoration of the *Work* proceeds and as provided in GC 5.2 – APPLICATIONS FOR PROGRESS PAYMENT and GC 5.3 – PROGRESS PAYMENT. In addition, the *Contractor* shall be entitled to receive from the payments made by the insurer the amount of the *Contractor's* interest in the restoration of the *Work*.

(6) In the case of loss or damage to the *Work* arising from the work of other contractors, or the *Owner's* own forces, the *Owner*, in accordance with the *Owner's* obligations under paragraph 3.2.2.4 of GC 3.2 – CONSTRUCTION BY OWNER OR OTHER CONTRACTORS, shall pay the *Contractor* the cost of restoring the *Work* as the restoration of the *Work* proceeds and as provided in GC 5.2 – APPLICATIONS FOR PROGRESS PAYMENT and GC 5.3 – PROGRESS PAYMENT.

#### **.5 Contractors' Equipment Insurance**

"All risks" contractors' equipment insurance covering construction machinery and equipment used by the *Contractor* for the performance of the *Work*, excluding boiler insurance, shall be in a form acceptable to the *Owner* and shall not allow subrogation claims by the insurer against the *Owner*. The policies shall be endorsed to provide the *Owner* with not less than 30 days' notice, in writing, in advance of cancellation, change or amendment restricting coverage. Subject to satisfactory proof of financial capability by the *Contractor* for self-insurance of his equipment, the *Owner* agrees to waive the equipment insurance requirement.

11.1.2 The *Contractor* shall be responsible for deductible amounts under the policies except where such amounts may be excluded from the *Contractor's* responsibility by the terms of GC 9.1 - PROTECTION OF WORK AND PROPERTY and GC 9.2 - DAMAGES AND MUTUAL RESPONSIBILITY.

11.1.3 Where the full insurable value of the *Work* is substantially less than the *Contract Price*, the *Owner* may reduce the amount of insurance required to waive the course of construction insurance requirement.

11.1.4 If the *Contractor* fails to provide or maintain insurance as required by the *Contract Documents*, then the *Owner* shall have the right to provide and maintain such insurance and provide evidence of same to the *Contractor*. The *Contractor* shall pay the costs thereof to the *Owner* on demand, or the *Owner* may deduct the amount that is due or may become due to the *Contractor*.

11.1.5 All required insurance policies shall be with insurers licensed to underwrite insurance in the jurisdiction of the *Place of the Work*.

#### **GC 11.2 CONTRACT SECURITY**

11.2.2 Delete paragraph after the word "provided" and replace with the following:

Such bonds shall be issued by a duly licensed surety company, which has been approved by the *Owner*, authorized to transact a business of suretyship in the province or territory of the *Place of the Work* and shall be maintained in good standing until the fulfillment of the *Contract*, including all warranty and maintenance periods set out in the *Contract Documents*.

Add new paragraph 11.2.3 as follows:

11.2.3 It is the intention of the parties that the performance bond shall be applicable to all of the *Contractor's* obligations in the *Contract Document* and, wherever a performance bond is provided with language which conflicts with this intention, it shall be deemed to be amended to comply. The *Contractor* represents and warrants to the *Owner* that it has provided its surety with a copy of the *Contract Documents* prior to the issuance of such bonds.

#### **GC 12.1 INDEMNIFICATION**

Delete General Condition 12.1 – INDEMNIFICATION in its entirety and substitute as follows:

- 12.1.1 The *Contractor* shall indemnify and hold harmless the *Owner*, its parent, subsidiaries and affiliates, their respective partners, trustees, officers, directors, agents and employees and the *Consultant* from and against any and all claims, liabilities, expenses, demands, losses, damages, actions, costs, suits, or proceedings (hereinafter called “claims”), whether in respect of claims suffered by the *Owner* or in respect of claims by third parties, that directly or indirectly arise out of, or are attributable to, the acts or omissions of the *Contractor*, its employees, agents, *Subcontractors*, *Suppliers* or any other persons for whom it is in law responsible (including, without limitation, claims that directly or indirectly arise out of, or are attributable to, loss of use or damage to the *Work*, the *Owner’s* property or equipment, the *Contractor’s* property or equipment or equipment or property adjacent to the *Place of the Work* or death or injury to the *Contractor’s* personnel).
- 12.1.2 The provisions of GC 12.1 - INDEMNIFICATION shall survive the termination of the *Contract*, howsoever caused and no payment or partial payment, no issuance of a final certificate of payment and no occupancy in whole or in part of the *Work* shall constitute a waiver or release of any of the provisions of GC 12.1.

## **GC 12.2 WAIVER OF CLAIMS**

- 12.2.1 In the fourth line, add the words “claims for delay pursuant to GC 6.5 DELAYS” after the word “limitation”. Add the words “(collectively “Claims”)” after “*Substantial Performance of the Work*” in the sixth line.
- 12.2.1.1 Change the word “claims” to “Claims” and change the word “claim” to “Claim”.
- 12.2.1.2 Change the word “claims” to “Claims”.
- 12.2.1.3 Delete paragraph in its entirety.
- 12.2.1.4 Change the word “claims” to “Claims”.
- 12.2.2 Change the words “in paragraphs 12.2.1.2 and 12.2.1.3” to “in paragraph 12.2.1.2”. Change the word “claims” to “Claims” in both instances and change the word “claim” to “Claim”.
- 12.2.3 Delete paragraph in its entirety.
- 12.2.4 Delete paragraph in its entirety.
- 12.2.5 Delete paragraph in its entirety.
- 12.2.6 Change the word “claim” to “Claim” in all instances in the paragraph.
- 12.2.7 Change “The party” to “The *Contractor*”. Change the word “claim” to “Claim” in all instances in the paragraph.
- 12.2.8 Change “under paragraphs 12.2.1 or 12.2.3” to “under paragraph 12.2.1”. Change both instances of the words “the party” to “the *Contractor*”. Change the word “claim” to “Claim” in all instances in the paragraph.
- 12.2.9 Delete paragraph 12.2.9 in its entirety.
- 12.2.10 Delete paragraph 12.2.10 in its entirety.

## **GC 12.3 WARRANTY**

- 12.3.2 Delete from the first line of paragraph 12.3.2 the word, “The” and substitute the words “Subject to paragraph 3.4.1, the...”
- Add new paragraphs 12.3.7 to 12.3.12 as follows:
- 12.3.7 Where required by the *Contract Documents*, the *Contractor* shall provide a maintenance bond as security for the performance of the *Contractor’s* obligations as set out in GC 12.3 WARRANTY.

- 12.3.8 The *Contractor* shall provide fully and properly completed and signed copies of all warranties and guarantees required by the *Contract Documents*, containing:
- .1 the proper name of the *Owner*;
  - .2 the proper name and address of the *Project*;
  - .3 the date the warranty commences, which shall be at the “date of *Substantial Performance of the Work*” unless otherwise agreed upon by the *Consultant* in writing.
  - .4 a clear definition of what is being warranted and/or guaranteed as required by the *Contract Documents*; and
  - .5 the signature and seal (if required by the governing law of the *Contract*) of the company issuing the warranty, countersigned by the *Contractor*.
- 12.3.9 Should any *Work* be repaired or replaced during the time period for which it is covered by the specified warranty, a new warranty shall be provided under the same conditions and for the same period as specified herein before. The new warranty shall commence at the completion of the repair or replacement.
- 12.3.10 The *Contractor* shall ensure that its *Subcontractors* are bound to the requirements of GC 12.3 – WARRANTY for the *Subcontractor’s* portion of the *Work*.
- 12.3.11 The *Contractor* shall ensure that all warranties, guarantees or other obligations for *Work*, services or *Products* performed or supplied by any *Subcontractor*, *Supplier* or other person in connection with the *Work* are obtained and available for the direct benefit of the *Owner*. In the alternative, the *Contractor* shall assign to the *Owner* all warranties, guarantees or other obligations for *Work*, services or *Products* performed or supplied by any *Subcontractor*, *Supplier* or other person in connection with the *Work* and such assignment shall be with the consent of the assigning party, where required by law, or by the terms of that party’s contract. Such assignment shall be in addition to, and shall in no way limit, the warranty rights of the *Owner* under the *Contract Documents*.
- 12.3.12 The *Contractor* shall commence or correct any deficiency within 2 Working Days after receiving a notice from the *Owner* or the *Consultant*, and shall complete the *Work* as expeditiously as possible, except in the case where the deficiency prevents maintaining security or where basic systems essential to the ongoing business of the *Owner* and/or its tenants cannot be maintained operational as designed. In those circumstances all necessary corrections and/or installations of temporary replacements shall be carried out immediately as an emergency service. Should the *Contractor* fail to provide this emergency service within 8 hours of a request being made during the normal business hours of the *Contractor*, the *Owner* is authorized, notwithstanding GC 3.1, to carry out all necessary repairs or replacements at the *Contractor’s* expense.

## **PART 13 OTHER PROVISIONS**

Add new Part 13 OTHER PROVISIONS as follows:

### **GC 13.1 OWNERSHIP OF MATERIALS**

- 13.1.1 Unless otherwise specified, all materials existing at the *Place of the Work* at the time of execution of the *Contract* shall remain the property of the *Owner*. All *Work* and *Products* delivered to the *Place of the Work* by the *Contractor* shall be the property of the *Owner*. The *Contractor* shall remove all surplus or rejected materials as its property when notified in writing to do so by the *Consultant*.

### **GC 13.2 CONSTRUCTION LIENS**

- 13.2.1 In the event that a claim for lien is registered against the *Project* by a *Subcontractor*, *Sub-subcontractor* or *Supplier*, and provided the *Owner* has paid all amounts properly owing under the *Contract*, the *Contractor* shall, at its own expense:
- .1 within 10 calendar days, ensure that any and all claims for lien and certificates of action are discharged, released, or vacated by the posting of security or otherwise; and
  - .2 in the case of written notices of lien, ensure that such notices are withdrawn, in writing.
- 13.2.2 In the event that the *Contractor* fails to conform with the requirements of paragraph 13.2.1, the *Owner* may fulfil those requirements without *Notice in Writing* to the *Contractor* and set off and deduct from any amount owing to the *Contractor*, all costs and associated expenses, including the costs of posting security and all legal fees and disbursements associated

with discharging or vacating the claim for lien or certificate of action and defending the action. If there is no amount owing by the *Owner* to the *Contractor*, then the *Contractor* shall reimburse the *Owner* for all of the said costs and associated expenses.

13.2.3 Notwithstanding any other provision in the *Contract*, the *Consultant* shall not be obligated to issue a certificate and the *Owner* shall not be obligated to make payment to the *Contractor* if, at the time such certificate or payment was otherwise due:

- .1 a claim for lien has been registered against the *Project* lands, or
- .2 if the *Owner* or mortgagee of the *Project* lands has received written notice of a lien.. or
- .3 the *Owner* or *Consultant* reasonably believe that any party has purported to retain title to *Products* or materials in respect of which an application for payment has been made.

13.2.4 Without limiting the foregoing, the *Contractor* shall, if requested by the *Owner*, defend, indemnify and save the *Owner* harmless from the amount of all such claims and the costs of defending any and all actions commenced against the *Owner* pursuant to the construction/builder's lien legislation in force at the *Place of the Work*, including the legal costs of the *Owner*, unless the lien was a direct result of a breach of the *Contract* by the *Owner* or the non-payment by the *Owner* of a valid charge or claim under the *Contract*.

13.2.5 GC 13.2 – CONSTRUCTION LIENS does not apply to construction/builder's liens claimed by the *Contractor*.

**END OF AMENDMENTS TO CCDC 2 - 2008**



**DESIGNATED SUBSTANCES SURVEY**  
(per Section 30, OHSA)  
**ASBESTOS PRODUCTS RE-ASSESSMENT**  
(per Section 8, O.Reg. 278/05)

**Our Lady of Fatima Catholic School**  
**Chatham, Ontario**

Prepared for:

St. Clair Catholic District School Board  
1930 Wildwood Drive  
Bright's Grove, Ontario  
N0N 1C0

February 11, 2020

Project No.: 19-1713

## TABLE OF CONTENTS

<b>1.0</b>	<b>INTRODUCTION.....</b>	<b>1</b>
<b>2.0</b>	<b>SURVEY METHODOLOGY.....</b>	<b>1</b>
2.1	ASBESTOS.....	2
2.2	OTHER HAZARDOUS BUILDING MATERIALS AND DESIGNATED SUBSTANCES.....	2
<b>3.0</b>	<b>REGULATORY REQUIREMENTS.....</b>	<b>2</b>
<b>4.0</b>	<b>RESULTS.....</b>	<b>3</b>
4.1	ASBESTOS-CONTAINING MATERIALS.....	3
4.2	LEAD.....	5
4.3	MERCURY.....	5
4.4	SILICA.....	5
4.5	ACRYLONITRILE, BENZENE, ISOCYANATES, ARSENIC, ETHYLENE OXIDE, VINYL CHLORIDE AND COKE OVEN EMISSIONS.....	6
4.6	MOULD.....	6
<b>5.0</b>	<b>RECOMMENDATIONS.....</b>	<b>7</b>
5.1	ASBESTOS.....	7
5.2	LEAD.....	8
5.3	MERCURY.....	8
5.4	SILICA.....	9
5.5	MOULD.....	9
<b>6.0</b>	<b>LIMITATIONS AND WARRANTY.....</b>	<b>9</b>

## APPENDICES

APPENDIX I	ASBESTOS BULK LABORATORY RESULTS (From Previous Assessments)
APPENDIX II	UPDATED ROOM-BY-ROOM ASBESTOS MATERIALS SUMMARY
APPENDIX III	DRAWINGS

## 1.0 INTRODUCTION

OH Solutions Inc. (OHS) was retained by the St. Clair Catholic District School Board to conduct a re-assessment of the condition of known friable asbestos-containing materials (ACM) and a visual inspection for mould at Our Lady of Fatima School located at 545 Baldoon Road North in Chatham, Ontario.

The school is a single storey structure, with a total area of 27,000 square feet. The original building was constructed in 1978. In addition to the investigation for asbestos and mould, the school was evaluated for the presence of any other designated substances.

Under the *Occupational Health & Safety Act* (OSHA), an owner must determine whether any Designated Substances are present at a site and is required to prepare a list of all Designated Substances that are present. These substances may require special handling procedures. The current OSHA regulation lists the following eleven (11) substances as Designated Substances in the workplace: acrylonitrile, arsenic, asbestos, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica and vinyl chloride.

Based on the estimated construction date and the reported use of the building, the review undertaken by OHS targeted asbestos, lead, mercury, and silica which, in our experience, are most likely to be present on-site.

The following report explains our survey methodology and summarizes the hazardous building materials found at the Site.

## 2.0 SURVEY METHODOLOGY

During this investigation the surveyor inspected the building for construction material suspected of containing asbestos after reviewing previous reports and database information. In addition, the surveyor inspected the building for construction materials suspected of containing other Designated Substances.

Note:

- Repetitive testing was generally not performed. Items, which were visually similar to others tested, were considered to be of like material and were not sampled again. However, due to the variable nature of some products, several samples may have been collected of some materials.
- No destructive testing was performed. The inaccessible spaces within the building were not inspected. This includes areas above plaster or drywall



ceilings (in the absence of access panels) as well as shafts, chases and bulkheads. Similarly, doors, motors and other equipment were not disassembled to determine composition.

- Vinyl sheet flooring and vinyl asbestos tiles have been recorded where observed, but may not be identified where they are present beneath multiple layers of flooring.

There was no access to the roof at the time of the assessment.

## **2.1 Asbestos**

No additional asbestos bulk samples were collected as a part of this re-assessment.

## **2.2 Other Hazardous Building Materials and Designated Substances**

All other hazardous building materials or Designated Substances were identified based on visual assessment and historical usage.

## **3.0 REGULATORY REQUIREMENTS**

"Designated Substance" as defined by the Ontario *Occupational Health & Safety Act* (OHSA) means "a biological, chemical or physical agent or combination thereof prescribed as a Designated Substance to which the exposure of a worker is prohibited, regulated, restricted, limited or controlled." Under Section 30 of the OHSA an owner is required to determine whether any Designated Substances are present at a project site before beginning construction. If any portion of the project is tendered, the person issuing the tenders is required to list the Designated Substances present at the project site. The constructor is then required to ensure that every contractor and sub-contractor receives a copy of the list.

Designated Substances are regulated under Ontario Regulation 490/09, which identifies the occupational exposure limits for these materials. Under Subsection 3(3) of the Regulation, construction projects are excluded from the OELs and most of the other requirements of the Regulation. For this reason, the Ministry of Labour (MOL) has issued regulations and guidelines to cover asbestos, lead and silica on construction.

Ontario Regulation 278/05 classifies all disturbance of asbestos as Type 1, Type 2 or Type 3, each of which is associated with defined work practices. All asbestos material waste is subject to special handling and disposal practices, and must be removed prior to partial or full demolition. Removal of any quantity of asbestos of more than 1m<sup>2</sup> requires notification of the MOL. Disposal of asbestos waste is subject to waste

management regulations under Ontario Regulation 347/90 as amended to Ontario Regulation 102/07.

The Guidelines: “Silica on Construction Projects” and “Lead on Construction Projects” identify precautions required for various activities that may disturb silica, or lead during construction, renovation or maintenance activities.

The MOL guideline for the control of lead exposures during the removal of lead on construction projects does not include criteria for categorizing lead paint. The Ontario Ministry of Labour (MOL) does not have a standard to state what percentage of lead a material must have to be considered lead-containing. The Environmental Abatement Council of Ontario (EACO) has issued a “Lead Guideline for Construction, Renovation, Maintenance or Repair”. This guideline recommends procedures to protect against lead exposure when concentrations of lead in paint exceed 0.1% by weight, but suggests that finishes with concentrations below 0.1% by weight do not require lead specific precautions provided the material is not disturbed in an aggressive manner (e.g. grinding or sandblasting) and that general dust control is adequate.

There are currently no regulations specifically covering exposure to mould or outlining mould remediation practices. In addition, there are no occupational exposure limits stating acceptable levels of exposure without adverse health effects.

However, Sections 25 and 27 of the Ontario *Occupational Health and Safety Act* states that an employer must take every reasonable precaution to ensure the health and safety of their workers. This includes exposure to moulds.

## **4.0 RESULTS**

### **4.1 Asbestos-Containing Materials**

Asbestos is a general name for several varieties of highly fibrous silicate minerals. Commercially significant types of asbestos include chrysotile, amosite and crocidolite. The fibres are valued for their heat and chemical resistance properties. The combination of fibrous structures, low heat conductivity, high electrical resistance, chemical inertness, strength and flexibility, as well as its effectiveness as a reinforcing or binding agent when combined with cement and/ or plastic, made asbestos popular for widespread industrial use.

One measure of the potential hazard of ACM is its friability. The Ontario Ministry of Labour asbestos regulation defines a friable material as one when dry can be crumbled, pulverized or powdered by hand pressure. The friability of ACM is considered a significant indicator of the ease with which fibres may be released into

the air. Non-friable products with bound asbestos pose no danger of releasing airborne fibres unless cut, broken up or otherwise physically abraded.

The following is a summary of the asbestos-containing or asbestos-suspect materials that were encountered at Our Lady of Fatima School. A detailed summary of asbestos materials identified in the building are included in Appendix II.

#### **4.1.1 Sprayed Fireproofing**

No sprayed fireproofing was encountered in the survey of this facility.

#### **4.1.2 Texture Finishes**

No texture finishes was encountered in the survey of this facility.

#### **4.1.3 Acoustic Ceiling Tiles**

Asbestos-containing ceiling tiles originally identified in the building have been removed from the building. Confirmatoert samples of the primary tile remaining were collected (Sample Group 106) and found to be asbestos free.

#### **4.1.4 Mechanical Insulation**

Asbestos and non-asbestos mechanical insulation is present in this building. Parging cement has been removed from the majority of piping systems although it in the Boiler Room and may be present in inaccessible areas.

Parging cement in the boiler room was sampled (Sample Group 101) and found to contain 18% chrysotile asbestos. Parging cement is present on the water meter, and on valves and other fittings in the mechanical room.

Non-asbestos parging cement is present in some locations. Straight run pipe insulation is generally non-asbestos fiberglass.

#### **4.1.5 Plaster and Drywall**

Plaster finishes were not encountered in the survey of this school.

The compound in the Resource Room at the south end of the school (Location 80) was sampled in advance of a renovation project and found to be asbestos-free. An additional five samples of drywall joint compound were collected from the original school building (Sample Group 105) and all were found to be asbestos free.

#### **4.1.6 Asbestos Cement Sheets**

No asbestos cement or “transite” products were encountered in the re-assessment of this facility.

#### **4.1.7 Vinyl Floor Tiles**

The original 12" x 12" vinyl floor tiles in the facility (Sample Groups 102 & 104) have been confirmed to contain asbestos. These products are non-friable, and as such are not expected to release airborne asbestos fibre under normal conditions of building use. If a large quantity of floor tile is to be removed, it may be practical to verify the presence of asbestos at that time.

Note that a third pattern was sampled (Sample Group 103) and found to be non-asbestos. This tile was present in a patterned application with tiles from Sample Group 102. The tiles should all be treated as asbestos containing, for practical purposes.

The black floor tile adhesive at the site was sampled (Sample Groups 102, 103, 109 & 110) and found to be a non-asbestos product.

#### **4.1.8 Sealant/Mastic**

Red or brown duct sealant is present on seams of ductwork present throughout the building. The sealant was sampled (Sample Group 107) and was found to contain 4% chrysotile asbestos.

A gold coloured mastic, has been applied as an acoustic treatment to the original sinks present in the building. This mastic has been visually identified to be an asbestos-containing product

#### **4.2 Lead**

Painted finishes in the building were not sampled. Lead may be present in some finishes within the building.

#### **4.3 Mercury**

Mercury is present in thermostats and within fluorescent light tubes located within the building.

#### **4.4 Silica**

Common construction sand contains free crystalline silica and is present in concrete products, mortar, brick, etc. These construction products are typically found throughout building structures.

#### 4.5 Acrylonitrile, Benzene, Isocyanates, Arsenic, Ethylene Oxide, Vinyl Chloride and Coke Oven Emissions

Evidence suggesting the presence of acrylonitrile, benzene, isocyanates, arsenic, ethylene oxide, vinyl chloride monomer or coke oven emissions was not observed at Our Lady of Fatima School.

#### 4.6 Mould

In recent years, contamination of buildings with mould has become a major concern. Mould growth will occur on any water damaged building material. Evidence does exist to support the relationship between exposure to mould in buildings and many health effects.

This re-assessment included the inspection of areas for visible mould growth. In the absence of occupants experiencing symptoms, the inspection for and remediation of visible mould present in the building will be an appropriate response to the issue. Where occupants are experiencing symptoms, in the absence of visible mould growth, some invasive inspection may be necessary to find potential sources of mould. In general this was beyond the scope of this assessment.

Although some evidence of water damage was present, visible mould was not evident in the course of this inspection. Locations where water stained/damaged tiles were identified are outlined in the following table:

Location	Quantity of Water Damaged Material
<b>LOC 29 – Resource Centre</b>	1 stained ceiling tile
<b>LOC 31 – I.T. Room</b>	1 stained ceiling tile
<b>Work Room 154</b>	1 stained ceiling tile
<b>Corridor CR 1-11</b>	1 stained ceiling tile
<b>Classroom 162</b>	1 stained ceiling tile
<b>Classroom 164</b>	1 stained ceiling tile
<b>Classroom 166</b>	1 stained ceiling tile
<b>Washroom 166B</b>	2 stained ceiling tiles

Location	Quantity of Water Damaged Material
<b>Washroom 170B</b>	1 stained ceiling tile
<b>Girl's Washroom 121</b>	1 stained ceiling tile
<b>Office 123</b>	1 stained ceiling tile
<b>Office 125B</b>	1 stained ceiling tile

## 5.0 RECOMMENDATIONS

The following recommendations are made with respect to the hazardous building materials and Designated Substances noted at Our Lady of Fatima School:

### 5.1 Asbestos

#### 5.1.1 Asbestos Management Program

Since asbestos-containing materials were identified at this facility, the building is subject to the requirement for an Asbestos Management Program, as specified under Ontario Regulation 278/05.

#### 5.1.2 Specific Recommendations

##### 5.1.2.1 Mechanical Insulation

Any activity, which will disturb asbestos-containing mechanical insulation, is governed by the procedures outlined in Reg. 278/05. The disturbance of less than nine linear feet (or nine parged fittings or nine square feet of parging cement) of asbestos-containing mechanical insulation may be performed as a Type 2 operation, while any greater disturbance requires Type 3 precautions.

##### 5.1.2.2 Drywall Joint Compound

The sampling of drywall compound was not performed throughout the school. If any disturbance of these materials is planned, sampling should be performed in advance.

Removal of more than 9 square feet, of drywall compound containing asbestos requires Type 2 procedures under Reg. 278/05.

### **5.1.2.3 Vinyl Floor Tiles**

Vinyl floor tiles may be removed, with manually powered tools, following the Type 1 procedures outlined in Reg. 278/05. The use of powered equipment on non-friable asbestos materials, an activity which could result in the release of airborne fibre, must be performed under Type 3 precautions.

## **5.2 Lead**

Although samples were not collected, it should be assumed that lead is present within paint finishes at the site. As a result, the handling or disturbance of painted finishes should be evaluated to help ensure that workers are not adversely affected.

The lead-containing materials in the building will not generate airborne lead dust in the absence of disturbance. However, significant lead dust levels can result when uncontrolled work procedures are used on lead-based materials. The control of dust levels during the demolition of the buildings can be accomplished through proper work practises such as wetting the surface of the materials to reduce overall dust levels and providing workers with washing facilities and proper respiratory protection.

The procedures outlined in the MOL document 'Guideline – Lead on Construction Projects' (2004) should provide an adequate standard for the handling or disturbance of the material.

The disposal of construction waste containing lead is controlled under Ontario Regulation 347, as amended by O. Reg. 102/07, and may be subject to Leachate Criteria (Schedule 4) of this regulation.

## **5.3 Mercury**

The presence of mercury in fluorescent light tubes and thermostats poses minimal risk to occupants or workers provided the equipment is handled properly and the mercury is not allowed to escape. In the event of future renovations, light tubes and thermostat tubes should be removed intact to prevent the mercury vapour from escaping.

It is good management practice to take precautions to prevent mercury vapours from becoming airborne during building demolition. Exposure to airborne mercury is regulated under Ontario Regulation 490/09 made under the *Occupational Health and Safety Act*. The current TWAEV for mercury vapour is 0.025 mg/m<sup>3</sup> (except alkyl compounds).

Mercury waste must be handled and disposed of according to Ontario Regulation 347, as amended by O. Reg. 102/07, and may be subject to Leachate Criteria (Schedule 4) of this regulation.

#### **5.4 Silica**

Disturbance of materials containing silica will occur during demolition of walls and ceilings, saw cutting floor slabs and removal of lay-in acoustic ceiling tiles containing silica and is regulated under Ontario Regulation 490/09. The current TWAEV for amorphous fused silica is 0.1 mg/m<sup>3</sup> and is 0.05 mg/m<sup>3</sup> for crystalline silica (quartz). This can be accomplished through proper work practises such as wetting the surface of the materials to reduce overall dust levels and providing workers with washing facilities and proper respiratory protection.

#### **5.5 Mould**

Mould growth on building materials was not observed during this investigation. At this time, no further action is required regarding conditions observed. However water damaged acoustic tiles and drywall were observed throughout the school. OHS recommends that this material be removed to reduce the potential for mould growth on the water impacted surface.

Moisture issues are the only factor in the growth of mould that may be controlled by the building operator. Any existing moisture problems in the building must be addressed to prevent or control mould growth. The following general recommendations are made to reduce the potential for future mould growth within the building:

- Promptly respond to any water infiltration, including minor leaks.
- Where HVAC units permit, maintain relative humidity below 60%.
- Maintain caulking at sinks, bathrooms and at exterior locations.

In the event of a flood, remove water by pumping or vacuuming as soon as possible. Drying of construction and finishing materials must begin promptly (in less than 24 hours). It may be practical to remove and dispose of some wetted materials, (e.g. drywall and carpet) in some cases.

### **6.0 LIMITATIONS AND WARRANTY**

OHS has prepared this report for the exclusive use of the Client in evaluating the Site at the time of OHS's assessment. OHS will not be responsible for the use of this report by any third party, or reliance on or any decision to be made based on it without



the prior written consent of OHS. OHS accepts no responsibility for damages, if any, by any third party because of decisions or actions based on this report.

The findings and conclusions documented in this report have been prepared for specific application to this project and have been developed in a manner consistent with that level of care and skill normally exercised by qualified professionals currently practising in this area of environmental assessment. No other warranty, expressed or implied, is made.

The findings contained in this report are based upon conditions as they were observed at the time of investigation. No assurance is made regarding changes in conditions subsequent to the time of investigation.

If new information is developed in future work, OHS should be contacted to re-evaluate the conclusions of this report and to provide amendments as required.

Respectfully submitted,

**OH Solutions Inc.**

A handwritten signature in black ink, appearing to read 'K. Olson', with a long horizontal line extending to the right.

Kris Olson, P.Eng.  
Senior Project Manager

**APPENDIX I**  
**BULK SAMPLING RESULTS**  
**(From Previous Assessments)**

## Pinchin Environmental Asbestos Samples Report

**Project #:** 13256

**Client Name:** St. Clair Catholic District School Board

**Building #:** 31

**Building Name:** Our Lady of Fatima School Chatham

**Survey Date:** 08/28/2007

Sample Number	System	Material	Location Number	Has Asbestos	Phase One		Phase Two		Description
					Asb. Type	Result	Asb. Type	Result	
0001	Piping	Parging Cement	1	<input checked="" type="checkbox"/>	Chrysotile	50-75%	No Result	NR	Parging cement pipe fittings
0002	Ceiling	Lay-in tiles	3	<input type="checkbox"/>	None Detected	ND	No Result	NR	Lay-in ceiling tiles
0003	Ceiling	Lay-in tiles	5	<input type="checkbox"/>	None Detected	ND	No Result	NR	Lay-in ceiling tiles
0004	Walls	Glued-on tiles	7	<input type="checkbox"/>	None Detected	ND	No Result	NR	Stuck-on ceiling tiles
0005	Ceiling	Lay-in tiles	15	<input checked="" type="checkbox"/>	Amosite	0.5-5%	No Result	NR	Lay-in ceiling tiles
0006	Ceiling	Lay-in tiles	80	<input type="checkbox"/>	None Detected	ND	No Result	NR	Lay-in tiles
0007	Ceiling	Lay-in tiles	80	<input type="checkbox"/>	None Detected	ND	No Result	NR	Lay-in Tiles
0008	Ceiling	Lay-in tiles	80	<input type="checkbox"/>	None Detected	ND	No Result	NR	Lay-in Tile
0009	Walls	Drywall Compound	80	<input type="checkbox"/>	None Detected	ND	No Result	NR	Drywall Joint Compound
0010	Walls	Drywall Compound	80	<input type="checkbox"/>	None Detected	ND	No Result	NR	Drywall Joint Compound
0011	Walls	Drywall Compound	80	<input type="checkbox"/>	None Detected	ND	No Result	NR	Drywall Joint Compound

**APPENDIX II**

**UPDATED ROOM-BY-ROOM ASBESTOS MATERIALS SUMMARY**

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
--------	-------------	----------	-------	---------------	---------	--------	---------	---------	--------

---

**Building Number :** SC 31

**Building Name :** Our Lady of Fatima School Chat

**Survey Date :** 7/27/2018

---

**Level :** LOC 01 - First Floor

**Room :** Boiler Room

**Asbestos Present :** No

---

Ceiling	Not Found
Duct	Uninsulated
Floor	Concrete
Mechanical	Boiler
Piping	Fibreglass Straight Run
Piping	Uninsulated
Structure	Inaccessible
Wall	Masonry

**Comments:**

Reno 2019.

---

**Level :** LOC 02 - First Floor

**Room :** Electrical Room

**Asbestos Present :** No

---

Ceiling	Not Found
Duct	Not Found
Floor	Concrete
Mechanical	Electrical
Piping	Uninsulated
Structure	Steel Beam, Deck
Wall	Masonry

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
--------	-------------	----------	-------	---------------	---------	--------	---------	---------	--------

**Comments:**

Reno 2019.

---

**Level :** LOC 03 - First Floor

**Room :** Corridor

**Asbestos Present :** No

Ceiling	Non-Asbestos Lay-in Tile								S0002
Duct	Uninsulated								
Floor	Terrazzo								
Mechanical	Not Found								
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:**

Reno 2019.

---

**Level :** LOC 04 - First Floor

**Room :** Corridor

**Asbestos Present :** No

Ceiling	Non-Asbestos Lay-in Tile								S0002
Duct	Uninsulated								
Floor	Terrazzo								
Mechanical	Not Found								
Piping	Fibreglass Straight Run								
Piping	Uninsulated								
Structure	Steel Beam, Deck & Joist								

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105
<b>Comments:</b>									
<b>Level :</b> LOC 05 - First Floor			<b>Room :</b> Side Entrance			<b>Asbestos Present :</b> No			
Ceiling	Non-Asbestos Lay-in Tile								S0003
Duct	Uninsulated								
Floor	Terrazzo								
Mechanical	Not Found								
Piping	Fibreglass Fitting								
Piping	Fibreglass Rain Water Leader								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Non-Asbestos Drywall Compound - New								V105
<b>Comments:</b>									
Reno 2019.									
<b>Level :</b> LOC 06 - First Floor			<b>Room :</b> Office			<b>Asbestos Present :</b> No			
Ceiling	Not Found								
Duct	Not Found								
Floor	Concrete								
Mechanical	Not Found								
Piping	Not Found								
Structure	Steel Beam, Deck & Joist								

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Wall	Masonry								
<b>Comments:</b>									
<b>Level :</b> LOC 07 - First Floor			<b>Room :</b> Gymnasium			<b>Asbestos Present :</b> Yes			
Ceiling	Non-Asbestos Lay-in Tile								
Duct	Uninsulated								
Floor	Suspect Vinyl Floor Tile	2,520.0	SF	Good		A 8	Yes	No	
Piping	Asbestos Parging Cement Roof Hopper	2.0	EA	Good		C 7	Yes	Yes	V0001
Piping	Fibreglass Straight Run								
Piping	Fibreglass with PVC								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos 1 x 1 Tile								S0004

**Comments:**

Includes corridor to left side of stage

<b>Level :</b> LOC 08 - First Floor			<b>Room :</b> Equipment Storage Room			<b>Asbestos Present :</b> Potentially			
Ceiling	Not Found								
Duct	Not Found								
Floor	Suspect Vinyl Floor Tile	100.0	SF	Good		A 8	Yes	No	
Mechanical	Not Found								
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								



# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Piping	Non-Asbestos Parging Cement								
Structure	Concrete								
Wall	Masonry								

**Comments:** Vinyl Floor Tile Assumed to Contain Asbestos

Level :	LOC 09 - First Floor	Room :	Stage	Asbestos Present : Potentially					
Ceiling	Non-Asbestos 1 x 1 Tile								
Ceiling	Not Found								
Duct	Not Found								
Floor	Suspect Vinyl Floor Tile	480.0	SF	Good	A	8	Yes	No	
Mechanical	Not Found								
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:** Vinyl Floor Tile Assumed to Contain Asbestos

Level :	LOC 10 - First Floor	Room :	Equipment Storage Room	Asbestos Present : Potentially					
Ceiling	Not Found								
Duct	Uninsulated								
Floor	Suspect Vinyl Floor Tile	200.0	SF	Good	A	8	Yes	No	
Mechanical	Not Found								
Piping	Not Found								

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
<b>Comments:</b> Vinyl Floor Tile Assumed to Contain Asbestos									
<b>Level :</b> LOC 11 - First Floor			<b>Room :</b> Boy's Change Room			<b>Asbestos Present :</b> Potentially			
Ceiling	Non-Asbestos Drywall Compound								V105
Duct	Inaccessible								
Floor	Terrazzo								
Mechanical	Inaccessible								
Piping	Uninsulated								
Structure	Inaccessible								
Wall	Masonry								
<b>Comments:</b> No access above ceiling.									
<b>Level :</b> LOC 12 - First Floor			<b>Room :</b> Girl's Change Room			<b>Asbestos Present :</b> Potentially			
Ceiling	Non-Asbestos Drywall Compound								V105
Duct	Inaccessible								
Floor	Terrazzo								
Mechanical	Inaccessible								
Piping	Uninsulated								
Structure	Inaccessible								
Wall	Masonry								
<b>Comments:</b> No access above ceiling.									

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
<b>Level :</b> LOC 13 - First Floor		<b>Room :</b> Custodial Storage Room			<b>Asbestos Present :</b> No				
Ceiling	Not Found								
Duct	Not Found								
Floor	Concrete								
Mechanical	Not Found								
Piping	Not Found								
Structure	Steel Beam, Deck								
Wall	Masonry								
<b>Comments:</b>									
Former custodial room. Future vestibule and building exit. Reno 2019.									
<b>Level :</b> LOC 14 - First Floor		<b>Room :</b> 2 - Washroom			<b>Asbestos Present :</b> Potentially				
Ceiling	Non-Asbestos Drywall Compound								V105
Duct	Inaccessible								
Floor	Suspect Vinyl Floor Tile	25.0	SF	Good		A	8	Yes	No
Mechanical	Inaccessible								
Piping	Uninsulated								
Structure	Inaccessible								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:** No access above ceiling.  
Vinyl Floor Tile Assumed to Contain Asbestos

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
<hr/>									
<b>Level :</b> LOC 15 - First Floor		<b>Room :</b> Secretary's Office			<b>Asbestos Present :</b> No				
<hr/>									
Ceiling	Non-Asbestos Drywall Compound								V105
Ceiling	Non-Asbestos Lay-in Tile								
Duct	Uninsulated								
Floor	Non-Asbestos Vinyl Tile - New								
Mechanical	Not Found								
Piping	Not Found								
Structure	Steel Beam, Deck								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								
<b>Comments:</b>									
<hr/>									
<b>Level :</b> LOC 16 - First Floor		<b>Room :</b> Vestibule			<b>Asbestos Present :</b> No				
<hr/>									
Ceiling	Non-Asbestos Lay-in Tile								
Duct	Not Found								
Floor	Terrazzo								
Mechanical	Not Found								
Piping	Not Found								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
<b>Comments:</b>									
<hr/>									
<b>Level :</b> LOC 17 - First Floor		<b>Room :</b> Vice Principal's Office			<b>Asbestos Present :</b> No				
<hr/>									

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Ceiling	Non-Asbestos Lay-in Tile								
Duct	Uninsulated								
Floor	Carpet								
Mechanical	Not Found								
Piping	Not Found								
Structure	Steel Beam, Deck								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:**

---

<b>Level :</b> LOC 18 - First Floor	<b>Room :</b> 2 - Principal's Office	<b>Asbestos Present :</b> Potentially
-------------------------------------	--------------------------------------	---------------------------------------

---

Ceiling	Non-Asbestos Lay-in Tile								
Duct	Inaccessible								
Floor	Suspect Vinyl Floor Tile	180.0 SF	Good		A	8	Yes	No	
Mechanical	Inaccessible								
Piping	Fibreglass Straight Run								
Structure	Inaccessible								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:** No access above ceiling.

Vinyl Floor Tile Assumed to Contain Asbestos

---

<b>Level :</b> LOC 19 - First Floor	<b>Room :</b> Corridor	<b>Asbestos Present :</b> Potentially
-------------------------------------	------------------------	---------------------------------------

---

Ceiling	Non-Asbestos Lay-in Tile
---------	--------------------------

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Duct	Not Found								
Floor	Suspect Vinyl Floor Tile	80.0 SF	Good		A	8	Yes	No	
Mechanical	Not Found								
Piping	Not Found								
Structure	Steel Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:** Vinyl Floor Tile Assumed to Contain Asbestos

**Level :** LOC 20 - First Floor

**Room :** Supply Room

**Asbestos Present :** Potentially

Ceiling	Non-Asbestos Lay-in Tile								
Duct	Not Found								
Floor	Suspect Vinyl Floor Tile	70.0 SF	Good		A	8	Yes	No	
Mechanical	Not Found								
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:** Vinyl Floor Tile Assumed to Contain Asbestos

**Level :** LOC 21 - First Floor

**Room :** Washroom

**Asbestos Present :** Potentially

Ceiling	Suspect Drywall Compound	30.0 SF	Good		C	8	Yes	No	
Duct	Inaccessible								

# Asbestos Status Report

(sorted by Building Number)

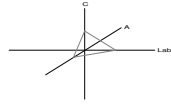
UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Floor	Suspect Vinyl Floor Tile	30.0 SF	Good		A	8	Yes	No	
Mechanical	Inaccessible								
Piping	Uninsulated								
Structure	Inaccessible								
Wall	Masonry								
<b>Comments:</b> No access above ceiling.									
Vinyl Floor Tile Assumed to Contain Asbestos									
<b>Level :</b> LOC 22 - First Floor			<b>Room :</b> Teacher's Work Room			<b>Asbestos Present :</b> Potentially			
Ceiling	Non-Asbestos Lay-in Tile								V0002
Duct	Uninsulated								
Floor	Suspect Vinyl Floor Tile	170.0 SF	Good		A	8	Yes	No	
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105
<b>Comments:</b> Vinyl Floor Tile Assumed to Contain Asbestos									
<b>Level :</b> LOC 23 - First Floor			<b>Room :</b> Staff Room			<b>Asbestos Present :</b> Potentially			
Ceiling	Non-Asbestos Lay-in Tile								V0002
Duct	Uninsulated								
Floor	Suspect Vinyl Floor Tile	440.0 SF	Good		A	8	Yes	No	
Mechanical	Not Found								

**CA Labs**  
Dedicated to  
Quality

**Crisp Analytical, L.L.C.**  
1929 Old Denton Road  
Carrollton, TX 75006  
Phone 972-242-2754  
Fax 972-242-2798



**CA Labs, L.L.C.**  
12232 Industriplex, Suite 32  
Baton Rouge, LA 70809  
Phone 225-751-5632  
Fax 225-751-5634

## **Materials Characterization - Bulk Asbestos Analysis**

### **Laboratory Analysis Report - Polarized Light**

#### **OH Solutions**

119 Thames St S  
Ingersoll, ON N5C 2T3

Customer Project: 18-1461, OLFCS  
Reference #: CAL1901470AG

Date: 1/24/2019

#### **Analysis and Method**

Summary of polarized light microscopy (PLM / Stereomicroscopy bulk asbestos analysis) using the methods described in 40CFR Part 763 Appendix E to Subpart E (Interim and EPA 600 / R-93 / 116 (Improved)). The sample is first viewed with the aid of a stereomicroscope. Numerous liquid slide preparations are created for analysis under the polarized microscope where identifications and quantifications are performed. Calibrated liquid refractive oils are used as liquid mounting medium. These oils are used for identification (dispersion staining). A calibrated visual estimation is reported, should any asbestiform mineral be present. Other techniques such as acid washing are used in conjunction with refractive oils for detection of smaller quantities of asbestos. All asbestos percentages are based on calibrated visual estimation traceable to NIST standards for regulated asbestos. Traceability to measurement and calibration is achieved by using known amounts and types of asbestos from standards where analyst and laboratory accuracy are measured. As little as 0.001% asbestos can be detected in favorable samples, while detection in unfavorable samples may approach the detection limit of 0.50% (well above the laboratory definition of trace).

#### **Discussion**

Vermiculite containing samples may contain trace amounts of actinolite/tremolite. When not detected by PLM, these samples should be analyzed using TEM methods and / or water separation techniques. Suspected actinolite/vermiculite presence will be indicated through the sample comment section of this report.

Fibrous talc containing samples may contain a regulated asbestos fiber known as anthophyllite. Under certain conditions the same fiber may actually contain both talc and anthophyllite (a phenomenon called intergrowth). Again, TEM detection methods are recommended. CA Labs PLM report comments will denote suspected amounts of asbestiform anthophyllite with talc, where further analysis is recommended.

Some samples (floor tiles, surfacings, etc.) may contain fibers too small to be detectable by PLM analysis and should be analyzed by TEM bulk protocols.

A "trace asbestos" will be reported if the analyst observes far less than 1% asbestos. CA Labs defines "trace asbestos" as a few fibers detected by the analyst in several preparations and will indicate as such under these circumstances.

Since allowable variation in quantification of samples close to 1% is high, <1% may be reported. Such results are ideal for point counting, and the technique is mandatory for friable samples (NESHAP, Nov. 1990 and clarification letter 8 May 1991) under 1% percent asbestos or "trace asbestos". **In order to make all initial PLM reports issued from CA Labs NESHAP compliant, all <1% asbestos results (except floor tiles) will be point counted at no additional charge.**

#### **Qualifications**

CA Labs is accredited by the National Voluntary Accreditation Program (NVLAP) for selected test methods for airborne fiber analysis (TEM), and for bulk asbestos fiber analysis (PLM). CA Labs is also accredited by AIHA LAP, LLC. in the PLM asbestos field of testing for Industrial Hygiene. All analysts have completed college courses or hold a degree in a natural science (geology, biology, or environmental science). Recognition by a state professional board in one these disciplines is preferred, but not required. Extensive in-house training programs are used to augment the educational background of the analyst. The Laboratory Director and Quality Manager have received supplemental McCrone Research training for asbestos identification. Analysis performed at Crisp Analytical Labs, LLC 1929 Old Denton Road Carrollton, TX 75006

*Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235*  
**AIHA LAP, LLC Laboratory #102929**



Overview of Project Sample Material Containing Asbestos

<b>Customer Project:</b> 18-1461, OLFCS		<b>CA Labs Project #:</b> CAL1901470AG		
Sample #	Layer #	Analysts Physical Description of Subsample	Asbestos type / calibrated visual estimate percent	List of Affected Building Material Types
101-01	101-01-1	<b>Parging at Water Meter, Room 150/ gray insulation</b>	<b>18% Chrysotile</b>	<b>gray insulation red floor tile tan floor tile</b>
102-01	102-01-1	<b>VFT #1 Room 126/ red floor tile</b>	<b>3% Chrysotile</b>	<b>brown sealant</b>
104-01	104-01-1	<b>VFT #3 Room 114/ tan floor tile</b>	<b>2% Chrysotile</b>	
107-01	107-01-1	<b>Red Duct Sealant, Corridor/ brown sealant</b>	<b>4% Chrysotile</b>	

Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235  
**AIHA LAP, LLC Laboratory #102929**

**Glossary of abbreviations (non-asbestos fibers and non-fibrous minerals):**

ca - carbonate	pe - perlite	fg - fiberglass	pa - palygorskite (clay)
gypsum - gypsum	qu - quartz	mw - mineral wool	
bi - binder		wo - wollastinite	
or - organic		ta - talc	
ma - matrix		sy - synthetic	
mi - mica		ce - cellulose	
ve - vermiculite		br - brucite	
ot - other		ka - kaolin (clay)	

This report relates to the items tested. This report is not to be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST, AIHA LAP, LLC, or any other agency of the federal government. This report may not be reproduced except in full without written permission from CA Labs. These results are submitted pursuant to CA Labs' current terms and sale, condition of sale, including the company's standard warranty and limitations of liability provisions and no responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing to return the samples covered by this report, CA Labs will store the samples for a period of ninety (90) days before discarding. A shipping or handling fee may be assessed for the return of any samples.

**Polarized Light Asbestiform Materials Characterization**

<b>Customer Info:</b>	<b>Attn:</b>	<b>Customer Project:</b>	<b>CA Labs Project #:</b>
<b>OH Solutions</b>			CAL1901470AG
119 Thames St S			
Ingersoll, ON N5C 2T3		18-1461, OLFCS	<b>Date:</b> 1/24/2019
		<b>Turnaround Time:</b>	<b>Samples Received:</b> 1/21/19 10:30AM
Phone # (519) 485 - 2500		3 days	<b>Date Of Sampling:</b> None Given
Fax # (866) 700 - 4975			<b>Purchase Order #:</b>

Sample #	Com ment	Layer #	Analysts Subsample	Physical Description of	Homo-geneo us (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
101-01		101-01-1		<b>Parging at Water Meter, Room 150/ gray insulation</b>	y	<b>18% Chrysotile</b>	4% fg	78% qu,ca,ma
101-02		101-02-1		<b>Parging at Water Meter, Room 150/ gray insulation</b>		<b>Positive Stop</b>		
101-03		101-03-1		<b>Parging at Valve, Room 150/ gray insulation</b>		<b>Positive Stop</b>		
102-01		102-01-1		<b>VFT #1 Room 126/ red floor tile</b>	y	<b>3% Chrysotile</b>		97% qu,ca
	<b>5</b>	102-01-2		<b>black mastic</b>				
102-02		102-02-1		<b>VFT #1 Room 126/ red floor tile</b>		<b>Positive Stop</b>		
		102-02-2		<b>black mastic</b>	y	<b>None Detected</b>	3% ce	97% gy,bi

Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

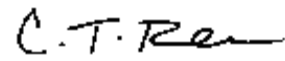
**AIHA LAP, LLC Laboratory #102929**

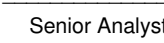
Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.  
 Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:

  
 Robert Olivarez  
 Analyst

  
 Technical Manager  
 Tanner Rasmussen

  
 Senior Analyst  
 Julio Robles

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers  
 2. Fire Damage no significant fiber damages effecting fibrous percentages  
 3. Actinolite in association with Vermiculite  
 4. Layer not analyzed - attached to previous positive layer and contamination is suspected  
 5. Not enough sample to analyze

6. Anthophyllite in association with Fibrous Talc  
 7. Contamination suspected from other building materials  
 8. Favorable scenario for water separation on vermiculite for possible analysis by another method  
 9. < 1% Result point counted positive  
 10. TEM analysis suggested

**Polarized Light Asbestiform Materials Characterization**

<b>Customer Info:</b>	<b>Attn:</b>	<b>Customer Project:</b>	<b>CA Labs Project #:</b>
<b>OH Solutions</b>			CAL1901470AG
119 Thames St S			
Ingersoll, ON N5C 2T3		18-1461, OLFCS	<b>Date:</b> 1/24/2019
		<b>Turnaround Time:</b>	<b>Samples Received:</b> 1/21/19 10:30AM
Phone # (519) 485 - 2500		3 days	<b>Date Of Sampling:</b> None Given
Fax # (866) 700 - 4975			<b>Purchase Order #:</b>

Sample #	Com ment	Layer #	Analysts Subsample	Physical Description of	Homo-geneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
102-03		102-03-1		<b>VFT #1 Room 126/ red floor</b> tile		Positive Stop		
		102-03-2		black mastic	y	None Detected	2% ce	98% gy,bi
103-01		103-01-1		<b>VFT #2 Room 126/ gray floor</b> tile	y	None Detected	3% ce	97% qu,ca
		103-01-2		black mastic	y	None Detected		100% gy,bi
103-02		103-02-1		<b>VFT #2 Room 126/ gray floor</b> tile	y	None Detected	3% ce	97% qu,ca
	5	103-02-2		black mastic				
103-03		103-03-1		<b>VFT #2 Room 126/ gray floor</b> tile	y	None Detected	3% ce	97% qu,ca

Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235


**AIHA LAP, LLC Laboratory #102929**

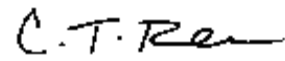
Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.  
Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for

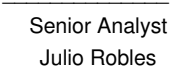
identification of asbestos types by dispersion attaining / becke line method.

ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:

  
Robert Olivarez  
Analyst

  
Technical Manager  
Tanner Rasmussen

  
Senior Analyst  
Julio Robles

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers  
2. Fire Damage no significant fiber damages effecting fibrous percentages  
3. Actinolite in association with Vermiculite  
4. Layer not analyzed - attached to previous positive layer and contamination is suspected  
5. Not enough sample to analyze

6. Anthophyllite in association with Fibrous Talc  
7. Contamination suspected from other building materials  
8. Favorable scenario for water separation on vermiculite for possible analysis by another method  
9. < 1% Result point counted positive  
10. TEM analysis suggested

**CA Labs**  
**Dedicated to**  
**Quality**

**Crisp Analytical, L.L.C.**  
 1929 Old Denton Road  
 Carrollton, TX 75006  
 Phone 972-242-2754  
 Fax 972-242-2798

**CA Labs, L.L.C.**  
 12232 Industriplex, Suite 32  
 Baton Rouge, LA 70809  
 Phone 225-751-5632  
 Fax 225-751-5634

**Polarized Light Asbestiform Materials Characterization**

<b>Customer Info:</b>	<b>Attn:</b>	<b>Customer Project:</b>	<b>CA Labs Project #:</b>
<b>OH Solutions</b>			CAL1901470AG
119 Thames St S			
Ingersoll, ON N5C 2T3		18-1461, OLFCS	<b>Date:</b> 1/24/2019
		<b>Turnaround Time:</b>	<b>Samples Received:</b> 1/21/19 10:30AM
Phone # (519) 485 - 2500		3 days	<b>Date Of Sampling:</b> None Given
Fax # (866) 700 - 4975			<b>Purchase Order #:</b>

Sample #	Com ment	Layer #	Analysts Subsample	Physical Description of	Homo-geneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
		103-03-2		black mastic	y	None Detected	2% ce	98% gy,bi
104-01		104-01-1		VFT #3 Room 114/ tan floor tile	y	2% Chrysotile		98% qu,ca
104-02		104-02-1		VFT #3 Room 114/ tan floor tile		Positive Stop		
	5	104-02-2		black mastic				
104-03		104-03-1		VFT #3 Room 114/ tan floor tile		Positive Stop		
	5	104-03-2		black mastic				
				<b>Joint Compound, Room 114/</b>				
105-01		105-01-1		off-white surfaced white compound	n	None Detected		100% qu,mi,bi,ca

Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

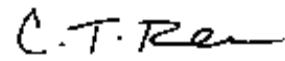
**AIHA LAP, LLC Laboratory #102929**

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.  
 Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:

  
 Robert Olivarez  
 Analyst

  
 Technical Manager  
 Tanner Rasmussen  
 Senior Analyst  
 Julio Robles

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
2. Fire Damage no significant fiber damages effecting fibrous percentages
3. Actinolite in association with Vermiculite
4. Layer not analyzed - attached to previous positive layer and contamination is suspected
5. Not enough sample to analyze

6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

**Polarized Light Asbestiform Materials Characterization**

<b>Customer Info:</b>	<b>Attn:</b>	<b>Customer Project:</b>	<b>CA Labs Project #:</b>
<b>OH Solutions</b>			CAL1901470AG
119 Thames St S			
Ingersoll, ON N5C 2T3		18-1461, OLFCS	<b>Date:</b> 1/24/2019
		<b>Turnaround Time:</b>	<b>Samples Received:</b> 1/21/19 10:30AM
Phone # (519) 485 - 2500		3 days	<b>Date Of Sampling:</b> None Given
Fax # (866) 700 - 4975			<b>Purchase Order #:</b>

Sample #	Com ment	Layer #	Analysts Physical Description of Subsample	Homo-geneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
<b>Joint Compound, Room 126/</b>							
105-02		105-02-1	off-white surfaced white compound	n	<b>None Detected</b>		100% qu,mi,bi,ca
<b>Joint Compound, Room 138/</b>							
105-03		105-03-1	off-white surfaced white compound	n	<b>None Detected</b>		100% qu,mi,bi,ca
<b>Joint Compound, Room 148/</b>							
105-04		105-04-1	off-white surfaced white compound	n	<b>None Detected</b>		100% qu,mi,bi,ca
<b>Joint Compound, Room 150/</b>							
105-05		105-05-1	off-white surfaced white compound	n	<b>None Detected</b>		100% qu,mi,bi,ca
<b>Acoustic Tile, Corridor at 128/</b>							
106-01		106-01-1	white surfacing	y	<b>None Detected</b>		100% qu,bi
		106-01-2	tan ceiling tile	y	<b>None Detected</b>	37% ce 37% fg	26% qu,pe
<b>Acoustic Tile, Room 138/</b>							
106-02		106-02-1	white surfacing	y	<b>None Detected</b>		100% qu,bi

Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

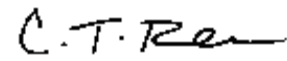
**AIHA LAP, LLC Laboratory #102929**

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.  
 Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:

  
 Robert Olivarez  
 Analyst

  
 Technical Manager  
 Tanner Rasmussen  
 Senior Analyst  
 Julio Robles

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers  
 2. Fire Damage no significant fiber damages effecting fibrous percentages  
 3. Actinolite in association with Vermiculite  
 4. Layer not analyzed - attached to previous positive layer and contamination is suspected  
 5. Not enough sample to analyze

6. Anthophyllite in association with Fibrous Talc  
 7. Contamination suspected from other building materials  
 8. Favorable scenario for water separation on vermiculite for possible analysis by another method  
 9. < 1% Result point counted positive  
 10. TEM analysis suggested

**CA Labs**  
**Dedicated to**  
**Quality**

**Crisp Analytical, L.L.C.**  
 1929 Old Denton Road  
 Carrollton, TX 75006  
 Phone 972-242-2754  
 Fax 972-242-2798

**CA Labs, L.L.C.**  
 12232 Industriplex, Suite 32  
 Baton Rouge, LA 70809  
 Phone 225-751-5632  
 Fax 225-751-5634

**Polarized Light Asbestiform Materials Characterization**

<b>Customer Info:</b>	<b>Attn:</b>	<b>Customer Project:</b>	<b>CA Labs Project #:</b>
<b>OH Solutions</b>			CAL1901470AG
119 Thames St S			
Ingersoll, ON N5C 2T3		18-1461, OLFCS	<b>Date:</b> 1/24/2019
		<b>Turnaround Time:</b>	<b>Samples Received:</b> 1/21/19 10:30AM
Phone # (519) 485 - 2500		3 days	<b>Date Of Sampling:</b> None Given
Fax # (866) 700 - 4975			<b>Purchase Order #:</b>

Sample #	Com ment	Layer #	Analysts Physical Description of Subsample	Homo-geneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
		106-02-2	tan ceiling tile	y	<b>None Detected</b>	37% ce 36% fg	27% qu,pe
106-03		106-03-1	<b>Acoustic Tile, Corridor at 150/</b> white surfacing	y	<b>None Detected</b>		100% qu,bi
		106-03-2	tan ceiling tile	y	<b>None Detected</b>	38% ce 39% fg	23% qu,pe
107-01		107-01-1	<b>Red Duct Sealant, Corridor/</b> brown sealant	y	<b>4% Chrysotile</b>		96% qu,gy,bi
107-02		107-02-1	<b>Red Duct Sealant, Corridor/</b> brown sealant		<b>Positive Stop</b>		
107-03		107-03-1	<b>Red Duct Sealant, Corridor/</b> brown sealant		<b>Positive Stop</b>		


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

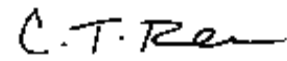
**AIHA LAP, LLC Laboratory #102929**

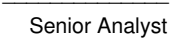
Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.  
 Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:

  
 Robert Olivarez  
 Analyst

  
 Technical Manager  
 Tanner Rasmussen

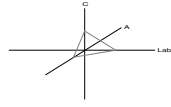
  
 Senior Analyst  
 Julio Robles

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
2. Fire Damage no significant fiber damages effecting fibrous percentages
3. Actinolite in association with Vermiculite
4. Layer not analyzed - attached to previous positive layer and contamination is suspected
5. Not enough sample to analyze

6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

**CA Labs**  
Dedicated to  
Quality

**Crisp Analytical, L.L.C.**  
1929 Old Denton Road  
Carrollton, TX 75006  
Phone 972-242-2754  
Fax 972-242-2798



**CA Labs, L.L.C.**  
12232 Industriplex, Suite 32  
Baton Rouge, LA 70809  
Phone 225-751-5632  
Fax 225-751-5634

## **Materials Characterization - Bulk Asbestos Analysis**

### **Laboratory Analysis Report - Polarized Light**

#### **OH Solutions**

119 Thames St S  
Ingersoll, ON N5C 2T3

Customer Project: Our Lady of Fatima  
Reference #: CAL2001569RL

Date: 1/27/2020

#### **Analysis and Method**

Summary of polarized light microscopy (PLM / Stereomicroscopy bulk asbestos analysis) using the methods described in 40CFR Part 763 Appendix E to Subpart E (Interim and EPA 600 / R-93 / 116 (Improved)). The sample is first viewed with the aid of a stereomicroscope. Numerous liquid slide preparations are created for analysis under the polarized microscope where identifications and quantifications are performed. Calibrated liquid refractive oils are used as liquid mounting medium. These oils are used for identification (dispersion staining). A calibrated visual estimation is reported, should any asbestiform mineral be present. Other techniques such as acid washing are used in conjunction with refractive oils for detection of smaller quantities of asbestos. All asbestos percentages are based on calibrated visual estimation traceable to NIST standards for regulated asbestos. Traceability to measurement and calibration is achieved by using known amounts and types of asbestos from standards where analyst and laboratory accuracy are measured. As little as 0.001% asbestos can be detected in favorable samples, while detection in unfavorable samples may approach the detection limit of 0.50% (well above the laboratory definition of trace).

#### **Discussion**

Vermiculite containing samples may contain trace amounts of actinolite/tremolite. When not detected by PLM, these samples should be analyzed using TEM methods and / or water separation techniques. Suspected actinolite/vermiculite presence will be indicated through the sample comment section of this report.

Fibrous talc containing samples may contain a regulated asbestos fiber known as anthophyllite. Under certain conditions the same fiber may actually contain both talc and anthophyllite (a phenomenon called intergrowth). Again, TEM detection methods are recommended. CA Labs PLM report comments will denote suspected amounts of asbestiform anthophyllite with talc, where further analysis is recommended.

Some samples (floor tiles, surfacings, etc.) may contain fibers too small to be detectable by PLM analysis and should be analyzed by TEM bulk protocols.

A "trace asbestos" will be reported if the analyst observes far less than 1% asbestos. CA Labs defines "trace asbestos" as a few fibers detected by the analyst in several preparations and will indicate as such under these circumstances.

Since allowable variation in quantification of samples close to 1% is high, <1% may be reported. Such results are ideal for point counting, and the technique is mandatory for friable samples (NESHAP, Nov. 1990 and clarification letter 8 May 1991) under 1% percent asbestos or "trace asbestos". **In order to make all initial PLM reports issued from CA Labs NESHAP compliant, all <1% asbestos results (except floor tiles) will be point counted at no additional charge.**

#### **Qualifications**

CA Labs is accredited by the National Voluntary Accreditation Program (NVLAP) for selected test methods for airborne fiber analysis (TEM), and for bulk asbestos fiber analysis (PLM). CA Labs is also accredited by AIHA LAP, LLC. in the PLM asbestos field of testing for Industrial Hygiene. All analysts have completed college courses or hold a degree in a natural science (geology, biology, or environmental science). Recognition by a state professional board in one these disciplines is preferred, but not required. Extensive in-house training programs are used to augment the educational background of the analyst. The Laboratory Director and Quality Manager have received supplemental McCrone Research training for asbestos identification. Analysis performed at Crisp Analytical Labs, LLC 1929 Old Denton Road Carrollton, TX 75006

*Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235*  
**AIHA LAP, LLC Laboratory #102929**

**CA Labs**  
**Dedicated to**  
**Quality**

**Crisp Analytical, L.L.C.**  
 1929 Old Denton Road  
 Carrollton, TX 75006  
 Phone 972-242-2754  
 Fax 972-242-2798

**CA Labs, L.L.C.**  
 12232 Industrilex, Suite 32  
 Baton Rouge, LA 70809  
 Phone 225-751-5632  
 Fax 225-751-5634

Overview of Project Sample Material Containing Asbestos

<b>Customer Project:</b>		Our Lady of Fatima		<b>CA Labs Project #:</b> CAL2001569RL	
Sample #	Layer #	Analysts	Physical Description of Subsample	Asbestos type / calibrated visual estimate percent	List of Affected Building Material Types
109-02	109-02-1		<b>Mastic/</b> gray floor tile	<b>3% Chrysotile</b>	<b>gray floor tile</b>

Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235  
**AIHA LAP, LLC Laboratory #102929**

**Glossary of abbreviations (non-asbestos fibers and non-fibrous minerals):**

ca - carbonate	pe - perlite	fg - fiberglass	pa - palygorskite (clay)
gypsum - gypsum	qu - quartz	mw - mineral wool	
bi - binder		wo - wollastinite	
or - organic		ta - talc	
ma - matrix		sy - synthetic	
mi - mica		ce - cellulose	
ve - vermiculite		br - brucite	
ot - other		ka - kaolin (clay)	

This report relates to the items tested. This report is not to be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST, AIHA LAP, LLC, or any other agency of the federal government. This report may not be reproduced except in full without written permission from CA Labs. These results are submitted pursuant to CA Labs' current terms and sale, condition of sale, including the company's standard warranty and limitations of liability provisions and no responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing to return the samples covered by this report, CA Labs will store the samples for a period of ninety (90) days before discarding. A shipping or handling fee may be assessed for the return of any samples.



**CA Labs**  
**Dedicated to**  
**Quality**

**Crisp Analytical, L.L.C.**

1929 Old Denton Road  
 Carrollton, TX 75006  
 Phone 972-242-2754  
 Fax 972-242-2798

**CA Labs, L.L.C.**

12232 Industriplex, Suite 32  
 Baton Rouge, LA 70809  
 Phone 225-751-5632  
 Fax 225-751-5634

**Polarized Light Asbestiform Materials Characterization**

<b>Customer Info:</b>	<b>Attn:</b>	<b>Customer Project:</b>	<b>CA Labs Project #:</b>
<b>OH Solutions</b>			CAL2001569RL
119 Thames St S		Our Lady of Fatima	<b>Date:</b> 1/27/2020
Ingersoll, ON N5C 2T3		<b>Turnaround Time:</b>	<b>Samples Received:</b> 1/27/20 10:30am
Phone # (519) 485 - 2500		4 Hours	<b>Date Of Sampling:</b> None Given
Fax # (866) 700 - 4975			<b>Purchase Order #:</b>

Sample #	Com ment	Layer #	Analysts Subsample	Physical Description of	Homo-geneo us (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
109-02		109-02-1		<b>Mastic/</b> gray floor tile	y	<b>3% Chrysotile</b>		97% qu,ca
		109-02-2		black mastic	y	<b>None Detected</b>		100% gy,bi
109-03		109-03-1		<b>Mastic/</b> brown floor tile		<b>Positive Stop</b>		
		109-03-2		black mastic	y	<b>None Detected</b>		100% gy,bi
110-01		110-01-1		<b>Mastic/</b> green floor tile	y	<b>None Detected</b>		100% qu,ca
		110-01-2		black mstic	y	<b>None Detected</b>		100% gy,bi
110-02		110-02-1		<b>Mastic/</b> white floor tile	y	<b>None Detected</b>		100% qu,ca


Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

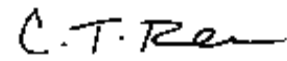
**AIHA LAP, LLC Laboratory #102929**


Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.  
 Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:

  
 Julio Robles  
 Analyst

  
 Technical Manager  
 Tanner Rasmussen

  
 Senior Analyst  
 Julio Robles

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
2. Fire Damage no significant fiber damages effecting fibrous percentages
3. Actinolite in association with Vermiculite
4. Layer not analyzed - attached to previous positive layer and contamination is suspected
5. Not enough sample to analyze

6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

**CA Labs**  
**Dedicated to**  
**Quality**

**Crisp Analytical, L.L.C.**

1929 Old Denton Road  
 Carrollton, TX 75006  
 Phone 972-242-2754  
 Fax 972-242-2798

**CA Labs, L.L.C.**

12232 Industriplex, Suite 32  
 Baton Rouge, LA 70809  
 Phone 225-751-5632  
 Fax 225-751-5634

**Polarized Light Asbestiform Materials Characterization**

**Customer Info:** **Attn:**  
**OH Solutions**  
 119 Thames St S  
 Ingersoll, ON N5C 2T3

Phone # (519) 485 - 2500  
 Fax # (866) 700 - 4975

**Customer Project:**  
 Our Lady of Fatima  
**Turnaround Time:**  
 4 Hours

**CA Labs Project #:**  
 CAL2001569RL

**Date:** 1/27/2020  
**Samples Received:** 1/27/20 10:30am  
**Date Of Sampling:** None Given  
**Purchase Order #:**

Sample #	Com ment	Layer #	Analysts Subsample	Physical Description of	Homo- geneo us (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
		110-02- 2		black mastic	y	<b>None Detected</b>		100% gy,bi
110-03		110-03- 1		<b>Mastic/ green floor tile</b>	y	<b>None Detected</b>		100% qu,ca
		110-03- 2		black mastic	y	<b>None Detected</b>		100% gy,bi

Dallas NVLAP Lab Code 200349-0 TEM/PLM TCEQ# T104704513-15-3 TDH 30-0235

**AIHA LAP, LLC Laboratory #102929**

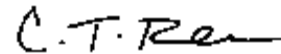
Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.  
 Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:



Julio Robles  
 Analyst



Technical Manager  
 Tanner Rasmussen  
 Senior Analyst  
 Julio Robles

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
2. Fire Damage no significant fiber damages effecting fibrous percentages
3. Actinolite in association with Vermiculite
4. Layer not analyzed - attached to previous positive layer and contamination is suspected
5. Not enough sample to analyze

6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:** Vinyl Floor Tile Assumed to Contain Asbestos

**Level :** LOC 24 - First Floor

**Room :** Staff Washroom

**Asbestos Present :** Potentially

Ceiling	Non-Asbestos Drywall Compound								V105
Duct	Inaccessible								
Floor	Suspect Vinyl Floor Tile	30.0 SF	Good		A	8	Yes	No	
Mechanical	Inaccessible								
Piping	Uninsulated								
Structure	Inaccessible								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:** No access above ceiling.

Vinyl Floor Tile Assumed to Contain Asbestos

**Level :** LOC 25 - First Floor

**Room :** Corridor

**Asbestos Present :** No

Ceiling	Non-Asbestos Lay-in Tile								V0002
Duct	Uninsulated								
Floor	Terrazzo								
Mechanical	Not Found								

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:**

---

Level :	Room :	Asbestos Present :
LOC 26 - First Floor	Corridor	No

---

Ceiling	Non-Asbestos Lay-in Tile								V0002
Duct	Uninsulated								
Floor	Terrazzo								
Mechanical	Not Found								
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:**

---

Level :	Room :	Asbestos Present :
LOC 27 - First Floor	Corridor	Yes

---

Ceiling	Non-Asbestos Lay-in Tile								V0002
Duct	Asbestos Sealant	Good	Chrysotile 4.00%	C	7	Yes	No		107-01
Duct	Uninsulated								
Floor	Terrazzo								

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Mechanical	Not Found								
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:**

Includes vestibule.  
Reno 2019.

**Level :** LOC 28 - First Floor

**Room :** Library

**Asbestos Present :** Yes

Ceiling	Non-Asbestos Lay-in Tile								V0002
Duct	Asbestos Sealant		Good	Chrysotile 4.00%	C	7	Yes	No	107-02
Floor	Carpet								
Floor	Suspect Vinyl Floor Tile	200.0 SF	Good		A	8	Yes	No	
Mechanical	Not Found								
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								105-05

**Comments:**

**Level :** LOC 29 - First Floor

**Room :** Resource Centre

**Asbestos Present :** Potentially

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Ceiling	Non-Asbestos Lay-in Tile								V0002
Duct	Uninsulated								
Floor	Suspect Vinyl Floor Tile	308.0 SF	Good		A	8	Yes	No	
Mechanical	Not Found								
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:** Vinyl Floor Tile Assumed to Contain Asbestos

**Level :** LOC 30 - First Floor

**Room :** Librarian's Office

**Asbestos Present :** Potentially

Ceiling	Non-Asbestos Lay-in Tile								V0002
Duct	Uninsulated								
Floor	Suspect Vinyl Floor Tile	144.0 SF	Good		A	8	Yes	No	
Mechanical	Not Found								
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:** Vinyl Floor Tile Assumed to Contain Asbestos

**Level :** LOC 31 - First Floor

**Room :** I.T. Room

**Asbestos Present :** Potentially

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Ceiling	Non-Asbestos Lay-in Tile								V0002
Duct	Uninsulated								
Floor	Suspect Vinyl Floor Tile	168.0 SF	Good		A	8	Yes	No	
Mechanical	Inaccessible								
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Inaccessible								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:** No access above ceiling.

Vinyl Floor Tile Assumed to Contain Asbestos

**Level :** LOC 32 - First Floor

**Room :** 3 - Storage Room

**Asbestos Present :** Potentially

Ceiling	Non-Asbestos Lay-in Tile								V0002
Duct	Uninsulated								
Floor	Suspect Vinyl Floor Tile	80.0 SF	Good		A	8	Yes	No	
Mechanical	Not Found								
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:** Vinyl Floor Tile Assumed to Contain Asbestos

Reno 2019.

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
<b>Level :</b> LOC 33 - First Floor			<b>Room :</b> Publishing Room			<b>Asbestos Present :</b> No			
Ceiling	Non-Asbestos Lay-in Tile								V0002
Duct	Uninsulated								
Floor	Non-Asbestos Vinyl Tile - New								
Mechanical	Not Found								
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105
<b>Comments:</b>									
Reno 2019.									
<b>Level :</b> LOC 34 - First Floor			<b>Room :</b> Girl's Washroom			<b>Asbestos Present :</b> Potentially			
Ceiling	Non-Asbestos Drywall Compound								V105
Duct	Inaccessible								
Floor	Terrazzo								
Mechanical	Inaccessible								
Piping	Uninsulated								
Structure	Inaccessible								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105



# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample	
<b>Comments:</b> No access above ceiling.										
Reno 2019.										
<b>Level :</b> LOC 35 - First Floor			<b>Room :</b> Boy's Washroom			<b>Asbestos Present :</b> Potentially				
Ceiling	Non-Asbestos Drywall Compound								V105	
Duct	Uninsulated									
Floor	Terrazzo									
Mechanical	Not Found									
Piping	Fibreglass Fitting									
Piping	Fibreglass Straight Run									
Piping	Uninsulated									
Structure	Steel Deck & Joist									
Wall	Masonry									
Wall	Non-Asbestos Drywall Compound								V105	
<b>Comments:</b>										
Reno 2019.										
<b>Level :</b> LOC 36 - First Floor			<b>Room :</b> 122 - Classroom			<b>Asbestos Present :</b> Yes				
Ceiling	Non-Asbestos Lay-in Tile								V0002	
Duct	Uninsulated									
Floor	Asbestos Vinyl Floor Tile	784.0	SF	Good	Chrysotile 3.00%	A	7	Yes	No	V102
Floor	Terrazzo									
Mechanical	Not Found									
Piping	Fibreglass Fitting									

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:**

Asbestos containing accoustic mastic on underside of sink.  
Reno 2019.

---

<b>Level :</b> LOC 37 - First Floor	<b>Room :</b> 116 - Classroom	<b>Asbestos Present :</b> Yes
-------------------------------------	-------------------------------	-------------------------------

---

Ceiling	Non-Asbestos Lay-in Tile									V0002
Duct	Uninsulated									
Floor	Asbestos Vinyl Floor Tile	840.0 SF	Good	Chrysotile 3.00%	A	7	Yes	No		V102
Floor	Terrazzo									
Mechanical	Not Found									
Piping	Fibreglass Fitting									
Piping	Fibreglass Straight Run									
Structure	Steel Beam, Deck & Joist									
Wall	Masonry									
Wall	Non-Asbestos Drywall Compound									V105

**Comments:**

Asbestos containing accoustic mastic on underside of sink.  
Reno 2019.

---

<b>Level :</b> LOC 38 - First Floor	<b>Room :</b> 114 - Classroom	<b>Asbestos Present :</b> Yes
-------------------------------------	-------------------------------	-------------------------------

---

Ceiling	Non-Asbestos Lay-in Tile									V0002
---------	--------------------------	--	--	--	--	--	--	--	--	-------

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Duct	Uninsulated								
Floor	Asbestos Vinyl Floor Tile	840.0 SF	Good	Chrysotile 3.00%	A	7	Yes	No	S104-01
Floor	Terrazzo								
Mechanical	Not Found								
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								105-01

**Comments:**

Asbestos containing mastic on underside of sink.  
Reno 2019.

**Level :** LOC 39 - First Floor

**Room :** 112 - Classroom

**Asbestos Present :** Yes

Ceiling	Non-Asbestos Lay-in Tile								V0002
Duct	Uninsulated								
Floor	Asbestos Vinyl Floor Tile	840.0 SF	Good	Chrysotile 3.00%	A	7	Yes	No	V102
Floor	Terrazzo								
Mechanical	Not Found								
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
--------	-------------	----------	-------	---------------	---------	--------	---------	---------	--------

**Comments:**

Asbestos containing mastic on underside of sink.  
Reno 2019.

**Level :** LOC 40 - First Floor

**Room :** 110 - Classroom

**Asbestos Present :** Yes

Ceiling	Non-Asbestos Lay-in Tile								V0002
Duct	Uninsulated								
Floor	Asbestos Vinyl Floor Tile	840.0 SF	Good	Chrysotile 3.00%	A	7	Yes	No	V102
Floor	Terrazzo								
Mechanical	Not Found								
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:**

Asbestos containing acoustic mastic on underside of sink.  
Reno 2019.

**Level :** LOC 41 - First Floor

**Room :** Corridor

**Asbestos Present :** Yes

Ceiling	Non-Asbestos Lay-in Tile								V0002
Duct	Asbestos Sealant		Good	Chrysotile 4.00%	C	7	Yes	No	104-03
Duct	Uninsulated								
Floor	Terrazzo								
Piping	Fibreglass Fitting								

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:**

Reno 2019.

**Level :** LOC 42 - First Floor

**Room :** Corridor

**Asbestos Present :** No

Ceiling	Non-Asbestos Lay-in Tile								V0002
Duct	Uninsulated								
Floor	Terrazzo								
Mechanical	Not Found								
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:**

Reno 2019.

**Level :** LOC 43 - First Floor

**Room :** Corridor

**Asbestos Present :** No

Ceiling	Non-Asbestos Lay-in Tile								V0002
Duct	Not Found								
Floor	Terrazzo								

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Mechanical	Not Found								
Piping	Uninsulated								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
<b>Comments:</b>									
Reno 2019. Vestibule now closed up.									

**Level :** LOC 44 - First Floor

**Room :** 124 - Classroom

**Asbestos Present :** Yes

Ceiling	Non-Asbestos Lay-in Tile									V0002
Duct	Uninsulated									
Floor	Asbestos Vinyl Floor Tile	784.0 SF	Good	Chrysotile 3.00%	A	7	Yes	No		V102
Floor	Terrazzo									
Mechanical	Not Found									
Piping	Fibreglass Fitting									
Piping	Fibreglass Straight Run									
Structure	Steel Beam, Deck & Joist									
Wall	Masonry									
Wall	Non-Asbestos Drywall Compound						No	No		V105

**Comments:**

Asbestos containing acoustic mastic on underside of sink.  
Reno 2019.

**Level :** LOC 45 - First Floor

**Room :** 126 - Classroom

**Asbestos Present :** Yes

Ceiling	Non-Asbestos Lay-in Tile									V0002
---------	--------------------------	--	--	--	--	--	--	--	--	-------

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Duct	Uninsulated								
Floor	Asbestos Vinyl Floor Tile	784.0 SF	Good	Chrysotile 3.00%	A	7	Yes	No	S102-01
Floor	Terrazzo								
Mechanical	Not Found								
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								105-02

**Comments:**

Asbestos containing acoustic mastic on underside of sink.  
Reno 2019.

---

**Level :** LOC 46 - First Floor      **Room :** 128 - Classroom      **Asbestos Present :** Yes

---

Ceiling	Non-Asbestos Lay-in Tile								V0002
Duct	Uninsulated								
Floor	Asbestos Vinyl Floor Tile	784.0 SF	Good	Chrysotile 3.00%	A	7	Yes	No	V102
Mechanical	Not Found								
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
--------	-------------	----------	-------	---------------	---------	--------	---------	---------	--------

**Comments:**

Asbestos containing acoustic mastic on underside of sink.  
Reno 2019.

**Level :** LOC 47 - First Floor

**Room :** 130 - Kindergarten

**Asbestos Present :** Yes

Ceiling	Non-Asbestos Lay-in Tile									V0002
Duct	Uninsulated									
Floor	Asbestos Vinyl Floor Tile	784.0 SF	Good	Chrysotile 3.00%	A	7	Yes	No		V102
Floor	Terrazzo									
Mechanical	Not Found									
Piping	Fibreglass Fitting									
Piping	Fibreglass Straight Run									
Piping	Uninsulated									
Structure	Steel Beam, Deck & Joist									
Wall	Masonry									
Wall	Non-Asbestos Drywall Compound									V105

**Comments:**

Asbestos containing acoustic mastic on underside of sink.  
Reno 2019.

**Level :** LOC 48 - First Floor

**Room :** 130A - Kindergarten Coat Room

**Asbestos Present :** Yes

Ceiling	Non-Asbestos Lay-in Tile									V0002
Duct	Uninsulated									
Floor	Asbestos Vinyl Floor Tile	216.0 SF	Good	Chrysotile 3.00%	A	7	Yes	No		V102
Mechanical	Not Found									



# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Piping	Uninsulated								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:**

Reno 2019.

**Level :** LOC 49 - First Floor

**Room :** Storage Room

**Asbestos Present :** Yes

Ceiling	Non-Asbestos Lay-in Tile									V0002
Duct	Uninsulated									
Floor	Asbestos Vinyl Floor Tile	96.0 SF	Good	Chrysotile 3.00%	A	7	Yes	No		V102
Floor	Ceramic									
Mechanical	Not Found									
Piping	Fibreglass Fitting									
Piping	Fibreglass Straight Run									
Structure	Steel Beam, Deck & Joist									
Wall	Masonry									
Wall	Non-Asbestos Drywall Compound									V105

**Comments:**

Reno 2019.

**Level :** LOC 50 - First Floor

**Room :** Side Entrance

**Asbestos Present :** No

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Ceiling	Non-Asbestos Lay-in Tile								
Duct	Not Found								
Floor	Terrazzo								
Mechanical	Not Found								
Piping	Not Found								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								

**Comments:**

Reno 2019.

**Level :** LOC 51 - First Floor

**Room :** 134 - Classroom

**Asbestos Present :** Yes

Ceiling	Non-Asbestos Lay-in Tile									V0002
Duct	Uninsulated									
Floor	Asbestos Vinyl Floor Tile	784.0	SF	Good	Chrysotile 3.00%	A	7	Yes	No	V102
Mechanical	Not Found									
Piping	Fibreglass Fitting									
Piping	Fibreglass Straight Run									
Structure	Steel Beam, Deck & Joist									
Wall	Masonry									
Wall	Non-Asbestos Drywall Compound									V105

**Comments:**

Asbestos containing acoustic mastic on underside of sink.  
Reno 2019.

**Level :** LOC 52 - First Floor

**Room :** 136 - Classroom

**Asbestos Present :** Yes

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Ceiling	Non-Asbestos Lay-in Tile								V0002
Duct	Uninsulated								
Floor	Asbestos Vinyl Floor Tile	784.0 SF	Good	Chrysotile 3.00%	A	7	Yes	No	V102
Mechanical	Not Found								
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:**

Asbestos containing acoustic mastic on underside of sink.  
Reno 2019.

**Level :** LOC 53 - First Floor

**Room :** 138 - Classroom

**Asbestos Present :** Yes

Ceiling	Non-Asbestos Lay-in Tile								V0002
Duct	Uninsulated								
Floor	Asbestos Vinyl Floor Tile	784.0 SF	Good	Chrysotile 3.00%	A	7	Yes	No	V102
Mechanical	Not Found								
Piping	Fibreglass Fitting								
Piping	Fibreglass Straight Run								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								105-03

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
--------	-------------	----------	-------	---------------	---------	--------	---------	---------	--------

**Comments:**

Asbestos containing acoustic mastic on underside of sink.  
Reno 2019.

**Level :** LOC 54 - First Floor

**Room :** Prep Room

**Asbestos Present :** Yes

Ceiling	Non-Asbestos Lay-in Tile								V0002
Duct	Asbestos Sealant		Good	Chrysotile 4.00%	C	7	Yes	No	107-04
Duct	Uninsulated								
Floor	Concrete								
Mechanical	Not Found								
Piping	Uninsulated								
Structure	Steel Beam, Deck & Joist								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105

**Comments:**

Reno 2019.  
ACM vinyl floor tiles removed 2019.  
Former storage 142 LOC 55 now part of this room.

**Level :** LOC 56 - First Floor

**Room :** Boy's Washroom

**Asbestos Present :** Potentially

Ceiling	Non-Asbestos Drywall Compound								V105
Duct	Uninsulated								
Floor	Terrazzo								
Mechanical	Inaccessible								
Piping	Uninsulated								

# Asbestos Status Report

(sorted by Building Number)

UPPER(BUILD:BuildingNumber) = 'SC 31'

Registered user: OH Solutions Inc.

Design	Description	Quantity	Cond.	Asbestos type	Access.	Action	Visible	Friable	Sample
Structure	Inaccessible								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105
<b>Comments:</b> No access above ceiling.									

**Level :** LOC 57 - First Floor

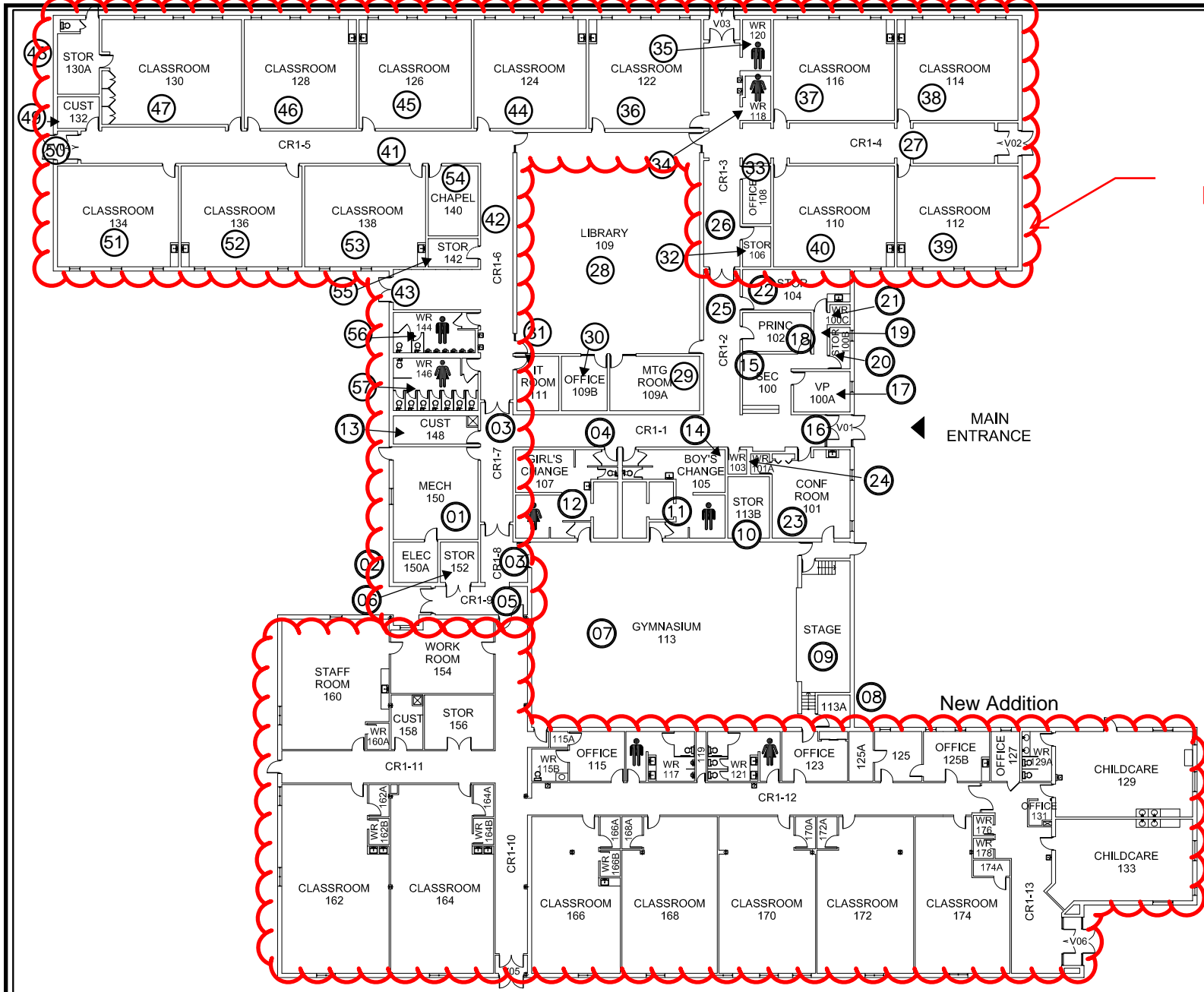
**Room :** Girls Washroom

**Asbestos Present :** Potentially

Ceiling	Non-Asbestos Drywall Compound								V105
Duct	Inaccessible								
Floor	Terrazzo								
Mechanical	Inaccessible								
Piping	Uninsulated								
Structure	Inaccessible								
Wall	Masonry								
Wall	Non-Asbestos Drywall Compound								V105
<b>Comments:</b> No access above ceiling.									

**APPENDIX III**

**DRAWINGS OUTLINING INSPECTION LOCATIONS**




Renovation in progress, 2019

MAIN ENTRANCE

New Addition

New Addition

Occupational Hygiene Solutions  
 119 Thames Street South  
 Ingersoll, Ontario  
 N5C 2T3



**St. Clair Catholic School Board**  
**Our Lady Of Fatima**  
**Elementary School Chatham**  
**Main Floor**  
**Survey Locations**

Project: <b>19-1713</b>	Prepared by: <b>JE</b>
Scale: <b>N.T.S.</b>	Date: <b>Sept 2019</b>

## **PART 1 - GENERAL**

### **1.01 RELATED REQUIREMENTS**

- .1 Section 06 10 00 Rough Carpentry
- .2 Section 07 13 00 Sheet Waterproofing
- .3 Section 07 84 00 Fire Stopping and Smoke Seal
- .4 Section 09 21 16 Gypsum Board Assemblies
- .5 Section 09 91 00 Painting

### **1.02 REFERENCE STANDARDS**

- .1 Volatile Organic Compound (VOC) Concentrations Limits for Architectural Coatings Regulations
- .2 Canadian Standards Association (CSA International)
  - .1 CSA-O121-17 Douglas Fir Plywood.
- .3 CAN/CSA-A82.27-M91 Gypsum Board Products
- .4 South Coast Air Quality Management District (SCAQMD): Rule 1113 - Architectural Coatings.
- .5 Green Seal, Inc.:
  - .1 GS-11 Standard for Paints and Coatings (Latest Edition).
  - .2 GC-03 - Environmental Criteria for Anti-Corrosive Paints.

### **1.03 INSTALLATION AND REMOVAL**

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from site all such work after use.

### **1.04 HOARDING**

- .1 Erect temporary construction site enclosures using interlocking welded metal panels 2.4 m high. Fence shall be freestanding on asphalt and anchored in loose terrain.
- .2 Apply plywood panels vertically as need for privacy and additional security.
- .3 Provide one lockable truck entrance gate and at least one pedestrian gate/door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys.
- .4 Erect and maintain pedestrian walkways including roof and side covers, complete with signs and electrical lighting as required by law.



- .5 Paint public side of site enclosure/walkways 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.
- .6 Erect temporary barriers around trees and plants designated to remain. Barriers shall be constructed using new 1.2 m high construction safety fence wired to rolled steel "T" bar fence posts spaced at 2.4 m on centre maximum. Protect from damage by equipment and construction procedures.
- .7 Maintain all barriers and fence in good repair.

#### **1.05 GUARD RAILS AND BARRICADES**

- .1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs.
- .2 Provide as required by governing authorities.

#### **1.06 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.

#### **1.07 DUST TIGHT SCREENS**

- .1 Provide dust tight screens or insulated partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.
- .2 Repair any damage caused by the installation and removal of temporary screens at no additional cost.
- .3 Maintain and relocate protection until such work is complete.

#### **1.08 ACCESS TO SITE**

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

#### **1.09 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 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.

**PART 2 - PRODUCTS**

**2.01 MATERIALS – FOR INTERNAL BARRIERS**

- .1 Plywood 13 mm minimum thickness Douglas Fir exterior grade plywood "B" or better for paint finish.
- .2 Structural Lumber: Rafters, posts, planking and bracing, N.L.G.A. No. 2 grade minimum.
- .3 Roll Plastic dust barrier: 6mil. Polyethylene roll sheets of a width and length to meet requirements for a dust proof barrier. Joints to be taped with Acrylic Tuck Tape by 3M.
- .4 Waterproof Membrane: "Bituthene" Regular by W.R. Grace Materials Ltd., or approved alternative.
- .5 Exterior alkyd paint to approved manufacturer.
- .6 Interior fire-retardant paint to approved manufacturer.
- .7 Steel Studs: 0.55 mm thick, wipe coated galvanized, having knurled flanges 32 mm wide with edges doubled back at least 4.8 mm, with girts as required.
- .8 Gypsum Board: To meet specified requirements of CAN/CSA-A82.27; fire rated board classified for hazard by ULC and labelled as such.

## **2.02 CHAIN LINK FENCING FOR EXTERIOR SITE ENCLOSURES**

- .1 Galvanized Link Fabric: 50mm mesh, No. 9 gauge woven steel wire, zinc coated after weaving, to meet specified requirements of ASTM A392.
- .2 Tube: 90mm diameter for end posts, 45mm for top rail, 60mm for line posts, standard, butt welded steel, galvanized, Schedule 40, to meet specified requirements of ASTM A120. Hollow metal structural steel tubing with minimum wall thickness of 0.100" and meeting specified requirements of CSA G40.21, Grade 50W.
- .3 Tension Wire: No. 6 gauge single strand, finished to match fabric.
- .4 Fabric Bands: Galvanized steel to fit tubing.
- .5 Rail Fittings: Galvanized steel for caps, top tails guides.
- .6 Galvanizing: Galvanize fittings, accessories and steel tube by hot dip method after fabrication to meet specified requirements of CSA Standard G164.
- .7 Approved manufacturers: Frost Fencing, Lundy Steel Fencing, Donald Greening or other approved alternate. Materials need not be new however, they must be able to remain in place and perform as required for the duration of the Project.
- .8 Fence height: 1830mm high unless noted otherwise.
- .9 Commercially available temporary construction fencing may be approved at the discretion of the architect.

## **PART 3 – EXECUTION**

### **3.01 FABRICATION AND INSTALLATION - HOARDING**

- .1 Install hoarding, fencing and sidewalk protection to the exterior of the building in accordance with approved Shop Drawings and By-laws of the City of Sarnia, and in accordance with documents.
- .2 Provide posts, planking and plywood.
- .3 Provide pedestrian and vehicular entrances as required, complete with swing or sliding gates, screened openings and all necessary hardware including locks.
- .4 Paint complete hoarding in colour selected by Consultant.
- .5 Maintain hoarding in good condition at all times.
- .6 Repair any hoarding removed or damaged, to satisfaction of the Consultant and authorities.

- .7 Wash all hoarding at least every two months.
- .8 Remove hoarding and fencing from site only when authorized by the Consultant.

**3.02 FABRICATION AND INSTALLATION - BARRIER**

- .1 Install barriers within the existing building to separate a work area from the remainder of the building.
- .2 Barriers shall be erected such that it is self-supporting and braced on work area side.
- .3 Erect a barrier of one hour fire rated drywall construction and to meet the requirements of Section 092116 and ULC Design No.W408 or W409.
- .4 Barriers shall not allow for the passage of airborne dust.
- .5 Maintain minimum clearance for exits and access to exits.
- .6 Relocate, temporarily any existing life safety devices which may become hidden or obscure due to the erection of barrier.
- .7 Maintain barriers in good stable condition at all times.

**3.03 FABRICATION AND INSTALLATION - CHAIN LINK FENCING**

- .1 Posts shall be spaced at 3000mm on centre maximum and shall be driven into the ground a minimum of 1200mm deep.
- .2 Install at 40mm above grade, a single strand of tension wire with turnbuckles at each end.
- .3 Install at top of fabric, a 45mm diameter top rail with appropriate caps and holders.
- .4 Install fabric under tension under anchor to the posts, top rail and bottom tension wire at 450mm on centre.
- .5 At end post, attach fabric and 6mm x 19mm tension bands at 300mm on centre.
- .6 Provide a 45mm diameter brace between end posts at mid height.
- .7 At completion of project, completely remove temporary fencing and patch all disturbed areas to match existing.
- .8 All fencing and components will remain the property of the Contractor.

**3.04**    **EXCEPTION**

- .1    Temporary/movable perimeter fencing barriers for site work is may be approved by the consultant where construction activities require staged construction perimeters.
  
- .2    Where permanent hoarding is not specifically indicated, provide safety fencing at perimeter of property adjacent of streets and adjacent residential properties, separating public access areas from the work site, where no other barrier is present.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.01 QUALITY CONTROL**

- .1 The Contractor is fully responsible for continuous examination and inspection of the Work related to the exterior assemblies to ensure compliance with the Contract Documents.
- .2 Materials and workmanship shall be subject to inspection and testing at any time. Cooperate in permitting access for inspection and testing to places where work is being done or stock is being stored.
- .3 In addition to Consultant site review, the Owner may provide quality control inspection and testing as specified.
- .4 Allow sufficient time for testing, evaluation, alterations and retesting so as not to affect the Progress Schedule for the Work.
- .5 The Consultant or Owner's inspection and testing agency may require testing of connections and special prefabricated inserts, as part of the work of this Section.

## **PART 2 - PRODUCTS**

### **2.01 DESIGN AND PERFORMANCE**

- .1 Building envelope includes, but is not limited to, slabs-on-grade, foundation walls, cladding systems, glazing systems, louvres, doors, frames, mechanical and electrical penetrations of assemblies, sealants, air and vapour barrier materials, roofing and waterproofing.
- .2 Design and engineer as required by applicable Section of the Specifications, fabricate, erect or install building envelope in compliance with the Ontario Building Code, other regulations and requirements of authorities having jurisdiction, with the stringent requirements to govern.
- .3 Take into account tolerance limitations of the structure, creep, deflection and other movements of the structure, both during the Work and in service.
- .4 Allow for expansion and contraction of components caused by ambient, temperature range and surface temperature variation of components, and structural movements, without causing distortion, failure of fastening, joints and/or air/vapour barrier seals, undue stress or other defects detrimental to appearance and/or performance.

- .5 Accommodate, by means of expansion and contraction provisions, any movements in the building assemblies themselves and between the assemblies and the building structure, caused by structural movements, both deflection and racking; and/or thermal expansion and contraction, without distortion, damage, misalignment of joints, breakage of air/vapour barriers, water and air penetration through the assembly, or glass breakage.
- .6 Method of attachment to the structure shall take into account site peculiarities such that there shall be no possibility of site and air vibrations or normal temperature movements of the building to loosen, weaken and/or fracture the connection between building envelope assembly components and the structure or between the components themselves.
- .7 Reinforce building envelope assembly components, as required, so that the members can safely sustain design loads.
- .8 Assemble and secure assemblies in manner which will keep stresses on sealants within the sealant manufacturers' recommended maximum.
- .9 Construct building envelope wall and window assemblies based on "Rain Screen" principle as advocated by the National Research Council of Canada. All voids between the assembly components as well as those between components and structure shall have:
  - .1 Gaskets, baffles, overlaps, seals and compartmentalization as required to provide a barrier "Rain Screen" to effectively prevent excessive rain water entry into any of the building envelope cavities but allow pressure equalization of cavity air spaces.
  - .2 Air barriers and seals as required to prevent entry of interior building air into building envelope cavities, and exterior air into the building. Air barriers and seals shall be able to withstand design pressures.
  - .3 Such provisions in the form of openings between cavities and the building exterior of sufficient cross sections to provide adequate pressure equalization. Openings shall be effectively baffled against direct rain water entry.
  - .4 Thermal separators, isolators and seals placed to eliminate contact between interior humid air and a cold surface or structural component to prevent condensation and ice build-up on such surfaces during cold weather.
- .10 Comply with the design and performance requirements specified in the Ontario Building Code, with the most stringent requirements to govern, and as specified herein, including the following principles:
  - .1 Drain to exterior face of the wall or window assembly, any water entering at joints and any condensation occurring within the building envelope assembly.
  - .2 Design, fabricate and install the assembly to minimize specified materials' ability to transmit moisture through capillary action.

- .3 Design, fabricate and install the assembly to be watertight to the interior under the interior and exterior design conditions in combination with the movements occurring due to loads imposed.
- .11 The requirements for an air barrier and a vapour barrier are intended to be provided at same plane in the building envelope design, unless otherwise indicated or specified. In such cases, the Drawings and Specifications refer to “air/vapour barrier”. The definition of the air/vapour barrier for the purpose of these Specifications is “a continuous membrane including joints of membrane between components and to adjacent construction which prevents or retards passage of moisture laden air and the diffusion of water vapour through it”.
- .12 Design sealant joints with strict regard for sizing of joint and parallel orientation of contract surfaces. Ensure support for both sealant and backer rod.
- .13 This project incorporates the design principles of positive air and vapour leakage control at the building enclosure line. Drawing details illustrate continuity of air/vapour barrier penetrating elements such as door, window and louver frames.
- .14 The barrier extends nominally from foundation line, vertically along exterior walls and to positive contact with roof air/vapour barrier.
- .15 In order to maintain the continuity of the envelope, the interfacing of various building elements requires close coordination by all trades involved with the exterior building elements. The positive mechanical connections and seal of transition medium extending from the primary wall air/vapour barrier to the insulation line of window or door frame, shall be made with proper construction sequencing established by Contractor to ensure such interfacing. All such transition installation shall be inspected by Consultant prior to concealing with subsequent construction.
- .16 Manufacturers of such window or door frames shall ensure that correctly designed and positioned metallic legs, extensions or recesses are provided at the thermal break line to facilitate connections of rigid or flexible transition medium as indicated prior to setting such elements in their allotted openings.
- .17 Provide completed installations free from vibrations, wind whistles, and noise due to thermal and structural movement and wind pressure.
- .18 Design building envelope assemblies to prevent damage due to earthquake forces as required by the Ontario Building Code.

### **PART 3 – EXECUTION**

**NOT USED**

**END OF SECTION**



## **PART 1 - GENERAL**

### **1.01 SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings:
  - .1 Provide shop drawings for:
    - .1 Building removal procedures complete with temporary shoring.
    - .2 Dock removals complete with pile removal procedures
    - .3 Temporary shoreline shoring and support
  - .2 Provide drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.

### **1.02 EXISTING CONDITIONS**

- .1 Examine areas to be selectively demolished or dismantled, and confirm that their condition is substantially the same as the date on which bids closed, and as indicated in the Contract Documents. Advise the Consultant of any conditions that vary from this.
- .2 Be familiar with structural system of the building, and the elements being demolished or dismantled. Ensure that all temporary measures of support are implemented in areas of demolition and reconstruction as noted on drawings.
- .3 Inspect site and verify with Consultant items designated for removal and items to remain. Protect existing items designated to remain and materials designated for salvage. In event of damage to such items, immediately replace or make repairs to approval of Consultant and at no cost to Owner.
- .4 Demolition of spray or trowel applied asbestos can be hazardous to health. Should material resembling spray or trowel applied asbestos be encountered in the course of demolition work stop work and notify the Consultant immediately. Do not proceed until written instructions have been received from the Consultant.
- .5 Demolition of applied asbestos materials can be hazardous to health. Should material resembling asbestos be encountered in the course of demolition work, stop work and notify the Consultant immediately. Do not proceed until written instructions have been received from the Consultant.

### **1.03 EXTENT OF DEMOLITION**

- .1 Drawings showing extent of selective demolition are intended to be schematic and do not indicate full extent of all selective demolition work. Examine all Documents to determine complete scope of selective demolition, removals and re-instatement, repair and make good required to complete the Work.

#### **1.04 PROTECTION**

- .1 Prevent movement, settlement or damage of existing structures, services, walks, paving, trees, landscaping, adjacent grades and parts of existing building to remain.
- .2 Provide bracing, shoring and underpinning as required. Make good damage caused by demolition.
- .3 Take precautions to support affected structures and, if safety of building being demolished appears to be endangered, cease operations and notify Consultant.
- .4 Prevent debris from blocking surface drainage system, elevators, mechanical and electrical systems which must remain in operation.
- .5 Provide bracing, shoring, or needling as required to support portions of existing structure or building to remain, where demolition or dismantling, cutting out, or partial removal of any elements, as specified in other Sections degrades the structural integrity of the structure to a point where it will not support all imposed loads. All bracing, shoring, and needling shall be designed to cause no damage to existing surfaces upon which the bracing, shoring or needling bears.
- .6 Shoring, bracing, or needling of structural items shall be designed by a Professional Engineer registered in the Province of Ontario, and drawings shall bear the seal of this Engineer. Submit drawings of shoring, bracing, or needling to the Consultant prior to installing.
- .7 Maintain temporary supports in place until permanent structure is able to fully support all imposed loads.
- .8 Make good damage to existing elements to remain caused by demolition.
- .9 Prevent debris from blocking surface drainage system, and obstructing mechanical and electrical systems which must remain in operation.
- .10 Protect salvaged elements from damage. Provide protective coverings and storage.

#### **PART 2 – PRODUCTS**

**NOT USED**

## **PART 3 – EXECUTION**

### **3.01 WORK**

- .1 Dispose of demolished materials except where noted otherwise and in accordance with authorities having jurisdiction and in accordance with the Specifications.
- .2 Remove materials and equipment as indicated in the documents. Salvage, and store, protect, and reinstall to suit execution of other parts of the Work as indicated in the documents.
- .3 Items for Demolition: Refer to drawings for specific details.
  - .1 Portions of existing VCT.
  - .2 Door and window openings in walls, overhead lintels, portions of masonry walls.
  - .3 Miscellaneous plumbing, mechanical and electrical items.
  - .4 Windows as indicated.
  - .5 Ceiling systems as indicated.
  - .6 All other elements required to allow the Work to be completed, whether specifically indicated, or not.
- .4 Carefully dismantle items containing materials for salvage and stockpile salvaged materials on site at locations as indicated or as directed by Consultant.
- .5 Temporarily reroute service lines entering building or on the building in accordance with authorities having jurisdiction, and to suit the Work of this Contract. Post warning signs on electrical lines and equipment that must remain energized during period of work.
- .6 Do not disrupt active or energized utilities designated to remain undisturbed without Consultant's consent.
- .7 Reference the demolition of specific Mechanical and Electrical as documented in drawings and Specifications.

### **3.02 SAFETY**

- .1 Comply with all applicable legislation.

### **3.03 DISMANTLING AND DEMOLITION**

- .1 Do all work in a manner to prevent endangering safety of building assemblies, systems or occupants.

- .2 Selectively dismantle parts of the building as required to suit installation of new work and remedial work. Salvage and reinstall elements unless otherwise indicated. Make good disturbed surfaces.
- .3 Remove existing equipment, services, and obstacles where required for refinishing or making good of existing surfaces, and replace as work progresses.
- .4 Do not disturb adjacent items designated to remain in place.
- .5 At end of each day's work, leave work in safe condition so that no part is in danger of toppling or falling. Protect interiors of parts not to be demolished from exterior elements at all times.
- .6 Demolish to minimize dusting. Keep materials wetted as directed by Consultant.
- .7 Do not throw or allow debris to fall uncontrolled from heights. Use chutes and other controls.

#### **3.04 CLEANING AND RESTORATION**

- .1 Keep site clean and organized throughout demolition process. Upon completion of work, remove debris, trim surfaces and leave work site clean.
- .2 Reinstate areas and existing works outside areas of demolition to conditions that existed prior to commencement of work.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.01 SECTION INCLUDES**

- .1 Formwork for cast-in place concrete, with shoring, bracing and anchorage.
- .2 Openings for other work.
- .3 Form accessories.
- .4 Form stripping.

### **1.02 RELATED REQUIREMENTS**

- .1 Section 03 20 00 - Concrete Reinforcement
- .2 Section 03 30 00 - Cast-in-Place Concrete
- .3 Section 05 50 00 - Metal Fabrications

### **1.03 REFERENCE STANDARDS**

- .1 American Concrete Institute
  - .1 ACI 301 - Structural Concrete.
  - .2 ACI 318 - Building Code Requirements for Structural Concrete and Commentary.
  - .3 ACI 347 - Guide to Formwork for Concrete.
- .2 Canadian Standards Association (CSA International)
  - .1 CAN/CSA-A23.1-14/A23.2-14 Concrete Materials and Methods of Concrete Construction/test methods and standard practices for concrete
  - .2 CAN/CSA O86-09 - Engineering Design in Wood
  - .3 CSA O151-17 Canadian Softwood Plywood.
  - .4 CSA O153-13 (2017) Poplar Plywood
  - .5 CSA O437 Series -93(R2011) Standards on OSB and Waferboard.
  - .6 CSA S269.1-16 Falsework and Formwork.
- .3 Underwriters' Laboratories of Canada (ULC)
  - .1 CAN/ULC-S701.1:2017, Standard for Thermal Insulation, Polystyrene, Boards

### **1.04 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit shop drawings for formwork and falsework.

- .1 Design and construct formwork, shoring and bracing to conform to code requirements; resultant concrete to conform to required shape, line and dimension.
- .3 Shop Drawings:
  - 1. Maintain on site for reference by consultant or owner.
  - 2. Indicate pertinent dimensions, materials, bracing, and arrangement of joints and ties.
  - 3. Indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, special architectural exposed finishes, ties, liners, and locations of temporary embedded parts.
  - 4. Comply with CSA S269.1
- .4 Product Data: Maintain on site data on void form materials and installation requirements.

### **1.05 DELIVERY, STORAGE, AND HANDLING**

- .1 Transport, handle, store, and protect products.
- .2 Store off ground in ventilated and protected manner to prevent deterioration from moisture.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- .1 Formwork materials:
  - .1 For concrete without special architectural features, use wood and wood product formwork materials with sufficient strength, stability and rigidity to prevent bulging or deflection under the liquid weight of the concrete and support in addition all construction loads to which they may be subjected.
- .2 Tubular column forms: round, spirally wound laminated fibre forms, internally treated with release material.
  - .1 Spiral pattern not to show in hardened concrete.
- .3 Form ties:
  - .1 For concrete not designated 'Architectural', use removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm diameter in concrete surface.
  - .2 For Architectural concrete, use snap ties complete with plastic cones and light grey concrete plugs.
- .4 Form release agent: non-toxic, biodegradable, low VOC.
- .5 Form stripping agent: colourless mineral oil, non-toxic, biodegradable, low VOC.

- .6 Sealant: to Section 07 92 00 - Joint Sealants.

### **PART 3 – EXECUTION**

#### **3.01 EXAMINATION**

- .1 Verify lines, levels and centres before proceeding with formwork.  
.2 Ensure that dimensions agree with drawings.

#### **3.02 EARTH FORMS**

- .1 Earth forms are not permitted

#### **3.03 FABRICATION AND ERECTION**

- .1 Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.  
.2 Fabricate and erect false work in accordance with CSA S269.1.  
.3 Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.  
.4 Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.  
.5 Align joints and make watertight. Keep form joints to a minimum.  
.6 Obtain approval before framing openings in structural members which are not indicated on Drawings.  
.7 Install void forms in accordance with manufacturer's recommendations. Protect forms from moisture or crushing.  
.8 Coordinate this section with other sections of work which require attachment of components to formwork.  
.9 If formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement before proceeding, request instructions from Consultant.

#### **3.04 APPLICATION - FORM RELEASE AGENT**

- .1 Apply form release agent on formwork in accordance with manufacturer's recommendations.  
.2 Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

- .3 Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings which are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

### **3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS**

- .1 Provide formed openings where required for items to be embedded in passing through concrete work.  
Locate and set in place items which will be cast directly into concrete.
- .2 Coordinate with work of other sections in forming and placing openings, slots, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.
- .3 Install accessories in accordance with manufacturer's instructions, straight, level, and plumb. Ensure items are not disturbed during concrete placement.
- .4 Install waterstops in accordance with manufacturer's instructions continuous without displacing reinforcement. Heat seal joints watertight.
- .5 Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
- .6 Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

### **3.06 FORM CLEANING**

- .1 Clean forms as erection proceeds, to remove foreign matter within forms.
- .2 Clean formed cavities of debris prior to placing concrete.
- .3 Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
- .4 During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

### **3.07 FIELD QUALITY CONTROL**

- .1 Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.

### **3.08 FORM REMOVAL**

- .1 Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.



- .2 Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
- .3 Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.01 SECTION INCLUDES**

- .1 Reinforcing steel bars, wire fabric and accessories for cast-in-place concrete.

### **1.02 RELATED SECTIONS**

- .1 Section 03 10 00 - Concrete Forming and Accessories.
- .2 Section 03 30 00 - Cast-in-Place Concrete.
- .3 Section 03 35 50 - Concrete Finishing

### **1.03 REFERENCES**

- .1 American Concrete Institute
  - .1 ACI SP-66 - American Concrete Institute - Detailing Manual.
- .2 American Society for Testing and Materials (ASTM)
  - .1 ASTM A82 -02 Steel Wire, Plain, for Concrete Reinforcement.
  - .2 ASTM A184/A184M -17 Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
  - .3 ASTM A185 -79 Steel Welded Wire Fabric for Concrete Reinforcement.
  - .4 ASTM A615/A615M – 18e1 Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
  - .5 ASTM A704/A704M -18 Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement.
  - .6 ASTM A706/A706M-16 Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement.
  - .7 ASTM A767/A767M-16 Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
  - .8 ASTM A775/A775M-17 Epoxy-Coated Steel Reinforcing Bars.
  - .9 ASTM A884/A884M-14 Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement.
  - .10 ASTM A1064/A1064M-18a Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed for Concrete
  - .11 ASTM D3963/D3963M-15 Fabrication and jobsite handling of Epoxy-Coated Steel Reinforcing Bars.
- .3 Reinforcing Steel Institute of Canada (RSIC)
  - .1 RSIC - Manual of Practice 2018
  - .2 RSCI – Canadian Placing Manual 2018.
- .4 CSA Group
  - .1 CAN/CSA-A23.1-14/A23.2-14 Concrete Materials and Methods of Concrete Construction/Test methods and standard practices for concrete.

- .2 CAN3-A23.3-14 Design of Concrete Structures.
- .3 CSA G30.3-M1983(R1998) Cold-Drawn Steel Wire for Concrete Reinforcement.
- .4 CSA G30.5-M1983 (R1998) Welded Steel Wire Fabric for Concrete Reinforcement.
- .5 CSA G30.15-M1983 (1998) Welded Deformed Steel Wire Fabric for Concrete Reinforcement.
- .6 CAN/CSA-G30.18—09(R2014) Carbon-Steel Bars for Concrete Reinforcement.
- .7 CAN/CSA-G40.20-13/G40.21-13 (R2018) Rolled or welded Structural Quality Steels/Structural quality steel.
- .8 CAN/CSA-G164-18 Hot Dip Galvanizing of Irregularly Shaped Articles.
- .9 CSA W186-M1990 (R2016) Welding of Reinforcing Bars in Reinforced Concrete Construction.

#### 1.04 ACTION AND INFORMATION SUBMITTALS

- .1 Submit in accordance with Section 01 33 00: Submittals Procedures
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for proprietary materials used in Cast-In-Place Concrete and additives and include product characteristics, performance criteria, physical size, finish, and limitations.
  - .2 When Chromate solution used as replacement for galvanizing non-prestressed reinforcement, provide product description for review by Consultant prior to its use.
  - .3 Submit one electronic copy of WHMIS MSDS.
- .3 Shop Drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province Ontario of Canada.
    - .1 Prepare reinforcement drawings in accordance with RSIC Manual of Standard Practice and SP-66.
    - .2 Indicate placing of reinforcement and:
      - .1 Bar bending details.
      - .2 Lists.
      - .3 Quantities of reinforcement.
      - .4 Sizes, spacings, locations of reinforcement and mechanical splices if approved by Consultant, with identifying code marks to permit correct placement without reference to structural drawings.

- .5 Indicate sizes, spacings and locations of chairs, spacers and hangers.
- .3 Detail lap lengths and bar development lengths to CAN/CSA-A23.3, unless otherwise indicated.
- .4 Indicate position and size of openings in slabs and walls. Coordinate with trades requiring openings.

### **1.05 SUBMITTALS FOR INFORMATION**

- .1 Section 01 30 00: Procedures for submittals.
- .2 Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- .3 Submit certified copies of mill test report of reinforcement materials analysis.

### **1.06 QUALITY ASSURANCE**

- .1 Perform Work in accordance with CRSI 63, 65 and Manual of Practice

## **PART 2 - PRODUCTS**

### **2.01 REINFORCEMENT**

- .1 Reinforcing Steel: CAN/CSA-G30.18, billet steel, Grade 400, deformed bars, weldable low alloy bars, unfinished.
- .2 Reinforcing steel shall contain a minimum pre-consumer recycled content of 15% and post-consumer recycled content of 60% (or Combined Recycled Content equivalent) and be extracted and manufactured locally as per section 01 67 11.
- .3 Welded Steel Wire Fabric: CSA G30.14 - Deformed steel wire, CSA G30.15 - Welded deformed steel wire.

### **2.02 ACCESSORIES**

- .1 Tie Wire: Minimum 16 gauge annealed type.
- .2 Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions including load bearing pad on bottom to prevent vapour barrier puncture.
- .3 Special Chairs, Bolsters, Bar Supports, Spacers Adjacent to Weather Exposed Concrete Surfaces: Plastic coated steel type; size and shape as required.

### **2.03 FABRICATION**

- .1 Fabricate concrete reinforcing in accordance with:
  - 1. CAN/CSA-A23.1.
  - 2. RSIC - Reinforcing Steel Manual of Standard Practice.
- .2 Locate reinforcing splices not indicated on drawings, at point of minimum stress.

**PART 3 - EXECUTION**

**3.01 PLACEMENT**

- .1 Place, support and secure reinforcement against displacement. Do not deviate from required position to CAN/CSA A23.1.
- .2 Do not displace or damage vapour barrier.
- .3 Accommodate placement of formed openings.
- .4 Maintain concrete cover around reinforcing as per drawings.

**3.02 FIELD QUALITY CONTROL**

- .1 Section 01 40 0: Field inspection and testing.
- .2 Inspect for acceptability.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.01 SECTION INCLUDES**

- .1 Cast-in-place concrete floors, foundation walls.
- .2 Floors and slabs on grade.
- .3 Control, expansion and contraction joint devices associated with concrete work.

### **1.02 RELATED SECTIONS**

- .1 Section 03 10 00 - Concrete Formwork and Accessories.
- .2 Section 03 20 00 - Concrete Reinforcement.
- .3 Section 03 35 00 - Concrete Finishing.
- .4 Section 03 39 00 – Concrete Curing

### **1.03 REFERENCES**

- .1 American Concrete Institute
  - .1 ACI 301 - Structural Concrete.
  - .2 ACI 302 - Guide for Concrete Floor and Slab Construction.
- .2 ASTM International:
  - .1 ASTM B221-14 Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
  - .2 ASTM C33/C33M Standard Specification for Concrete Aggregates.
  - .3 ASTM C94/C94M-17a - Ready-Mix Concrete.
  - .4 ASTM C150/C150M-18 Standard for Portland Cement.
  - .5 ASTM C260/C260M-10a(2016) Air Entraining Admixtures for Concrete.
  - .6 ASTM C494/C494M-17 Chemical Admixtures for Concrete.
  - .7 ASTM C618-17a - Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
  - .8 ASTM D412-16 Vulcanized Rubber and Thermoplastic Elastomers-Tension.
  - .9 ASTM D994/D994-11(2016) Preformed Expansion Joint Filler for Concrete (Bituminous Type).
- .3 CSA International
  - .1 CAN/CSA A23.1-14/A23.2-14 - Concrete Materials and Methods for Concrete Construction/Test Methods and standard practices for concrete.
  - .2 CAN/CSA A3000-18 - Cementitious Materials Compendium.

#### 1.04 SUBMITTALS FOR INFORMATION

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 At least 4 weeks prior to beginning Work, provide Consultant with samples of materials proposed for use as follows:
  - .1 5 L of curing compound.
  - .2 300 mm length of each type of joint filler.
  - .3 300 mm length of each type of waterstops.
  - .4 3 kg of each type of supplementary cementing material.
  - .5 10 kg of each type of blended hydraulic cement.
  - .6 5 kg of each admixture.
  - .7 5 kg of each fine and coarse aggregate.
- .3 Provide testing and inspection results and reports for review by Consultant and do not proceed without written approval when deviations from mix design or parameters are found.
- .4 Concrete pours: provide accurate records of poured concrete items indicating date and location of pour, quality, air temperature and test samples taken as described in PART 3 - FIELD QUALITY CONTROL.
- .5 Concrete hauling time: provide for review by Consultant deviations exceeding maximum allowable time of [120] minutes for concrete to be delivered to site of Work and discharged after batching.
- .6 Provide one electronic copy of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.

#### 1.05 SUBMITTALS AT PROJECT CLOSEOUT

- .1 Section 01 33 00: Submittal Procedures.
- .2 Accurately record actual locations of embedded utilities and components which are concealed from view.
- .3 Upon completion of concrete placement, provide final recycled content documentation in accordance with RMCAO technical bulletin T-030. Documentation shall take the format of the "Sample Letter" referenced in the technical bulletin.

#### 1.06 QUALITY ASSURANCE

- .1 Perform Work in accordance with ACI 301.
- .2 Acquire cement and aggregate from same source for all work.
- .3 Conform to ACI 305R when concreting during hot weather.
- .4 Conform to ACI 306R when concreting during cold weather.

---

## **PART 2 - PRODUCTS**

### **2.01 CONCRETE MATERIALS**

- .1 Portland Cement: CAN/CSA-A5, Type III, Natural colour.
- .2 Portland Cement: ASTM C150, Type III - High Early Strength Natural colour.
- .3 Fine and Coarse Aggregates: CAN/CSA-A23.1
- .4 Water: CAN/CSA-A23.1, clean and not detrimental to concrete.

### **2.02 ADMIXTURES**

- .1 Air Entrainment: ASTM C260.

### **2.03 ACCESSORIES**

- .1 Shrinkage Compensating Grout: Premixed compound consisting of metallic non-metallic aggregate, Portland cement, water reducing and plasticizing agents.
  - .1 Compressive strength: 48 MPa at 28 days.
  - .2 Consistency:
    - .1 Fluid: to ASTM C827. Time of efflux through flow cone (ASTM C939), under 30 s.
    - .2 Flowable: to ASTM C827. Flow table, 5 drops in 3 s, (ASTM C109, applicable portion) 125 to 145%.
    - .3 Plastic: to ASTM C827. Flow table, 5 drops in 3 s, (ASTM C109, applicable portions) 100 to 125 %.
    - .4 Dry pack to manufacturer's requirements.
  - .3 Net shrinkage at 28 days: maximum 1 %.
- .2 Non-Premixed Dry Pack Grout: Composition of non metallic aggregate, Portland cement with sufficient water for mixture to retain its shape when made into a ball by hand and capable of developing compressive strength of 48 MPa when measured at 28 days.
- .3 Non-Shrink Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 17 MPa in 48 hours and 48 MPa in 28 days.
- .4 Vapour Retarder: 6 mil thick clear polyethylene film fabric reinforced plastic film type recommended for below grade application.

### **2.04 JOINT DEVICES AND FILLER MATERIALS**

- .1 Joint Filler: To ASTM D994 10 mm thick, Asphalt Expansion Joint by R W Meadows or approved equal.
- .2 Ribbed Water Stops: Extruded PVC, Arctic Grade:
  - .1 Tensile Strength: ASTM D412, Method A, Die "C", minimum 13.94 MPa.
  - .2 Elongation: ASTM D412, Method A, Die "C", minimum 275%.



- .3 Tear Resistance: ASTM D624, Method A, Die "B", minimum 14.6 kN/m.
- .3 Sealant: Cold applied.

## **2.05 CONCRETE MIX**

- .1 Mix and deliver concrete in accordance with CAN/CSA-A23.1.
- .2 Mix and deliver concrete in accordance with ASTM C94, Alternative No. 2.
- .3 Use accelerating admixtures in cold weather only when approved by Consultant. Use of admixtures will not relax cold weather placement requirements.
- .4 Use calcium chloride only when approved by Consultant.
- .5 Use set retarding admixtures during hot weather only when approved by Consultant.
- .6 Add air entraining agent to normal weight concrete mix for work exposed to exterior.
- .7 Concrete must be extracted and manufactured locally as per section 01 67 11.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- .1 Verify site conditions prior to placing concrete.
- .2 Verify requirements for concrete cover over reinforcement.
- .3 Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

### **3.02 PREPARATION**

- .1 Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
- .2 In locations where new concrete is dowelled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.
- .3 Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories.
- .4 Prior to placing of concrete obtain Consultant's approval of proposed method for protection of concrete during placing and curing in adverse weather.
- .5 Protect previous Work from staining.
- .6 Clean and remove stains prior to application for concrete finishes.
- .7 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, workability, air content, temperature and test samples taken.
- .8 In locations where new concrete is dowelled to existing work, drill holes in existing concrete.
- .9 Place steel dowels of deformed steel reinforcing bars and pack solidly with epoxy grout to anchor and hold dowels in positions as indicated.

- .10 Do not place load upon new concrete until authorized by Consultant.

### 3.03 PLACING CONCRETE

- .1 Place concrete in accordance with CAN/CSA-A23.1.
- .2 Notify Consultant minimum 24 hours prior to commencement of operations.
- .3 Sleeves and inserts:
  - .1 Do not permit penetrations, sleeves, ducts, pipes or other openings to pass through joists, beams, column capitals or columns, except where indicated or approved by Consultant.
  - .2 Where approved by Consultant, set sleeves, ties, pipe hangers and other inserts and openings as indicated or specified elsewhere.
  - .3 Sleeves and openings greater than 100 x 100 mm not indicated, must be reviewed by Consultant.
  - .4 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain written approval of modifications from Consultant before placing of concrete.
  - .5 Confirm locations and sizes of sleeves and openings shown on drawings.
  - .6 Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints are not disturbed during concrete placement.
- .4 Install vapour retarder under interior slabs on grade. Lap joints minimum 6 inches and seal watertight by sealant applied between overlapping edges and ends.
- .5 Repair vapour retarder damaged during placement of concrete reinforcing. Repair with vapour retarder material; lap over damaged areas minimum 6 and seal watertight.
- .6 Anchor bolts:
  - .1 Set anchor bolts to templates in co-ordination with appropriate trade prior to placing concrete.
  - .2 Grout anchor bolts in preformed holes or holes drilled after concrete has set only after receipt of written approval from Consultant.
    - .1 Formed holes: 100 mm minimum diameter.
    - .2 Drilled holes: to manufacturers' recommendations.
    - .3 Protect anchor bolt holes from water accumulations, snow and ice build-ups.
    - .4 Set bolts and fill holes with epoxy grout.
    - .5 Locate anchor bolts used in connection with expansion shoes, rollers and rockers with due regard to ambient temperature at time of erection.

- .7 Drainage holes and weep holes:
  - .1 Form weep holes and drainage holes in accordance with Section 03 10 00 - Concrete Forming and Accessories. If wood forms are used, remove them after concrete has set.
  - .2 Install weep hole tubes and drains as indicated.
- .8 Dovetail anchor slots: in accordance with Section 04 05 00 - Common Work Results for Masonry.
  - .1 Install continuous vertical anchor slot to forms where masonry abuts concrete wall or columns.
  - .2 Install continuous vertical anchor slots at 800 mm on centre where concrete walls are masonry faced.
- .9 Grout under base plates using procedures in accordance with manufacturer's recommendations which result in 100 % contact over grouted area.
- .10 Water Stops.
  - .1 Install water stops to provide continuous water seal.
  - .2 Do not distort or pierce water stop in such a way as to hamper performance.
  - .3 Do not displace reinforcement when installing water stops.
  - .4 Use equipment to manufacturer's requirements to field splice water stops.
  - .5 Tie water stops rigidly in place.
  - .6 Use only straight heat sealed butt joints in field.
  - .7 Use factory welded corners and intersections.
- .11 Separate slabs on grade from vertical surfaces with 12mm thick joint filler.
- .12 Extend joint filler from bottom of slab to within 6mm inch of finished slab surface. Conform to Section 07 92 00 for finish joint sealer requirements.
- .13 Apply sealants in joint devices in accordance with Section 07 92 00.
- .14 Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- .15 Place concrete continuously between predetermined expansion, control, and construction joints.
- .16 Do not interrupt successive placement; do not permit cold joints to occur.
- .17 Place floor slabs in pattern indicated.
- .18 Saw cut joints within 24 hours after placing. Use 4mm inch thick blade, cut into 6mm depth of slab thickness.
- .19 Screed floors and slabs on grade level, maintaining surface flatness of maximum 3mm inch in 3048mm.

### 3.04 CONCRETE FINISHING

- .1 Provide formed concrete surfaces to be left exposed with smooth rubbed finish.
- .2 Finish concrete floor surfaces to requirements of Section 03355.
- .3 Wood float surfaces which will receive ceramic tile with full bed setting system.
- .4 Steel trowel surfaces which will receive carpeting and thin set ceramic
- .5 Steel trowel surfaces which are scheduled to be exposed.
- .6 In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains as indicated on drawings.

### 3.05 CURING AND PROTECTION

- .1 Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- .2 Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- .3 Cure concrete floor surfaces to requirements of Section 03 39 00.

### 3.06 FIELD QUALITY CONTROL

- .1 Provide free access to Work and cooperate with appointed inspection firms.
- .2 Submit proposed mix design to inspection and testing firm for review prior to commencement of Work.
- .3 Tests of cement and aggregates may be performed to ensure conformance with specified requirements.
- .4 Three concrete test cylinders will be taken for every 76 or less cu m of concrete placed.
- .5 One additional test cylinder will be taken during cold weather concreting, cured on job site under same conditions as concrete it represents.
- .6 One slump test will be taken for each set of test cylinders taken.

### 3.07 PATCHING

- .1 Allow Consultant to inspect concrete surfaces immediately upon removal of forms.
- .2 Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Consultant upon discovery.
- .3 Patch imperfections as directed.

### 3.08 DEFECTIVE CONCRETE

- .1 Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- .2 Repair or replacement of defective concrete will be determined by the Consultant.

- .3 Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Consultant for each individual area.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.01 SECTION INCLUDES**

- .1 Finishing slabs-on-grade and monolithic floor slab and separate floor toppings.
- .2 Surface treatment with concrete hardener and sealer.

### **1.02 RELATED SECTIONS**

- .1 Section 03 30 00 - Cast-in-Place Concrete:
- .2 Section 03 39 00 - Concrete Curing.

### **1.03 REFERENCES**

- .1 ACI 301 - Structural Concrete.
- .2 ACI 302 - Guide for Concrete Floor and Slab Construction.
- .3 ASTM E1155/E1155M - Determining Floor Flatness and Floor Levelness Numbers.

### **1.04 SUBMITTALS**

- .1 Section 01 30 00: Submission procedures.
- .2 Product Data: Provide data on concrete hardener and sealer compatibilities and limitations.
- .3 Complete Schedule M1 of section 01 67 11 and provide supporting documentation, demonstrating that concrete sealers meet the VOC content requirement of section 01 67 11. Submit this information 14 days prior to ordering for approval.”

### **1.05 MAINTENANCE DATA**

- .1 Section 01 70 00: Submission procedures.
- .2 Maintenance Data: Provide data on maintenance renewal of applied coatings

### **1.06 QUALITY ASSURANCE**

- .1 Perform Work in accordance with ACI 301.

### **1.07 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver, store, protect, and handle products to site.
- .2 Deliver materials in manufacturer's packaging including application instructions.

### **1.08 ENVIRONMENTAL REQUIREMENTS**

- .1 Temporary Heat: Ambient temperature of 10 degrees C minimum.
- .2 Ventilation: Sufficient to prevent injurious gases from temporary heat or other sources affecting concrete.

### **1.09 COORDINATION**

- .1 Section 01 30 00: Coordinate work.
- .2 Coordinate the work with concrete floor placement and concrete floor curing.

## **PART 2 - PRODUCTS**

### **2.01 COMPOUNDS - HARDENERS AND SEALERS**

- .1 Hardener: dry powder; Type R-Premix manufactured by W.R. Meadows.
- .2 Sealer: VOCOMP-20 manufactured by W.R. Meadows.
  - .1 Concrete sealers shall have a VOC content less than, or equal to, 100 g/L as per section 01 67 11

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- .1 Verify that floor surfaces are acceptable to receive the work of this section.

### **3.02 FLOOR FINISHING**

- .1 Finish concrete floor surfaces in accordance with ACI 301.
- .2 Wood float surfaces which will receive ceramic tile with full bed setting system.
- .3 Steel trowel surfaces which will receive carpeting and thin set ceramic tile.
- .4 Steel trowel surfaces which are scheduled to be exposed.
- .5 In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains as indicated on drawings.

### 3.03 FLOOR SURFACE TREATMENT

- .1 Apply dry shake hardener to manufacturer's instructions on floor surfaces.
- .2 Apply sealer to manufacturer's instructions on floor surfaces.

### 3.04 TOLERANCES

- .1 Maximum Variation of Surface Flatness For Exposed Concrete Floors: 1/8 inch in 10 ft.
- .2 Maximum Variation of Surface Flatness Under Carpeting: 3 mm in 3 m.
- .3 Correct defects in the defined traffic floor by grinding or removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

**END OF SECTION**



## **PART 1 - GENERAL**

### **1.01 SECTION INCLUDES**

- .1 Initial and final curing of horizontal and vertical concrete surfaces.

### **1.02 RELATED SECTIONS**

- .1 Section 03 30 00 - Cast-In-Place Concrete.
- .2 Section 03 35 00 - Concrete Finishing.

### **1.03 REFERENCES**

- .1 ACI 301 - Structural Concrete.
- .2 ACI 302 - Recommended Practice for Concrete Floor and Slab Construction.
- .3 ACI 308 - Guide to Curing Concrete.
- .4 ASTM C171-16 Sheet Materials for Curing Concrete.
- .5 ASTM C309-11 Liquid Membrane-Forming Compounds for Curing Concrete.
- .6 ASTM D2103-15 Polyethylene Film and Sheeting.

### **1.04 SUBMITTALS**

- .1 Submit to Section 01 30 00.
- .2 Product Data: Provide data on curing compounds compatibilities, and limitations.

### **1.05 QUALITY ASSURANCE**

- .1 Perform Work in accordance with ACI 301.

### **1.06 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver, store, protect, and handle products.
- .2 Deliver curing materials in manufacturer's packaging including application instructions.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- .1 Water: Potable, not detrimental to concrete.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- .1 Verify that substrate surfaces are ready to be cured.

### **3.02 EXECUTION - HORIZONTAL SURFACES**

- .1 Cure floor surfaces in accordance with ACI 308.

### **3.03 PROTECTION OF FINISHED WORK**

- .1 Protect finished Work.
- .2 Do not permit traffic over unprotected floor surface.

**END OF SECTION**

---

**PART 1 - GENERAL**

**1.1. Description**

**1.1.1. General Requirements**

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

**1.1.2. Section Includes**

.1 Masonry

**Related Sections**

Section 03 21 00 - Reinforcing steel for masonry lintels and reinforced masonry walls

Section 01 40 00 - Quality Requirements

Section 04 05 00 - Mortar and Grout

Section 04 20 00 - Unit Masonry

Section 04 50 23 - Masonry Reinforcing and Accessories

Section 05 12 00 - To furnish bearing plates

Section 05 12 00 - To furnish masonry anchors attached to steel structure

Section 05 12 00 - To furnish loose lintels

**1.1.3. Performance of Work Included in This Section, Specified in Other Sections**

Section 03 30 00 - Reinforced masonry

**1.2. Standards**

1.2.1 All work under this Section shall be carried out in accordance with Part 4, Section 4.4 of the current Ontario Building Code and CSA Standard CAN3-371-M84.

1.2.2 Use qualified and experienced journeymen masons for cutting and placing of masonry units and to personally direct all phases of the work including mortar mixes.

**1.3. Sample Panels**

1.3.1 Sample panels of masonry, as may be called for by the architect, are to be laid up using both exterior and interior masonry specified.

1.3.2 When approved, this sample will form the standard of quality to which all other masonry work is to conform.

**1.4. Examination/Preparation**

1.4.1 Examine the work of all Divisions affecting the work of this Division and report any defects or discrepancies to the Architect. No work in such areas shall be carried out until discrepancies have been resolved.

1.4.2 Establish all lines, levels, coursings and ensure co-ordination with other trades.

1.4.3 Notify all other trades when materials that are to be set in concrete block will be required and when and where the exact location of openings, chases, etc. will be. In the event of failure to properly locate openings, chases or materials to be set, this Contractor is to do all cutting and repairing necessary to the satisfaction of the Architect.

**1.5. Examination/Preparation**

- 1.5.1 Erect, maintain, and disassemble all scaffolding required for the performance of this trade's work in accordance with the provisions of the Construction Safety Act.
- 1.5.2 Scaffolding shall be strongly built and firmly braced and shall be supported only from the ground. It shall not be secured or braced against any part of the building.
- 1.5.3 Scaffolding may, with agreement between the mason and General Contractor be left for use by other trades and shall until so directed by the General Contractor.

**1.6. Protection**

- 1.6.1 Keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain, until masonry work is completed and protected by flashings or other permanent construction.
- 1.6.2 Protect masonry and other work from marking and other damage. Protect all completed work by all trades from mortar droppings. Use non-staining coverings.
- 1.6.3 Provide temporary bracing of masonry work during and after erection until permanent lateral support is in place.

**1.7. Clean Up and Demobilization**

- 1.7.1 Point all holes in masonry except weepers, and cut out all defective joints and repoint mortar.
- 1.7.2 Thoroughly clean all exposed masonry of exterior and interior walls of all dirt, stains, and excess mortar with stiff fibre brushes and a manufacturer's approved solution. Scrapers may be used only where necessary with prior approval of the Architect. Work from top of wall towards bottom, completing work without interruption. Clean a trial area for the Architect's approval to proceed. Power wash and/or acid wash as may be required to achieve final pristine completion.
- 1.7.3 Masonry work to be left in a finished condition satisfactory to the Architect.
- 1.7.4 Remove all equipment, surplus materials, debris, etc. immediately after completion of the work. Co-ordinate with the general contractor to repair and/or clean other work of the site as may be caused by the work of the Masonry Trade and as may be required.

**End of Section**

## **PART 1 - GENERAL**

### **1.01 RELATED SECTIONS**

- .1 Section 04 22 00 – Concrete Unit Masonry

### **1.02 REFERENCES**

- .1 CSA A179-14, Mortar and Grout for Unit Masonry.

### **1.03 SAMPLES**

- .1 Submit samples in accordance with Section 01 30 00 - Submittal Procedures.
- .2 Submit two samples of mortar and coloured mortar.

### **1.04 QUALITY ASSURANCE.**

- .1 Perform Work in accordance with applicable standards

### **1.05 DELIVERY, STORAGE, AND HANDLING**

- .1 Section 01 60 00: Deliver, store, protect, and handle products to site.
- .2 Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

### **1.06 ENVIRONMENTAL REQUIREMENTS**

- .1 Maintain materials and surrounding air temperature to minimum 10 degrees C prior to, during, and 48 hours after completion of masonry work or apply Cold Weather Requirements: IMIAC - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.
- .2 Maintain materials and surrounding air temperature to maximum 32 degrees C prior to, during, and 48 hours after completion of masonry work.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- .1 Use same brands of materials and source of aggregate for entire project.
- .2 Mortar and grout: CSA A179.

- .3 Use aggregate passing 1.18 mm sieve where 6 mm thick joints are indicated.
- .4 Colour: ground coloured natural aggregates or metallic oxide pigments.
- .5 Mortar for exterior masonry above grade:
  - .1 Loadbearing: Type S based on Proportion specifications.
  - .2 Non-loadbearing: Type N based on Proportion specifications.
  - .3 Parapet walls, chimneys, unprotected walls: Type based on Proportion specifications.
- .6 Mortar for foundation walls, manholes, sewers, pavements, walks, patios and other exterior masonry at or below grade: Type M based on Proportion specifications.
- .7 Mortar for interior masonry:
  - .1 Loadbearing: Type S based on Proportion specifications.
  - .2 Non-loadbearing: Type O based on Proportion specifications.
- .8 Following applies regardless of mortar types and uses specified above:
  - .1 Mortar for calcium silicate brick and concrete brick: Type O based on Proportion specifications.
  - .2 Mortar for stonework: Type N based on Proportion Property specifications.
  - .3 Mortar for grouted reinforced masonry: Type S based on Property Proportion specifications.
  - .4 Mortar for pointing: Type N based on Proportion specifications.
  - .5 Mortar for glass block: 1 part Portland cement, 1 part hydrated lime, 4 parts aggregate by volume.
- .9 White mortar: use white masonry cement to produce mortar type specified.
- .10 Coloured mortar: use colouring admixture not exceeding 10% of cement content by mass, or integrally coloured masonry cement, to produce coloured mortar to match approved sample.
- .11 Non-staining mortar: use non-staining masonry cement for cementitious portion of specified mortar type.
- .12 Grout: to CSA A179, Table 3.

## 2.02 MIXES

- .1 Colour and admixtures: mix grout to semi-fluid consistency.
- .2 Coloured mortars: incorporate colour and admixtures into mixes in accordance with manufacturer's instructions.
  - .1 Use clean mixer for coloured mortar.

- .3 Pointing mortar: Prehydrate pointing mortar by mixing ingredients dry, then mix again adding just enough water to produce damp workable mix that will retain its form when pressed into ball. Allow to stand for not less than 1 hour or more than 2 hours then remix with sufficient water to produce mortar of proper consistency for pointing.

### **PART 3 - EXECUTION**

#### **3.01 CONSTRUCTION**

- .1 Do masonry mortar and grout work in accordance with CSA A179 except where specified otherwise.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.01 SECTION INCLUDES**

- .1 Concrete masonry units
- .2 Natural Stone Masonry Units
- .3 Brick Masonry Units
- .4 Reinforcement, anchorage, and accessories.

### **1.02 RELATED SECTIONS**

- .1 Section 04 05 12 - Mortar and Grout
- .2 Section 05 50 00 - Metal Fabrications
- .3 Section 07 21 13 - Board Insulation
- .4 Section 07 26 00 - Vapour Retarders
- .5 Section 07 62 00 - Sheet Metal Flashing and Trim
- .6 Section 07 84 00 - Firestopping
- .7 Section 07 92 00 - Joint Sealers

### **1.03 REFERENCES**

- .1 ASTM
  - .1 ASTM A884/A884M-14 Epoxy-Coated Steel Wire and Welded Wire Reinforcement.
  - .2 ASTM A1022/A1022M-16b Deformed and Plain Stainless Steel Wire and Welded Wire for Concrete Reinforcement
  - .3 ASTM A123/A123M-17 Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - .4 ASTM A580/A580M - Stainless Steel Wire.
  - .5 ASTM A615/A615M -18e1 Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
  - .6 ASTM A641/A641M - 09a(2014) Zinc-Coated (Galvanized) Carbon Steel Wire.
  - .7 ASTM A653/A653M –18 Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .8 ASTM B370-12 Copper Sheet and Strip for Building Construction.
  - .9 ASTM C744 -16 Prefaced Concrete and Calcium Silicate Masonry Units.
  - .10 ASTM C90 -16a Load-Bearing Concrete Masonry Units.
  - .11 ASTM C129 -17 Non-Load Bearing Concrete Masonry Units.
  - .12 ASTM C568 /C568M-15 Limestone Dimension Stone

- .2 CSA Group
  - .1 CAN/CSA A165 Series-14, CSA Standards on Concrete Masonry Units.
  - .2 CAN/CSA A179-14 Mortar and Grout for unit masonry
  - .3 CAN/CSA A370 -14 Connectors for Masonry.
  - .4 CAN/CSA A371 -14 Masonry Construction for Buildings.
- .3 Underwriters Laboratories of Canada (ULC)
  - .1 CAN/ULC-S101-14 Standard Methods of Fire Endurance Tests of Building Construction and Materials.

#### **1.04 SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for concrete masonry units and include product characteristics, performance criteria, physical size, finish and limitations.

#### **1.05 QUALITY ASSURANCE**

- .1 Test Reports: submit certified test reports including sand gradation tests in accordance with CAN/CSA-A179 showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Mock-ups:
  - .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control
    - .1 Construct mock-up panel of exterior and interior concrete unit masonry construction minimum 1200 x 1800 mm.
    - .2 Face Masonry Mock Up: Prior to commencement of exterior cladding, lay up a section of typical wall construction on portion of building wall ready to receive cladding. Provide flashing, anchors, ties and weep procedures. Include two (600mm) lengths of base stone and up to 8 courses of Calcium Silicate Face Brick as specified. Include specified mortar. Mock Up Section should wrap a corner condition to indicate site cutting and breaking of end units at 90 degree turn.

#### **1.06 REGULATORY REQUIREMENTS**

- .1 Conform to applicable code for ULC requirements for fire rated masonry construction.

#### **1.07 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver store and handle materials in accordance with manufacturer's written instructions.



- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
  - .1 Offload concrete unit masonry packages using equipment that will not damage the surfaces.
  - .2 Do not use brick tongs to move or handle masonry.
  - .3 Storage and Handling Requirements:
    - .1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
    - .2 Do not double stack cubes of concrete unit masonry.
    - .3 Cover masonry units with non-staining waterproof membrane covering.
    - .4 Allow air circulation around units.
    - .5 Installation of wet or stained masonry units is prohibited.
    - .6 Keep concrete unit masonry in individual cardboard packaging provided by manufacturer until units are ready to be installed.
    - .7 Store and protect concrete unit masonry from nicks, scratches, and blemishes.
  - .4 Replace defective or damaged materials with new.

## 1.08 ENVIRONMENTAL REQUIREMENTS

- .1 Cold Weather Requirements: IMIAC - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.
- .2 When outside temperature is below or likely to drop below 4°C, materials and surrounding air shall be heated to maintain at least 10°C during period of laying and for 72 hrs. thereafter. Submit for approval methods for protecting masonry against low temperatures. All masonry units must be free from frost. Work to be executed in enclosure heated by smokeless means when temperature drops below 1°C.
- .3 Do not lay masonry units when air temperature is below -1° C.
- .4 Do not lay masonry during rain unless work is protected by sufficient enclosure.
- .5 Protect new masonry work from direct rays of sun to prevent fast drying and shrinkage.
- .6 Protect tops of all unfinished walls with weatherproof coverings at the end of each day's work, or upon stoppage of the work for any reason, or during rain, snow or sleet.
- .7 When air temperature is above 38 deg. C, or 32 deg. C with wind velocity greater than 13 km/hour, the spread of mortar beds shall be limited to 1200 mm and the masonry units shall be set within 1 minute of spreading the mortar.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- .1 **Standard concrete block units:** to CAN/CSA-A165 Series (CAN/CSA-A165.1)

- 
- .1 Classification: H/ 10/ A/ M Block grade
  - .2 Size: For the purposes of this project, the mason is to source American Imperial Unit sizes for continuation and infill of existing adjacent conditions and Metric Modular Units for new construction. Coordinate with architect in advance if there is question.
  - .3 Special shapes: such as end, bond, sash groove and lintel units, required for complete masonry installation indicated on Drawings. Use bullnose corner block at all door jambs, exposed vertical external corners and where otherwise indicated on Drawings.
  - .4 Solid Units: Provide 100% Solid Units where required by jurisdictional authorities and as noted on drawings.
  - .5 Moisture Controlled: “M” Units as approved by Architect
  - .6 CMU-1; Lightweight Units: Of slag aggregate manufacture. For use in all exposed partitions and exterior wall backup.
    - .1 Hollow Units: H/7.5/C/M
    - .2 Solid Units: S/15/A/M
    - .3 American Imperial and Metric as indicated.
    - .4 Single or Double Bullnose at all outside exposed corners.
    - .5 Colour: Grey
  - .7 CMU – 2 – Normal Weight Units: For use in contact in earth and concealed locations
    - .1 Non-load bearing assemblies; Type N
    - .2 Load Bearing Assemblies: Type S
    - .3 Hollow Units: H/15/A/M/, H20/A/M and H25/A/M.
    - .4 Solid Units (including 75%): S/15/A/M, H20/A/M and S/25/A/M/.
    - .5 Imperial to match existing and metric otherwise.
    - .6 Colour: Grey
    - .7 Face Block: Standard Smooth Face to match existing block in texture density and Colour.
  - .8 CMU-AC: Sound attenuation concrete masonry units, solid or hollow units H/25/A/M unless noted otherwise.

Products

    - .1 UltraLite Sound Cell” – Grey -by Richvale York Block Inc.
    - .2 Acousta-Wal – grey- Trenwyth.
    - .3 Soudblox – grey – by Proudfoot.  
(Gymnasium where noted on drawings)

**.2 Natural Stone Masonry Units**

- .1 Natural Stone Masonry Units (NSMU): Arriscraft 'Adair' Limestone. Acceptable Alternate: Mosa Dolomitic Limestone, type III High Density – ASTM C568 by OSI Hard Surfaces.
- .2 NSMU 1: Sawn top, bottom side and face. Exposed faces medium dressed.
- .3 Colour: Blue grey veined.
- .4 Size: 190mmx 590mmx 90mm.
- .5 Stone sill, Blue grey veined. 90mm top x 90mm face x 590mm length. Medium dressed on top and face, with 10mm rounded edges on top/front and front sides.

**.3 Calcium Silcate Manufactured Brick Units.**

- .1 Calcium Silicate Brick Units (CSBU): Arriscraft Contemporary Brick.
- .2 CSMBU 1: Smooth all sides except for face with top and bottom mortar frogs. Exposed face to be split face.
- .3 Colour: Blizzard
- .4 Size: 80mm x 590mm x 90mm

**2.02 REINFORCEMENT AND ANCHORAGE**

- .1 For Single Wythe Walls: Minimum 3.8 mm dia. side and cross rods, welded steel rod, galvanized, ladder design, DW 200 Dur-O-Wal Laudur by Dur-O-Wal Ltd. or Blok-Lok BL 10 ladder design by Blok-Lok Limited.
- .2 For Combination (Double Wythe) Solid Walls: 5 mm side and cross rods, welded steel rod, galvanized, ladder design, 4 wire, DW 220 Type by Dur-O-Wal Ltd., Blok-Lok BL 32 by Blok-Lok Limited.
- .3 For Cavity Walls: Interior wythe shall be single wythe ladder type; hot dipped galvanized.
  - .1 New exterior wythe shall be "Fero's" Block Shear Assembly. Shear connector plate shall be stainless steel: extruded polyethylene insulation support: Stainless Steel Vee-Tie. Spacing shall be 600 mm vertical and 800 mm horizontal. Fero Block Shear Anchor may be replaced with approval.
  - .2 New exterior wythe for tie in to existing concrete block shall be Helifix Stainless steel ties.
- .4 For Masonry at Steel Columns: 5.21 mm diameter wire with 1.19 mm diameter wire and 10 mm x 10 mm openings.
- .5 For Type A and B masonry, use stainless steel joint reinforcement. For exterior masonry use stainless steel reinforcement. For interior use mill galvanized.
- .6 Brick Wythe with Metal Stud framing. Bailey Brick Connector ESS-2 with Triangle V Stainless Steel wire min 3/16" diameter. (or approved equal.)
- .7

- .8 Dovetail Anchor:
  - .1 25.5 mm x 2 mm steel dovetail anchor, galvanized, with end crimped and bent.
  - .2 Fabricated of minimum .55 mm metal, galvanized after fabrication, minimum 27 mm depth, with cellular foam filler; by Richmond Acryo or "Beehive".
- .9 Flexible Anchor: To suit conditions and to allow for differential movement between the structure and masonry. Flex-O-Lok or Column-Lok by Blok-Lok Limited or similar anchor by Duro-O-Wal Ltd. of size and type to suit conditions and adequately anchor masonry.

### 2.03 MORTAR AND GROUT

- .1 Mortar and Grout: As specified in Section 04 05 12.

### 2.04 FLASHINGS

- .1 Sheet Metal :expansion
- .2 Through Wall Flashing Support: 0.55 mm thick cold rolled copper to meet specified requirements of ASTM B370, formed with 75 mm wide flanges with hemmed or offset edges to form anchorage in mortar joint.
- .3 Through Wall Damp-proof Flashing:
  - .1 Polyvinyl chloride flexible membrane, 20 mil thick, black; Rodoply by Sternson or Sealtight Flexguard by W.R. Meadows.
- .4 Damp-proofing Flashing Lap Cement :
  - .1 To meet specified requirements of flashing manufacturer.

### 2.05 ACCESSORIES

- .1 Preformed Control Joints: Neoprene material. Provide with corner and tee accessories, cement fused joints.
- .2 Joint Filler: Closed cell polyurethane; oversized 50 percent to joint width; self expanding.
- .3 Building Paper: No. 15 asphalt saturated felt.
- .4 Cavity Sealer: Closed cell Neoprene, or Ethofoam polystyrene by Dow Chemical of Canada Limited, continuous strip to fit tightly between inner and outer wythes of wall.
- .5 Expansion Joint: 0.55 mm thick cold rolled copper to meet specified requirements of ASTM B370, formed with 63.5 mm deep bellows and 75 mm wide flanges with hemmed or offset edges to form anchorage in mortar joint.
- .6 Nailing Strips: Softwood, preservative treated for moisture resistance, dovetail shape, sized to masonry joints

- .7 Weeps/cavity vents: Flexible polypropylene-copolymer plastic, honeycomb design, insect resistant. DA 1069 Cell vent by Dur-O-Wal Ltd. or Weephole Ventilator by Blok-Lok Limited.
- .8 Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.
- .9 Joint Packing at Walls
  - .1 Expansion Joint Packing: Glass fibre insulation, rigid board, density of 48 kg/cu.m.
- .10 Bituminous Paint:
  - .1 To meet specified requirements of CSGB Specification 1-GP-108.

### **PART 3 - EXECUTION**

#### **3.01 EXAMINATION**

- .1 Verify that field conditions are acceptable and are ready to receive work.
- .2 Verify items provided by other sections of work are properly sized and located.
- .3 Verify that built-in items are in proper location, and ready for roughing into masonry work.

#### **3.02 PREPARATION**

- .1 Coordinate/verify placement of metal anchors, shelf angles and lintels supplied by other sections.
- .2 Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.
- .3 Protect adjacent finished materials from damage due to masonry work.

#### **3.03 INSTALLATION**

- .1 Establish lines, levels, and coursing indicated. Protect from displacement.
- .2 Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- .3 Concrete Masonry Units:
  - .1 Bond: Running.
  - .2 Coursing: One unit and one mortar joint to equal 200mm.
  - .3 Mortar Joints: Concave.
- .4 Prefinished/Decorative Concrete Masonry Units:
  - .1 Bond: Running.
  - .2 Coursing: One unit and one mortar joint to equal 200 mm.
  - .3 Mortar Joints: Concave.
- .5 Architectural concrete/Stone unit masonry:
  - .1 Bond: running stack.
  - .2 Coursing height: 200 mm for one block and one joint.
  - .3 Jointing: concave where exposed or where paint or finish coating is specified.

- .6 Special Shapes:
  - .1 Install special units to form corners, returns, offsets, reveals and indents without cut ends being exposed and without losing bond or module.
  - .2 Install reinforced concrete block lintels over openings in masonry where steel or reinforced concrete lintels are not indicated.
  - .3 End bearing: not less than 200 mm or as indicated on drawings.
  - .4 Install special site cut shaped units.

### 3.04 CONSTRUCTION

- .1 Lay masonry to meet specified requirements of CAN/CSA-A370-M84 and CAN/CSA-A371-M84, unless otherwise specified.
- .2 Lay masonry as shown on Drawings, and to minimize cutting of units.
- .3 Coordinate coursing of dissimilar sized units only as approved by Architect.
- .4 Use only dry and unfrozen materials.
- .5 Remove sections of masonry which have been frozen before laying of masonry continues.
- .6 Lay masonry in running bond with vertical joints of alternate courses in line and as indicated on drawings.
- .7 Align webs of concrete unit masonry vertically and with thick ends on top.
- .8 Do not use units with chips, cracks, broken corners, excessive colour and texture variation.
- .9 Lay hollow masonry units with face shell bedding on head and bed joints.
- .10 Solid Units: apply mortar over entire vertical and horizontal surfaces. Avoid bridging of airspace between brick veneer and backup wall with mortar
- .11 Buttering corners of joints or excessive furrowing of mortar joints are not permitted.
- .12 Remove excess mortar as work progresses.
- .13 Interlock intersections and external corners.
- .14 Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- .15 Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- .16 Cut mortar joints flush where wall tile is scheduled, resilient base is scheduled, cavity insulation vapour barrier adhesive is applied, or bitumen dampproofing is applied.
- .17 Isolate masonry partitions from vertical structural framing members with a control joint as indicated.
- .18 Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.
- .19 Build in miscellaneous items such as bearing plates, steel angles, bolts, anchors, inserts, sleeves and conduits.

- .20 Extend all walls and partitions to underside of deck, slab or structural members, as applicable, except where otherwise noted on Drawings. Incorporate both lateral support and deflection space at termination of walls as required by this Section and coordinated with 05 50 00. Use 90 mm min. block to extend by steel joists and beams to deck. If 90 mm block cannot bypass steel terminate wall at underside of steel.

### **3.05 WEEPS**

- .1 Install weep holes in vertical joints at 600 mm o.c. in courses immediately above flashings, and at bottom of cavities, or as otherwise may be suitable to ensure that weep holes provide drainage of the cavity space. Install a minimum of 2 weeps over every opening.

### **3.06 CAVITY WALL**

- .1 Build inner wythe ahead of outer wythe to receive cavity insulation and air/vapour barrier adhesive. Where exterior walls change direction, fill cavity solid with cavity sealer for full height of wall. Set sealer in mortar bed and butter with mortar in contact with masonry wythe which is laid later. Install cavity sealer to ensure that it is secured in place and that it completely separates one cavity space from another by an airtight seal.
- .2 Keep cavity space completely free of mortar. Keep space free by drawing up a wood board the width of the cavity as masonry is laid. Alternatively, omit masonry units in bottom course at approximately 1000 mm m.o.c. to provide access holes for visual inspection of bottom of cavity after wall has been completed. If inspection reveals an accumulation of mortar droppings, clean out cavity through access holes. Install omitted masonry units with joints filled with mortar when approval is given that cavity space is clear of mortar.

### **3.07 REINFORCEMENT AND ANCHORAGE - SINGLE WYTHE MASONRY**

- .1 Install horizontal joint reinforcement 400mm on centre.
- .2 Use dovetail anchors for slots at concrete construction. Coordinate with Section 03 30 00 Cast in Place Concrete to ensure that dovetail slots are installed and located properly.
- .3 Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 600 mm each side of opening.
- .4 Place joint reinforcement continuous in first and second joint below top of walls.
- .5 Lap joint reinforcement ends minimum 200mm.
- .6 Reinforce joint corners and intersections with strap anchors 400 mm on centre.

### **3.08 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER**

- .1 Install horizontal joint reinforcement 400mm on centre.
- .2 Use dovetail anchors for slots at concrete construction. Coordinate with Section
- .3 Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 600 mm each side of opening.

- .4 Place joint reinforcement continuous in first and second joint below top of walls.
- .5 Lap joint reinforcement ends minimum 200mm.
- .6 Embed wall ties in masonry back-up to bond veneer at maximum 400 mm on centre vertically and 905mm on centre horizontally. Place at maximum 75mm on centre each way around perimeter of openings, within 305mm of openings.
- .7 Secure wall ties and anchors to stud framed back-up and embed into masonry veneer at maximum 400 mm on centre vertically and 905mm on centre horizontally. Place at maximum 75mm on centre each way around perimeter of openings, within 300mm of openings.
- .8 Reinforce joint corners and intersections with strap anchors 400mm on centre.

### **3.09 REINFORCEMENT AND ANCHORAGES - CAVITY WALL MASONRY**

- .1 Install horizontal joint reinforcement 400 mm on centre.
- .2 Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 600 mm each side of opening.
- .3 Place joint reinforcement continuous in first joint below top of walls.
- .4 Lap joint reinforcement ends minimum 200mm.
- .5 Attach to structural steel members. Embed anchorages in every second block joint.
- .6 Reinforce joint corners and intersections with strap anchors 400mm on centre.

### **3.10 MASONRY FLASHINGS**

- .1 Extend flashings horizontally at foundation walls, above ledge or shelf angles and lintels, under parapet caps and at bottom of walls and as detailed on drawings.
- .2 Turn flashing up minimum 200mm and bed into mortar joint of masonry, seal to concrete, or seal to sheathing over framed back-up.
- .3 Place flashing over sheet metal for support.
- .4 Lap end joints minimum 100mm and seal watertight.
- .5 Turn flashing, fold, and seal at corners, bends, and interruptions.

### **3.11 LINTELS**

- .1 Install steel lintels over openings as shown on drawings. Set and level lintels on a bed of mortar

### **3.12 JOINTS**

- .1 Make joints of uniform thickness with vertical joints from course to course maintained plumb.
- .2 Provide full bed and head joints for shear walls.
- .3 When laying is resumed on walls previously laid with mortar either partially or totally set, remove loose units and mortar from top and adjoining surfaces. Remove mortar completely when masonry is removed and replaced with new.



- .4 Form tooled concave joints wherever exposed to view, whether behind cabinets, fittings, and wall accessories, or not. When mortar has become "thumb-print" hard, tool joints and clean off burrs with trowel or burlap. Use a tool with a bearing surface of 550 mm minimum length on horizontal joints to avoid uneven depressions.
- .5 Trowel point joints in unparged masonry in contact with earth.
- .6 Rake out joints of masonry exposed to view to provide for caulking:
  - .1 at juncture of interior and exterior walls with columns.
  - .2 at interior with exterior walls.
  - .3 intersections of walls and partitions where joint reinforcement is installed.
  - .4 at caulked joints where indicated typically.
- .7 Cut joints off flush where thin-set tile will be applied, and where treatment is not otherwise specified.
- .8 Ensure that no mortar protrudes from joints on wall surfaces to which insulation vapour retarder or air barrier will be applied.

### 3.13 FIRE SEPARATIONS

- .1 Construct fire separation walls tightly to construction at perimeter, and without openings or voids.
- .2 Do not reduce the thickness of masonry fire separations to less than the thickness indicated for the required fire separation rating.

### 3.14 CONTROL AND EXPANSION JOINTS

- .1 Do not continue horizontal joint reinforcement through control and expansion joints.
- .2 Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.
- .3 Install control joints at junctions of walls and columns, at intersections of unit concrete masonry load-bearing walls, and wherever indicated on Drawings, and otherwise in walls with no openings, at a maximum spacing of 10.5 m o.c. Carry joints full height of walls.
- .4 Ensure complete vertical separation through walls incorporating control joints. Make control joints 9.5 mm wide, rake back 19 mm at junctures with concrete.
- .5 Construct control joints of standard block and fill void between block with 20 MPa concrete grout to form a continuous key full height of joint. Maintain separation between walls on each side of joint by installation of continuous building paper between concrete key and block on one side of joint.
- .6 Form expansion joint as detailed. Incorporate expansion joints in walls where indicated on Drawings.
- .7 Build in metal bellows with joints between lengths lapped a minimum of 50 mm and flanges anchored in joint between wythes.

- .8 Maintain expansion joints free of mortar with temporary filler when laying masonry. Pack joints full height with glass fibre board compressed to 50% of original thickness.
- .9 Leave joints free and clear for caulking, as specified in Section 07 92 00.

### **3.15 BUILT-IN WORK**

- .1 As work progresses, install built-in metal door and glazed frames, fabricated metal frames, window frames, wood nailing strips, anchor bolts, plates and other items to be built-in the work and furnished by other sections. Fit masonry closely against electrical and plumbing outlets so collars, plates and covers overlap and conceal cuts.
- .2 Install built-in items plumb and level.
- .3 All structural steel columns which require masonry fire protection shall be built in solid all sides with masonry. Do not fill Webs unless indicated on drawings.
- .4 Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout. Completely fill frames with mortar as each course is laid.
- .5 Do not build in organic materials subject to deterioration.

### **3.16 TOLERANCES**

- .1 Maximum Variation From Alignment of Columns: 3 mm.
- .2 Maximum Variation From Unit to Adjacent Unit: 1.5 mm.
- .3 Maximum Variation from Plane of Wall: 6 mm/3 m and 13 mm/6 m or more.
- .4 Maximum Variation from Plumb: 6 mm per story non-cumulative; <13 mm in two stories or more.
- .5 Maximum Variation from Level Coursing: 3 mm/m and <6 mm/3 m; 13 mm/9 m.
- .6 Maximum Variation of Joint Thickness: 3 mm/m.
- .7 Maximum Variation from Cross Sectional Thickness of Walls: 6 mm.

### **3.17 CUTTING AND FITTING**

- .1 Cut and fit for chases, pipes, conduit, sleeves, grounds, and other applicable items. Coordinate with other sections of work to provide correct size, shape, and location.
- .2 Cut units wherever electrical outlets, grilles, and pipes occur. Allow 3.2 mm clearance around items which are incorporated in walls.
- .3 Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

### **3.18 PARGING**

- .1 Dampen masonry walls prior to parging.
- .2 Scarify each parging coat to ensure full bond to subsequent coat.
- .3 Parge masonry walls in two uniform coats of mortar to a total thickness of 6 mm.

- .4 Steel trowel surface smooth and flat with a maximum surface variation of 3 mm per 300 mm.
- .5 Strike top edge of parging at 45 degrees.

### 3.19 FIELD QUALITY CONTROL

- .1 Section 01 40 00: Field inspection and testing.
- .2 An inspection and testing company will be selected to inspect and report on masonry installed by this Section as required by jurisdictional authorities and as directed.
- .3 The inspection and testing company will inspect and report on compressive strength of mortar samples as laying of masonry progresses. Provide six 50 mm cubes of mortar from samples taken randomly at the site, for each test, as directed.
- .4 Payment for inspection and testing will be made from cash allowance specified in Section 01 02 00.
- .5 Inspect engineered masonry work.
- .6 Inspect parging work. Cover exposed tops of masonry walls when laying is not in progress and until protected by completed construction. Cover with non-staining waterproof material to overhang top edges of wall by 600 mm minimum and secured to prevent dislodgement.
- .7 Protect work in progress:
  - .1 Protect exposed external corners of masonry with materials which will not damage or soil finished surfaces.
  - .2 Protect all finished surfaces from mortar droppings.
  - .3 Take particular care to protect faces of concrete unit masonry from mortar droppings and smears as laying proceeds.
  - .4 Turn over or cover scaffolds and mortar board at completion of each day's work to avoid staining of finished surfaces by splashed rain.

### 3.20 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
  - .2 Standard Concrete Unit Masonry:
    - .1 Allow mortar droppings on masonry to partially dry then remove by means of trowel, followed by rubbing lightly with small piece of block. Clean wall surface with suitable brush or burlap.
  - .3 Architectural Concrete Unit Masonry:
    - .1 Allow mortar droppings on masonry to partially dry then remove by means of trowel, followed by rubbing lightly with small piece of block. Clean wall surface with suitable brush or burlap.

- .4 Prefaced Concrete Unit Masonry:
  - .1 Clean masonry as work progresses using soft, clean cloths, within few minutes after laying. Upon completion, when mortar has set so that it will not be damaged by cleaning, clean with soft sponge or clean cloths, brush, and clean water. Polish with soft, clean cloths.
  - .5 Do not use wire brushes for cleaning
  - .6 Do not use detergents or chemicals without prior written approval from consultant.
  - .7 Protect adjacent materials, construction and finished surfaces from damage while cleaning.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

### **3.21 PROTECTION OF FINISHED WORK**

- .1 Protect finished Work.
- .2 Without damaging completed work, provide protective boards at exposed external corners which may be damaged by construction activities.

**END OF SECTION**

## **PART 1- GENERAL**

### **1.1 GENERAL REQUIREMENTS**

- .1 Read and be governed by conditions of the Contract and sections of Division 1.

### **1.2 SCOPE OF WORK**

- .1 Work Included  
Supply all materials, provide all labour and equipment to erect the structural steel as shown or required by the drawings or specifications. The principal items include, but are not limited to:
  - structural steel columns, girders, beams, open web steel joists, girts, angles
  - bracing, plates, stiffeners, strap anchors
  - galvanized shelf angles/bent plates
  - anchor bolts for anchoring sole plate of wood stud walls
  - Loose Structural Shapes Cast Into Concrete Work installed under Division 3 - Concrete, and built integrally with masonry work for installation under Division 4 - Masonry.
- .2 Related Work Specified Elsewhere
  - Masonry - Division 4.
  - Metal floor and roof deck Division 5
  - Grouting of Column Bases Division 3
  - Painting Division 9
  - Wind Bearing Studs Division 5

### **1.3 REFERENCED STANDARDS**

- .1 All standards in accordance with latest issue.
- .2 C.S.A. Standard CAN/CSA-S16-01, "Limit States Design of Steel Structures".
- .3 C.S.A. Standard W59-03, "Welded Steel Construction" (Metal Arc Welding).
- .4 C.S.A. Standard W.55.3-1965 (R2003), "Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings".
- .5 C.S.A. Standard W.47.1-03, "Certification of Companies for Fusion Welding of Steel".
- .6 C.S.A. Standard S136-01, "North American Specification for the Design of Cold Formed Steel Structural Members".
- .7 CAN/CSA-G164-M92 (R2003), "Hot Dip Galvanizing of Irregularly Shaped Articles".
- .8 CISC/CPMA 2-75 Quick Drying Primer for use on Structural Steel.
- .9 Ontario Building Code.

### **1.4 SHOP DRAWINGS**

- .1 Examine all drawings forming a part of this Contract and conform to the requirements of all such drawings.

- .2 The Consultant reserves the right to relocate members prior to and during the approval of erection diagrams for the purpose of clearing ducts, piping, walls, etc., and to finalize the location of mechanical roof top units, etc., at no additional cost to the Owner. Any cost involved in revisions to erection diagrams or shop drawings as a result of these changes shall be borne by this Sub-Contractor.
- .3 Any fabrication executed before review of shop drawings shall be at this Sub-Contractor's risk. Fabrication shall be assumed to begin when material is cut to length, whether this be by the fabricator or at the mill to the fabricator's orders.
- .4 The Consultant's review of shop drawings will not relieve the Sub-Contractor from his responsibility for ensuring that his work is complete, accurate, and in accordance with the drawings and specifications.
- .5 The use of reproducible copies of the Consultant's drawings for erection diagrams will not be permitted.
- .6 Shop drawings are to be submitted as follows:
  - Erection drawings: 2 prints and 1 pdf digital of each.
  - Shop fabrication drawings: 1 print and 1 pdf digital copy of each.
- .7 Provide two complete sets of sepias of the erection diagrams to the Consultant showing "as-built" conditions, including final sizes and locations of openings and final locations of mechanical units.
- .8 Within two weeks of awarding the contract the structural steel fabricator must submit for approval, a drawing showing the top of bearing plate elevations and horizontal dimensions to all bearing plates. The mason cannot start with blockwork above finished floor elevation until these drawings are reviewed and approved.
- .9 No levelling plates will be allowed on this project unless the steel fabricator hires a 3<sup>rd</sup> party inspection firm to confirm that the requirements of clauses 25.3.1.2, 28.5, and 29.7.8 of CSA standard S16-01 have been met for all column bases where levelling plates have been used. Following inspection the inspection firm must submit a letter signed and sealed by a professional engineer confirming that they have inspected all column bases employing levelling plates and that these bases meet the requirements of above noted clauses. The 3<sup>rd</sup> party inspection firm is to have a minimum 5 years experience inspecting steel structures and shall be certified as CWB certified inspection company.

## **1.5 DESIGN CRITERIA**

- .1 Certificates
  - .1 Provide a certificate signed and sealed by the registered professional engineer responsible for the detailed joist design, stating that the joists have been designed and fabricated in accordance with the applicable design and welding procedures for the loads shown on the drawings.
  - .2 Provide a certificate signed and sealed by the registered professional engineer responsible for the detailed structural steel connections, stating that the connections have been designed, detailed, and fabricated in accordance with the applicable standards for the loads shown.

- .3 Where joist to structural steel connections occur, these engineers must be co-ordinate their designs to ensure compatible design assumptions.
- .4 Certificates must bear the original seal and signature of the engineer and be dated. Photocopies are not acceptable.
- .2 All loads, forces and reactions shown on the drawings or noted in the specifications are service loads (unfactored), unless noted otherwise.
- .3 Design and detailing of joists, connections, etc., in accordance with CSA CAN3-S16-M. Service loads must be factored for limit States Design.
- .4 Typical connection details are shown on the drawings for guidance only. Design and submit for approval suitable bolted or welded connections. In general, bolted connections are to be designed as "bearing" connections with threads included in the shear plane.
- .5 The shear capacity of all beam and girder connections shall be not less than the shear capacity of the section acting as a simple beam loaded uniformly to its moment capacity over the same span nor less than that shown on the drawings, whichever is greater.
- .6 Design joists and bridging members in accordance with applicable reference standards for the uniform loadings shown on the drawings with due allowance for local bending moments and for any additional concentrated and/or line loads for support of mechanical units and/or masonry walls. Design OWSJ such that total load deflection does not exceed 1/240th of the design span and the live load deflection does not exceed 1/360th of the design span.
- .7 Refer to mechanical drawings for number of, approximate location, and weight of, suspended mechanical units and piping runs. Final location will be determined during the shop drawing stage.
- .8 Refer to Structural Drawings and cross reference with latest mechanical drawings for all locations where mechanical ductwork passes through open web steel joists. All such ductwork shall pass through joists between top and bottom chords of joists. Design openings in joist by the use of reinforced open panels, if necessary, to accommodate duct sizes indicated on mechanical plans. Analyze open panels trusses with full and off balanced loadings to account for maximum shear forces across open panel.
- .8 Where tie joists are shown on plan, extend the complete bottom chord of the joist and connect to either the column or beam.
- .9 Provide additional bottom chord bridging to ensure adequate bottom chord compression capacity where stress reversal may occur due to net uplift, or cantilever action.
- .10 Note that the roof systems are sloped for drainage which requires attention to detailing and fabrication.
- .11 Typical bearing stiffeners for beams continuous over columns are shown on the drawings. Design suitable stiffeners at other locations of concentrated loads, as required to suit the connection design.
- .12 Design and detailing of joists, connections, etc., to be in accordance with CSA CAN3-S16-M.
- .13 Top chords of joists to have horizontal leg of angle not less than 38 mm wide for hot rolled angles

and 50 mm wide for cold formed sections.

## **1.6 COORDINATION**

- .1 Coordinate the work of this Section with the General Contractor's scheduling in accordance with the General Conditions.
- .2 Coordinate the work of this Section with the work of all affected Divisions to provide proper clearances and assembly of the work.
- .3 Coordinate the work of this Section with the work of the Section 05300 "Metal Deck" to provide a continuous erection procedure

## **1.7 SUBSTITUTIONS**

- .1 Substitution of available beam and column sections for those shown on the drawings may be permitted, provided that the substituted members have equivalent or greater capacity and stiffness than those shown.
- .2 Proposed substitutions are subject to prior approval of the Consultant and must not interfere with Architectural clearances.

## **1.8 QUALITY ASSURANCE**

- .1 Fabrication and erection of all components to be by Division 1 or Division 2.1 certified company only. Welders must have current CWB certification for the applicable position

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- .1 Rolled Steel Sections, Shapes, Currently produced in Canada - in accordance with C.S.A. Standard G.40.21M-350W.
- .2 Plates and Rod Currently produced in Canada - in accordance with C.S.A. Standard G.40.21M-300W.
- .3 Hollow Structural Sections  
Currently produced in Canada - in accordance with C.S.A. Standard G40.21-350W Class - C
- .4 High Strength Bolts & Washers - in accordance with ASTM Standard A325.
- .5 Shop Primer Paint - in accordance with CISC/CPMA Standard 2-75, for steel on interior of building.
- .6 All exposed structural steel items on the exterior of the building are to be primed with a Reinforced inorganic Zinc Primer (Cathacoat 302H) and intermediate coat of High Build Epoxy (Bar-Rust 231 1) by Devoe Coatings .
- .7 Anchor bolts - in accordance with C.S.A. Standard G40.21M-300W.



- .8 Hot Dip Galvanizing - zinc coating by hot dip process after fabrication to provide a uniform coating of not less than 2.0 ounces per square foot.
- .9 Field Touch-up Paint
  - .1 As for shop paint for previously shop primed members
  - .2 Galvafruid zinc rich coating by W.R. Meadows for previously galvanized members.
  - .3 Touch-up paint for exterior canopies and any other steel having exterior exposure to be same as specially specified primer, intermediate, and top coats.

## **2.2 FABRICATION**

- .1 Fabrication of all structural steel in accordance with C.S.A. Standard CAN3-S16.1-M.
- .2 Carefully make and fit all details and connections to ensure that the finished work presents a neat and workmanlike appearance.
- .3 All shop and field connections are to be welded or high-strength bolted.
- .4 Splicing will not be allowed without the approval of the Consultant at the shop drawing review stage. Splicing will then only be allowed if the length of the fabricated member required is longer than that normally produced at the mill.
- .5 All members shall be true to length so that assembly may be done without fillers.
- .6 Provide holes for bolted connections for connecting the work of other trades where such holes can be determined prior to fabrication and only at the request of the Engineer or the trade concerned. Such holes shall only be provided where they will not impair the satisfactory performance of the structure.
- .7 Provide holes for blocking where blocking is required to receive 16 mm diameter bolts spaced at 600 mm o.c., and staggered where possible.
- .8 Provide holes in webs or welded bar assemblies for masonry anchors as per typical details.
- .9 Supply suitable anchor bolts for base plates and bearing plates and wood sole plates for installation under Division 3.
- .10 Base plate sizes shown on the drawings are finished sizes. Allow additional thickness as required for milling.
- .11 Take care to minimize distortion due to welding and galvanizing procedures. Straighten members as required to maintain the fabrication tolerances of C.S.A. CAN3-S16.1-M.
- .12 Provide restraining clip angles at the tops of all masonry walls for lateral support of such walls.
- .13 Thoroughly clean all steel of all loose mill scale, and rust.
- .14 for structural steel items exposed to the exterior abrasive blast all surfaces to minimum SSPC-SP6 and immediately apply a 3.0 mil dry thickness (4.0 mil wet thickness) of primer followed by a 5 mil dry thickness of intermediate paint coat.

- .15 Apply one coat of shop primer on dry clean surfaces for all members except as follows:
  - .1 Do not paint steel in direct contact with concrete,
  - .2 Do not paint steel at locations where field welded moment connections are to be made. (Field prime all steel after welding and after removal of slag down to bear metal)
  - .3 Do not paint any galvanized steel items.
  - .4 Do not paint steel to be fireproofed if the manufacturer of the fireproofing material indicates that the bond of the fireproofing will be adversely affected by the primer.
- .16 Take care to minimize distortion due to welding and galvanizing procedures. Straighten members as required to maintain the fabrication tolerances of C.S.A. CAN3-S16.1-M.
- .17 Galvanizing to C.S.A. Standard G164, including preparation. Blast clean to commercial quality after fabrication, prior to galvanizing. Provide seal welds in addition to structural welds as required by good practice.
- .18 Provide welded "seal" plates (minimum 5mm) as required to close all HSS sections. If this is not possible in all locations, provide drain holes.
- .19 Supply suitable loose lintels as shown on the Lintel Schedule for all openings in masonry walls for installation under Division 4. Lintels included are those for all openings shown on Architectural, Mechanical, and Electrical drawings.
- .20 Fabricate steel HSS columns that are to be filled with concrete fill for fire rating such that column can be filled and vibrated on site without segregation of the concrete mix.

### **2.3 QUALITY CONTROL**

- .1 All materials and fabrication shall be subject to test by a testing and inspection company appointed by the Owner.
- .2 Provide access to the work in the shop for the personnel of the inspection company.
- .3 Provide a written schedule supplied to the Consultant and the testing company when items to be tested are ready for inspection. This specifically includes site review dates for all large trusses in Show Arena. Submit schedule 2 weeks prior to completion of work to be tested.
- .4 Provide such samples of materials and mill test reports as may be required by the inspection company at no cost to the Owner.
- .5 The cost of testing will be paid for by the Owner.
- .6 The testing done by the Independent testing company retained by the Owner is to inform the Consultant and the Owner of Contractor's performance and must not be used in any way to bolster the quality control efforts of the Contractor nor relieve the Contractor of their contractual responsibility.

- .7 Non-destructive testing (NDT) is to be carried out by radiography, magnetic particle, or ultra sonic methods, whichever is more appropriate.
- .8 Any deficient welds identified by means of NDT, shall be repaired and retested at the Contractor's expense.
- .9 Shop testing by the Independent Testing Company retained by the Owner shall follow the following guidelines:
  - .1 Allow for 20% random visual and NDT on shop-welded connections.
  - .2 Allow for 20% random visual and 10% random NDT on and joist welding.

### **PART 3- EXECUTION**

#### **3.1 EXAMINATION**

- .1 Examine and obtain all necessary measurements of previously executed and existing work which may affect the work of this Section.
- .2 Make a line and level survey of the foundations and anchor bolts. Report any discovered discrepancies to the Consultant so that instructions can be given for the necessary remedial action.

#### **3.2 ERECTION**

- .1 Accurately set all steel to the lines and elevations shown on the drawings. Temporarily connect all members with sufficient bolts to ensure the safety of the structure until permanent connections are made.
- .2 Assemble all members without twists or open joints. Take particular care that all parts are well pinned up and drawn together before bolting or welding is started.
- .3 Assume full responsibility for the correct plumbing and alignment and for setting of all members.
- .4 If members do not fit properly in the field, repairs must be made by methods to the satisfaction of the Consultant. In no case shall cutting be done with a torch, except where specific approval as to size and location of same is granted by the Consultant. Unfair holes shall be enlarged with a twist drill and larger bolts used.
- .5 Set column bases and beam bearing plates on steel shims or other suitable supports. Grouting under these plates will be by Division 3, "Cast-in-Place Concrete" or Division 4 "Masonry" for bearing plates built into masonry walls.
- .6 Erect the steel frame true and plumb. Place temporary bracing where necessary to take care of all loads to which the incomplete building may be subjected, such as wind, equipment, or construction procedures. Leave temporary bracing in place as long as necessary for the safety of the structure.
- .7 Erection tolerances in accordance with Section 28 of C.S.A. CAN3-S16.1.
- .8 Install restraining clip angles to provide lateral support at the top of all new masonry walls.

Carefully co-ordinate with the Contractor and the Masonry Sub-contractor.

- .9 Erection of structural steel, OWSJ and bridging in accordance with CSA CAN3-S16.1. Take special care in the alignment of top chords to ensure a straight line for welding of deck.

### **3.3 FIELD PAINTING**

- .1 Field paint, using the appropriate finish paint, all scars, blemishes, and bolts not previously shop painted or those areas damaged by erection procedures.
- .2 For members which are hot-dipped galvanized, touch up all scars, scratches, etc. with a compatible zinc rich paint.

### **3.4 FIELD QUALITY CONTROL**

- .1 Provide access to the work at the site for the personnel of the inspection company.
- .2 Testing shall be carried out at the option of the Consultant and will be paid for by a cash allowance, except that any re-testing required due to defective work shall be borne by this Sub-Contractor.

### **3.5 CLEAN-UP**

- .1 At the completion of the work of this section, remove any excess materials, debris, and equipment from the site.

**END OF SECTION 05120**

**PART 1- GENERAL**

**1.1 GENERAL REQUIREMENTS**

- .1 Read and be governed by conditions of the Contract and sections of Division 1.

**1.2 SCOPE OF WORK**

- .1 Work Included  
Provide all plant, labour, equipment, and materials to supply and install the metal floor and roof deck, including flashings and accessories required for a complete installation.
- .2 Related Work Specified Elsewhere
  - .1 Structural Steel - Section 05100.
  - .2 Roofing, Flashing and Sheet Metal - Division 7.
  - .3 Cast-in-place concrete Section 03300

**1.3 APPLICABLE STANDARDS**

- .1 C.S.A. Standard S136, "Cold Formed Steel Structural Members".
- .2 C.S.A. Standard W47.1, "Certification of Companies for Fusion Welding of Steel Structures".
- .3 Ontario Building Code - as currently amended.
- .4 Manufacturing Standards, Canadian Sheet Steel Building Institute.

**1.4 SHOP DRAWINGS**

- .1 Examine all drawings forming a part of this Contract and conform to the requirements of all such drawings.
- .2 Prepare shop drawings to supplement the Consultant's drawings. Report any discovered discrepancies in the Contract Documents to the Consultant. Make allowances for clearance and provide details of framing around openings where these are not specifically detailed on the drawings.
- .3 Shop drawings shall show the position, extent, type and arrangement of the units, their relationship to other materials, depths, thicknesses, connections and accessories.
- .4 The Consultant's review of shop drawings will not relieve the Contractor from his responsibility for ensuring that his work is complete, accurate, and in accordance with the drawings and specifications.
- .5 Furnish to the Consultant a schedule showing the number of erection diagrams, shop drawings, and their rate of submission.
- .6 Examine the Mechanical and Electrical drawings to establish the number, size, and location of all openings through the deck.
- .7 Submit 1 sepia and 2 prints of each shop drawing to the Consultants for their review.

- .8 Shop drawings are to be signed and sealed by a licensed professional engineer responsible for the detailed design of deck.
- .9 Refer to Architectural Drawings for extent of Acoustic metal roof deck.

### **1.5 COORDINATION**

- .1 Coordinate the work of this Section with the Construction Manager's scheduling in accordance with the General Conditions.
- .2 Coordinate the work of this Section with the work of Section 5100, "Structural Steel", to ensure a continuous erection procedure.
- .3 Supply and erect steel deck at such a rate and in proper sequence so that the schedule is maintained.

### **1.6 DESIGN CRITERIA**

- .1 The drawings show the minimum thicknesses and depths of the deck sections. Deck supplier's engineer is to design deck units with increased thickness as warranted for heavier drift or deck loadings.
- .2 Design all roof decks to support the LL and DL shown on the drawings for each area in accordance with the requirements of C.S.A. Standard S136.
- .3 Deflection of the roof deck shall not exceed 1/360th of the span under a live load of 1.5 kPa. Do not use drift loads to calculate deflections.
- .4 Design and detail units to run over three or more supports, except where the structural steel layout does not permit.
- .5 Roof deck systems act as a structural diaphragm. Deck must "close" with perimeter boundary members to ensure integrity of diaphragms. Detail finishing angles at edges and flashing plates at change of deck directions as required for diaphragm.
- .6 Design suitable reinforcing or framing details around openings (where these are not specifically detailed on the drawings) to suit the opening size and loading condition.

### **1.7 STORAGE AND HANDLING**

- .1 Exercise care in storing, handling and placing the steel deck units to prevent damage likely to impair the adequacy or appearance of the material in the finished structure. Special care to be taken not to damage the pre-painted surface. Handle deck with appropriate slings and protection to avoid damage to finish.
- .2 Replace or correct damaged material to the approval of the Consultant.

## **PART 2 – PRODUCTS**

### **2.1 MATERIALS**

- .1 Steel Sheets: For the fabrication of deck sections, metal closures, straps and flashings, in accordance with ASTM Standard A440-60T, Grade A, zinc coated, with minimum basic design stress in bending of 144 MPa or Grade B zinc coated with a minimum basic design stress in bending of 144 MPa for 38 deep units.
- .2 Zinc Coating:
  - .1 For Interior of building provide Class Z075 (wipe coat) coating.
  - .2 For Exterior Canopies, and steel deck over corrosive area, provide Class Z275 coating applied before forming by a hot dipping process for metal deck
- .3 Metal Roof Deck: 38 deep with flutes centred at 152 o/c in accordance with C.S.S.B.I. Standards - minimum core thickness 0.76 mm (22 ga). RD 938 by VicWest, P-3615 by Canam Steel Works, RD36 by Agway Metals Inc., S-15 by Canadian Metal Rolling Mills or equal.
- .4 Metal Acoustic Roof Deck: 76 deep with flutes centred at 152 o/c in accordance with C.S.S.B.I. Standards - minimum core thickness 0.76 (22 ga). RD 306 by VicWest, P-2436 by Canam Steel Works or equal.
- .5 Metal Roof Deck: 76 deep with flutes centred at 152 o/c in accordance with C.S.S.B.I. Standards - minimum core thickness 0.76 (22 ga). RD 306 by VicWest, P-2436 by Canam Steel Works or equal.
- .6 Composite Metal Floor Deck: 38 deep with flutes centered at 152 o/c in accordance with C.S.S.B.I. Standards - minimum core thickness 0.76 mm (22 ga). HB 938 by VicWest, P-3615 Composite by Canam Steel Works, CD36 by Agway Metals Inc., S-15-K by Canadian Metal Rolling Mills or equal.
- .7 Finishing angles: 38x38x 3mm (minimum) thickness.
- .8 Flashing Sheets: 1.22 mm (minimum) thickness.
- .9 Concrete Screed Closure Channels: 1.22mm (18 gauge) closure channels complete 1.22mm (18gauge) straps spaced at 750mm o.c. Refer to typical details.
- .10 Acoustics Sound Insulation Pads: standard mineral wool fiber insulation pads cut to fit flute profile. Acoustic pads are to be supplied by deck manufacturer and installed by roofing contractor just prior to roofing as coordinated by the General Contractor.
- .11 Self Drilling Screws:
  - .1 If attachment of metal roof deck to structural roof framing is to be completed with self drilling screws or powder actuated fasteners the steel deck contractor to provide calculations for diaphragm resistance sealed and signed by a professional engineer for review.
  - .2 Minimum size fasteners for drilling up to two layers of 1.22mm (18 gauge) material to be 12-14x7/8" ICH Traxx/1 Climaseal fasteners as manufactured by ITW Construction Products or as required by design engineer.
  - .3 Minimum size fasteners for drilling up to two layers of 4.57mm (0.18") material to be 12-24x7/8" ICH Traxx/3 Climaseal fasteners as manufactured by ITW Construction Products or as required by design engineer.
  - .4 Minimum size fasteners for drilling up to two layers of 6.0mm (0.25") material to be 12-14x7/8"

ICH Traxx/4 Climaseal fasteners as manufactured by ITW Construction Products or as required by design engineer.

- .5 for drilling up to two layers of 13mm (0.5") material to be 12-14x7/8" ICH Traxx/5 Climaseal Minimum size fasteners as manufactured by ITW Construction Products or as required by design engineer.

## **2.2 FABRICATION**

- .1 Form all deck units to have interlocking male and female side laps. Form all composite deck units with indentations for mechanical bond with concrete to form a true composite section.
- .2 Provide sheet steel cover plates as noted on the drawings and to cover gaps where deck units abut or change direction.
- .3 Provide sheet steel flashings to close between deck units and columns; between deck and beams.
- .4 Provide sheet steel flashings and finishing angles to close between deck units and spandrel members, and deck edge supports (as required) to maintain the integrity of the diaphragm.

## **PART 3 – EXECUTION**

### **3.1 EXAMINATION**

- .1 Examine and obtain all necessary measurements of previously executed work which may affect the work of this section.
- .2 Report any discovered discrepancies to the Consultant so that instructions can be given for any remedial action.

### **3.2 ERECTION**

- .1 Erection of steel deck shall be performed by the erection forces of the manufacturer. Subletting of the erection of these materials will not be allowed without the prior written consent of the Consultant.
- .2 Place and align units in their final position on the supporting steel structure prior to making permanent connections.
- .3 Provide any temporary connection of the deck to the supporting structural steel to prevent displacement of the deck due to construction operations, wind forces, etc., which may result in a hazardous condition.
- .4 Provide permanent connection of the new steel roof deck to the supporting steel structure with 20 mm diameter puddle welds at the maximum spacings noted below. Note that lesser spacing may be required as determined by deck design engineer to satisfy diaphragm loading requirements.
  - i) Welds at ends of each sheet- 152 o.c. (each flute)
  - ii) Welds in 'field' of sheet - 152 o.c.(each flute)
  - iii) Weld each side of all lap joints.



- iv) Perimeter welds along trimmer angles - 300 o.c.
  - vi) Clinch side laps together at 300 o.c.
- .5 Provide permanent connection of the new steel roof deck to the supporting steel structure, where the roof slope exceeds a 30 degree slope from horizontal axis, with self drilling screws at the maximum spacings noted below. Note that lesser spacing may be required, as determined by deck design engineer, to satisfy diaphragm loading requirements.
- i) Screws at ends of each sheet- 152 o.c. (each flute)
  - ii) Screws in 'field' of sheet - 300 o.c.(every other flute)
  - iii) Provide screws each side of all lap joints.
  - iv) Perimeter screws along trimmer angles - 300 o.c.
  - vi) Clinch side laps together at 400 o.c.
- .6 Provide permanent connection of the new steel floor deck to the supporting steel structure with 20 mm diameter puddle welds at the maximum spacings noted below. Note that lesser spacing may be required, as determined by deck design engineer, to satisfy diaphragm loading requirements.
- i) Welds at ends of each sheet- 152 o.c. (each flute)
  - ii) Welds in 'field' of sheet - 300 o.c.(every other flute)
  - iii) Weld each side of all lap joints.
  - iv) Perimeter welds along trimmer angles - 300 o.c.
  - vi) Clinch side laps together at 400 o.c.
- .7 Handle deck with appropriate slings and protection to avoid damage to finish.
- .8 Cut and reinforce, where necessary, all holes through the roof deck where secondary structural framing is not specifically shown around the openings as designed under Sub-Section 1.06 F. of this Section. Exact location of openings will be established on site by the trades concerned.
- .9 Install all flashing plates, closures, and finishing channels.
- .10 Clean the new deck of all debris, welding rods, oil and grease or other materials likely to have a harmful effect on the bond or application of the roofing system or concrete in the case of composite deck units.
- .11 Refer to typical detail for detail at closure angle installation at locations where high deck flute does not 'close' with perimeter angle.

### **3.3 FIELD PAINTING**

- .1 Field paint with a compatible zinc rich paint, all scratches blemishes, welds or other defects.

### **3.4 CLEAN-UP**

- .1 At the completion of the work of this Section, remove any excess materials, debris and equipment from the site.

**END OF SECTION 05300**

**PART 1- GENERAL**

**1.1 GENERAL REQUIREMENTS**

- .1 Read and be governed by conditions of the Contract and sections of Division 1.

**1.2 SCOPE OF WORK**

- .1 Related Work Specified Elsewhere
1. Board Insulation Division 7
  2. Exterior Insulation and Finish System Division 7
  3. Cast in Place Concrete – Division 3
  4. Structural Steel - Division 5

**1.3 REFERENCED STANDARDS**

- .1 ASTM A653/A653M-00, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 ASTM A591/A591M-98, Standard Specification for Steel Sheet, Electrolytic Zinc-Coated, for Light Coating Weight (Mass) Applications.
- .3 ASTM A792/A792M-99, Standard Specification for Steel Sheet, 55%Aluminum-Zinc Alloy-Coated by the Hot-Dip Process, General Requirements.
- .4 ASTM A307-00 Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
- .5 ASTM A325-00 Standard Specification for Structural Bolts, Heat Treated, 120/105 ksi Minimum Tensile Strength.
- .6 CAN/CSA-G164-M92 (R2003), "Hot Dip Galvanizing of Irregularly Shaped Articles".
- .7 CSA W47.1-03, "Certification of Companies for Fusion Welding of Steel".
- .8 CSA W55.3-1965 (R2003), "Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings".
- .9 CSA W59-03 "Welded Steel Construction (Metal Arc Welding)".
- .10 CSA S136-01"North American Specification for the Design of Cold Formed Steel Structural Members.

- 
- .11 CAN/CGSB-1.181-92, Ready-Mixed Organic Zinc-Rich Coating.
  - .12 Canadian Sheet Steel Building Institute CSSBI 50M-1987, Lightweight Steel Framing Manual.
  - .13 Ontario Building Code.

#### **1.4 QUALITY ASSURANCE**

- .1 Retain a Professional Engineer registered in the Province of Ontario to design Lightweight Steel Framing System; to prepare, seal and sign all shop drawings; and to perform field review. Shop drawings shall show both design and installation requirements.

#### **1.5 DESIGN CRITERIA**

- .1 Design shall be based on Limit States Design principles using factored loads and resistances.
- .2 Loads and load factors shall be in accordance with the National Building Code of Canada.
- .3 Resistances and resistance factors shall be determined in accordance with the National Building Code and CSA S136.
- .4 Conform to the requirements of specified fire rated assemblies.
- .5 Design bridging to prevent member rotation and member translation perpendicular to the minor axis. Provide for secondary stress effects due to torsion between lines of bridging. Collateral sheathing may not be used to help restrain member rotation and translation perpendicular to the minor axis for:
  - .1 Wind bearing studs.
- .6 Maximum deflections under specified loads shall conform to the following:
  - .1 Wall studs supporting material not susceptible to cracking (eg. metal cladding, synthetic veneers)  $L/360$ .
  - .2 Building sway due to all effects  $1/400$  of building height or  $1/500$  of storey height.
  - .3 For wind bearing steel studs with masonry veneers  $L/720$
- .7 Design components or assemblies to accommodate specified erection tolerances of the structure.
- .8 The spacing of members shall not exceed the following:
  - .1 Wall studs: 400mm
- .9 Stud depths are shown on the drawings. Adjust stud material thicknesses and spacings, as required by the design criteria. Use greater or lesser stud and joist depths only if approved by the Consultant.
- .10 Allow for movement of the structure. Design wind bearing stud end connections to accommodate floor/roof deflections such that the studs are not loaded axially.
- .11 Connections between lightweight steel framing members shall be by bolts, welding or sheet metal

screws.

- .12 Resistances for sheet metal screws shall be based on the manufacturer's lower bound test values multiplied by the appropriate resistance factor  $\Phi_c$  given in CSA S136
- .13 Provide diagonally braced stud walls to act as shear walls.
- .14 The minimum design thickness for bridging channel shall be 1.22mm (18 gauge) for studs and 1.52mm (16 gauge) for joists. Use greater bridging channel design thickness if required by design criteria.
- .15 The minimum design thickness for clip angles shall be 1.52mm (16 gauge) for studs. Use greater clip angle thickness if required by design criteria.
- .16 Design anchorage and splice details for bridging.
- .17 Design for local loading due to anchorage of cladding and interior wall mounted fixtures and mechanical units.
- .18 Design all wind bearing studs for a minimum nominal unfactored lateral wind load as indicated in the tables below:
  - .1 For all stud walls that separate the interior space from the exterior or that may be exposed to wind gusts on the interior of the building, design for the loading in the table below:

<b>Tributary Area to Structural Member</b>	<b>Unfactored Wind Load for Strength Design</b>	<b>Unfactored Wind Load for Deflection</b>
Less than 2.0 m <sup>2</sup>	±1.20 kPa (25.1psf)	± 0.78 kPa (16.4psf)
Greater Than 2.0 m <sup>2</sup> and less than 6.0 m <sup>2</sup>	± 1.16 kPa (24.2psf)	± 0.75 kPa (15.8psf)
Greater Than 6.0 m <sup>2</sup>	± 1.10kPa (23.0psf)	+ 0.72 kPa (15.0psf)

Note that lw for ULS and SLS have already been applied to the values given in this table

- .2 For all parapet stud walls or freestanding exterior walls.

<b>Tributary Area to Structural Member</b>	<b>Unfactored Wind Load for Strength Design</b>	<b>Unfactored Wind Load for Deflection</b>
Less than 2.0 m <sup>2</sup>	± 1.71 kPa (35.8psf)	± 1.12 kPa (23.4psf)
Greater Than 2.0 m <sup>2</sup> and less than 6.0 m <sup>2</sup>	± 1.63 kPa (34.1psf)	± 1.07 kPa (22.3psf)
Greater Than 6.0 m <sup>2</sup>	± 1.51 kPa (31.5psf)	± 0.98 kPa (20.6psf)

Note that lw for ULS and SLS have already been applied to the values given in this table.

- .19 For stud walls anchor top and bottom track to the structure at a maximum spacing of 400mm (16") o.c. Closer spacings may be required to satisfy structural requirements.
- .20 For stud walls provide head, sill and jamb members and connections for all openings larger than 400mm (16").
- .21 Design brick connectors, V-wires, and screws to meet the requirements of CSA S136, CSA A370 and

---

CSA S304.1, including the requirement that tie deflection due to one half the total mechanical play plus deflection due to a tension or compression load of 0.45 kN (100 lbs) does not exceed 1.0mm.

## 1.5 SUBMITTALS

- .1 Submit two certified copies of mill reports covering chemical and mechanical properties, and coating designation of steel used in this work.
- .2 Submit two certified representative pieces of all framing component parts including mechanical fasteners if used. The length of pieces submitted need not exceed 300mm (12"). Tag pieces with the name of the part, the metal thickness exclusive of coating and the manufacturer.
- .3 Submit two signed and sealed copies of engineering calculations or data verifying the capacity of the members and the ability of the assemblies to meet the design requirements.
- .4 Submit shop drawing to the requirements of General Conditions of the contract and the following criteria:
  - .1 Each shop drawing submitted shall bear the stamp and signature of a qualified Professional Engineer registered in the Province of Ontario.
  - .2 Include all necessary shop details and erection diagrams. Indicate member sizes, locations, thickness exclusive of coating, coatings and materials. Include connection details for attaching framing to itself and for attachment to the structure complete with the number and location of all screws or other fasteners. Show splice details where permitted. Indicate dimensions, openings, requirements of related work and critical installation procedures. Show temporary bracing required for erection purposes. Also provide detailed building wall elevations showing all wall openings. Indicate stud sizes, where built-up members are required, dimensions, and section marks on elevation drawings.
  - .3 Indicate design loads.
  - .4 The Contractor must be aware that payment draws for metal studs will not be approved without proper shop drawing production. This includes all elevations of the various walls showing connection details of all connections including headers and sills. Connections must show dimensions, material, number of fasteners and all other information required to construct the stud wall framing. Refer to "Sample Light Gauge Framing Elevation Drawing" appended to this specification section for minimum requirements for elevation drawings.
- .5 Do not fabricate until all submittals in 1.5 are reviewed.
- .6 Make and submit field review reports for a minimum of 4 separate site visits. Provide three copies of field review reports and send simultaneously one copy to the Architect and one to the Structural Engineer. Field review is to be completed by the steel stud shop drawing design Engineer or his/her direct representative.
- .7 Submit product data for all components of Masonry Veneer Connectors, including tie, wires, and fasteners, indicating sizes, load capacities, mechanical play, and type of corrosion protection.

## PART 2- PRODUCTS

### 2.1 ACCEPTABLE MANUFACTURES

- .1 Bailey Metal Stud Products, Dietrich Metal Framing, Nicholson Rollforming Inc. or approved equal.
- .2 Note Dietrich Metals “Spazzer Bar” bridging lines and equivalent products by other manufactures will not be accepted. Typical channel bridging lines fastened with screws and clip angles shall be used.

### 2.2 MATERIALS

- .1 Steel shall have metallic coatings that conform to ASTM A653/A653M or ASTM A792/A792M.
- .2 Steel shall conform to the requirements of CSA S136 and shall be identified as to specification, type, grade and mechanical properties
- .3 Light weight steel framing members forming part of the exterior building envelope shall have a minimum Z275 galvanized coating. Other coatings (eg. aluminum- zinc alloy) providing equal or better corrosion protection may be used.
- .4 Interior non-loadbearing members not forming part of the exterior building envelope shall have a minimum coating of Class C electrogalvanizing in accordance with ASTM A591/A591M. Other coatings (eg. electro-deposited zinc, chromate treated; zinc-iron alloy; aluminum-zinc alloy) providing equal or better corrosion protection may be used.
- .5 Sheet metal screws shall have a minimum coating thickness of .008 mm of zinc or cadmium. Other coatings providing equal or better corrosion protection may be used.
- .6 Welding electrodes shall be of the 480 Mpa ( 70 ksi) minimum tensile strength series (eg. E480XXX, E480S-X).
- .7 Zinc rich paint for touching up welds and damaged metallic coatings shall conform to CAN/CGSB 1.181.
- .8 Unless shown otherwise the minimum steel thickness exclusive of coating shall be as follows:
  - .1 Wall studs: 1.22mm (18 gauge). Thicker material may be required to satisfy structural requirements
- .9 Masonry ties - Fero Slotted Tie Type I . Galvanized Steel Brick Connector System
  - .1 Metal Plate; Fero Slotted Stud Plate (Type I) 75 (3”) high to suit stud depth plus sheathing, plus insulation, thickness. Made from steel hot dipped after fabrication to CSA A370
  - .2 Fero V Tie: Galvanized V wire 4.76 (0.19”) diameter cold drawn steel wire, hot dipped galvanized after fabrication to CSA A370.
  - .3 Fasteners - #10 -16x3/4” Galvanized Hex Head Self Drilling Screws to CSA A370.

- .4 Insulation Support: Manufactured from polyethylene to secure insulation in place.

### **PART 3- EXECUTION**

#### **3.1 GENERAL**

- .1 Fabrication and erection shall conform to the approved shop drawings. Modifications required to accommodate as-built conditions (other than minor dimensional changes) shall be submitted to the Consultant for approval.

#### **3.2 WELDING**

- .1 Companies engaged in welding shall be certified by the Canadian Welding Bureau to CSA Standard W47.1. Companies shall have welding procedures approved and welders qualified for the base types and thicknesses that are to be welded.
- .2 Welds shall conform to CSA W59 and or ANSI/AWS DI .3. whichever is applicable.
- .3 For materials less than 3mm (1/8") thick, shop drawings may show nominal weld leg sizes. For such material, the effective throats of welds shall not be less than the thickness of the thinnest connected part.
- .4 Touch-up welds with zinc rich paint.

#### **3.3 SCREWS**

- .1 Steel screws shall equal or exceed the minimum diameter indicated on the shop drawings.
- .2 Penetration beyond joined materials shall not be less than 3 exposed threads.
- .3 Thread types and drilling capability shall conform to the manufacturer's recommendations.
- .4 Screws covered by sheathing materials shall have low profile heads.

#### **3.4 FABRICATION**

- .1 Where specified, provide cut-outs centred in the webs of members to accommodate services. Unreinforced cut-outs shall be limited to the dimensions determined by the certifying engineer and shall be clearly shown on the shop drawings. The effect of cutouts on the strength and stiffness of the member shall be considered.
- .2 The steel thickness exclusive of coating shall be marked on each member by embossing, stamping with indelible ink or by colour coding.

#### **3.5 STORAGE OF MATERIALS**

- .1 Products shall be protected from conditions that may cause physical damage or corrosion.



---

### 3.6 ERECTION

- .1 Methods of construction may be either by piece (stick-built) or by fabrication into panels (panelized) either on or off the site.
- .2 Lightweight steel framing shall be erected true and plumb within the specified tolerances. Temporary bracing shall be employed wherever necessary to withstand all loads to which the structure may be subject during erection and subsequent construction. Temporary bracing shall be left in place as long as required for the safety and integrity of the structure. The erector shall ensure that during erection a margin of safety consistent with the requirements of the National Building Code and CAN3-S136 exists in the uncompleted structure.
- .3 Erection Tolerances
  - .1 For the purposes of this section, camber is defined as the deviation from straightness of a member or any portion of a member with respect to its major axis, and sweep is defined as the deviation from straightness of a member or any portion of a member with respect to its minor axis.
  - .2 For wind bearing studs, out of plumbness shall not exceed 1/500th of the member length. Out of straightness (camber and sweep) shall not exceed 1/1000th of the member length.
  - .3 For track, camber shall not exceed 1/1000th of the member length.
  - .4 Studs shall seat into top and bottom tracks. The gap between the end of the stud and the web of the track shall not exceed 1.5 mm (0.059") for axial load bearing studs or 4 mm (0.157") for wind bearing studs.
  - .5 Align adjacent prefabricated panels to provide surface continuity at the interface.
  - .6 Spacing of studs shall not be more than 3 mm (1/8") from the design spacing. The cumulative error in spacing shall not exceed the requirements of the finishing materials.
- .4 Make all field measurements necessary to insure the proper fit of all members.
- .5 Cutting of members may be by saw or shear. Torch cutting is not permitted.
- .6 All axially loaded members shall be aligned vertically to allow for full transfer of the loads to the foundation. Vertical alignment shall be maintained at floor/ wall intersections.
- .7 Complete bearing shall be maintained under tracks to provide for load transfer in axially loaded assemblies. Any discrepancy shall be brought to the attention of the Consultant.
- .8 Holes that are field cut into lightweight steel framing members shall conform to the requirements of Section 3.4.1 and 3.6.5
- .9 Splicing of wind bearing members is not permitted.
- .10 Insulation equal to that specified shall be placed in all jamb and header assemblies that will be inaccessible after their installation into the wall. Insure that insulation is kept dry and not compressed.

.11 Handling and lifting of prefabricated panels shall not cause permanent distortion to any member or collateral material.

.12 Brick Connector Installation

- .1 Install brick connectors in accordance with CSA S136, CSA A370, CSA A371 and CSA S304.1
- .2 Attach brick Connectors directly to web of the steel studs with number of fasteners dictated by design loads (Minimum two per connector)

**3.7 INSPECTION**

.1 The lightweight steel framing Design Engineer, responsible for the production of the shop drawings, shall provide periodic field review during construction and shall submit reports in accordance with Section 1.5 .6.

.1 The cost of this field review shall be paid for by the Contractor.

.2 Additional inspection and testing of materials and workmanship shall be carried out by a qualified independent Inspection Agency appointed by the Owner.

.1 The cost of this additional inspection shall be paid for out of the Cash Allowances for Inspection and Testing.

.2 Any testing or inspection required by the Consultant because of an error by the Contractor or due to departure from the contract documents by the Contractor, shall be paid by the Contractor.

.3 Inspection shall include:

- .1 Checking that mill test reports are properly correlated to materials.
- .2 Sampling fabrication and erection procedures for general conformity to the requirements of the specification.
- .3 Checking that the welding conforms to the requirements of Section 3.2.
- .4 Checking fabricated members against specified member shapes.
- .5 Visual inspection of all welded connections including sample checking of joint preparation and fit-up.
- .6 Sample checking of screwed and bolted joints.
- .7 Sample checking that tolerances are not exceeded during fit-up or erection.
- .8 Additional inspection and testing of welded connections as required by CSA W59.
- .9 General inspection of field cutting and alterations required by other trades.
- .10 Submission of reports to the Consultant, the Structural Engineer, the Contractor and the authorities having jurisdiction covering the work inspected with details of

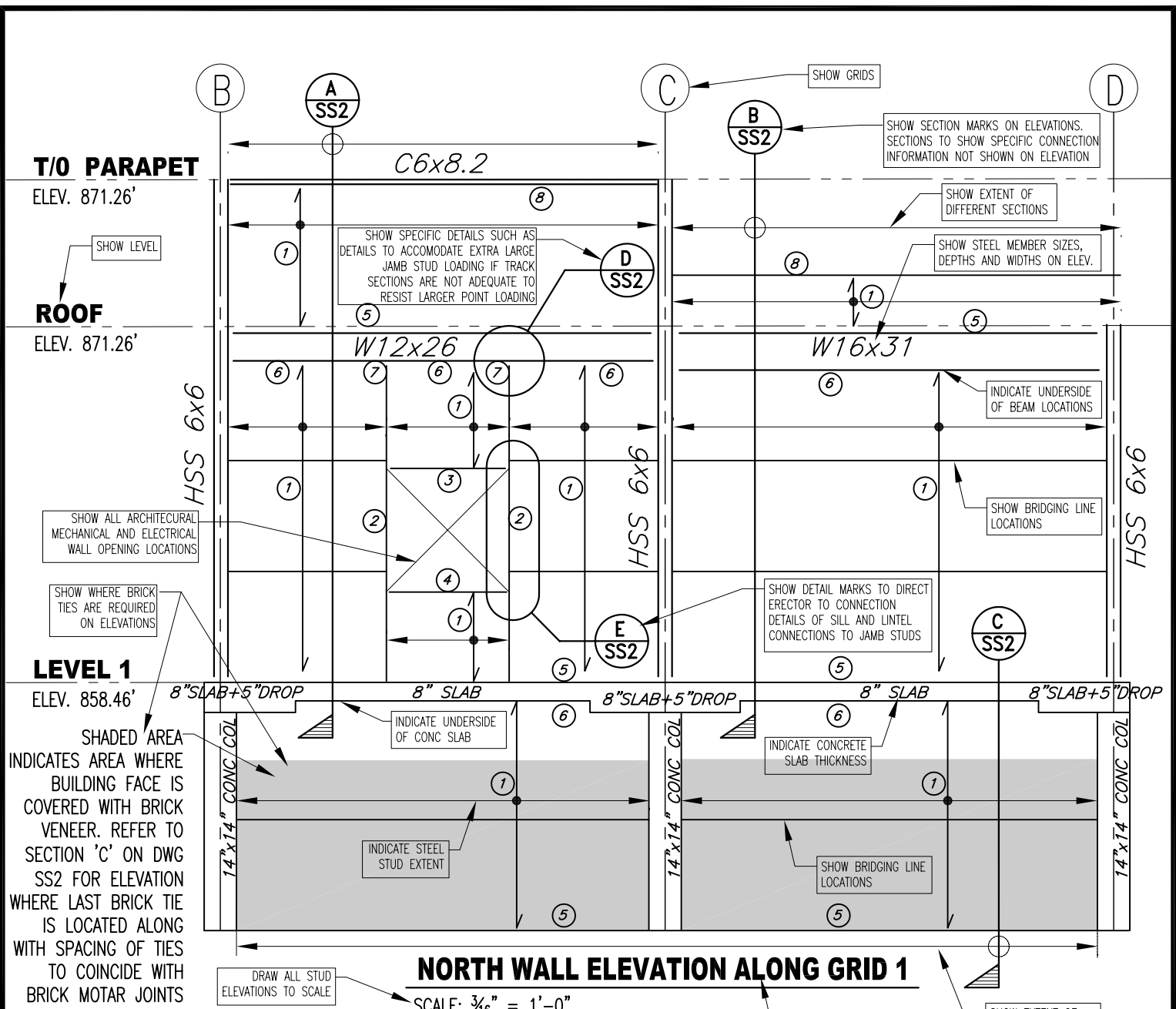
deficiencies discovered.

- .4 Provide a minimum of 4 site visits by the design Engineer or his direct representative. Provide and distribute written site reports for each site visit. A clearance report that specific walls have been inspected and are
- .5 The Contractor shall provide the necessary cooperation to insure that the inspection can proceed.
- .6 The inspection provided in this section does not relieve the Contractor of his responsibility for the performance of the contract. The Contractor is solely responsible for quality control and he shall implement his own supervisory and quality control procedures.
- .7 Materials or workmanship not conforming to the requirements of the contract documents may be rejected at any time during the progress or work.

### **3.8 CLEAN-UP**

- .1 At the completion of the work of this section, remove any excess materials, debris, and equipment from the site.

**END OF SECTION**



**NORTH WALL ELEVATION ALONG GRID 1**

SCALE: 3/16" = 1'-0"

STEEL STUD SCHEDULE	
MARK	STUD SIZE, GAUGE, AND SPACING/QUANTITY
①	600S162-43 STEEL STUDS AT 16" O.C.
②	DOUBLE 600S162-43 STEEL STUDS PLUS SINGLE 600T125-43 TRACK SECTION. SCREW STUDS TOGETHER WITH #10 SCREWS AT 8" O.C.
③	LINTEL CONSTRUCTED OF DOUBLE 600T125-43 TRACK SECTIONS 600S162-43 STEEL STUD. SCREW STUDS TOGETHER WITH #10 SCREWS AT 8" O.C.
④	SILL MEMBER 600T125-43 TRACK
⑤	600T125-43 TRACK
⑥	600T125-43 TRACK PLUS 600T300-68 DEFLECTION TRACK
⑦	SPECIAL 16 GAUGE CLIP ANGLE WITH SLOTTED HOLES AT JAMB STUDS
⑧	600T125-43 TRACK SECTION

- Clearly identify location and grid of elevation shown
- Show extent of different sections
- Show all stud sizes and spacing on elevations
- Show all built-up jamb stud along with how multiple members are to be assembled
- Show all built-up lintel along with how multiple members are to be assembled
- Indicate where special deflection track sections are required. Refer erector to proper details for connection and deflection space required
- Indicate where special details are required. Refer erector to specific details and sections for special connections
- Show track section sizes and refer to sections for connections to beams, floors, and studs

**SAMPLE LIGHT GAUGE FRAMING ELEVATION DRAWING**

## **PART 1 - GENERAL**

### **1.01 SECTION INCLUDES**

- .1 Shop fabricated ferrous metal items.

### **1.02 RELATED SECTIONS**

- .2 Section 03 30 00 - Cast-In-Place Concrete: Placement of metal fabrications in concrete.
- .3 Section 09 90 00 - Painting

### **1.03 REFERENCES**

- .1 American Architectural Manufacturers Association
  - .1 AAMA 611-14 Specifications for Anodized Architectural Aluminum.
  - .2 AAMA 2603 -17a Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
  - .3 AAMA 2605 -17a Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
- .2 ASTM International
  - .1 ASTM A36/A36M -14 Carbon Structural Steel.
  - .2 ASTM A53/A53M – Pipe, Steel, Black and Hot-Dipped, Zinc-coated, Welded and Seamless
  - .3 ASTM A123/A123M-17 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - .4 ASTM A153/A153M-16a Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
  - .5 ASTM A283/A283M-18 - Low and Intermediate Tensile Strength Carbon Steel Plates.
  - .6 ASTM A307- 14e1 Carbon Steel Bolts and Studs, and Threaded Rod 60,000 psi Tensile Strength.
  - .7 ASTM A500/A500M-18 Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
  - .8 ASTM A501/A501M-14- Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.

- .9 ASTM B26/B26M-18e1 Aluminum-Alloy Sand Castings.
- .10 ASTM B85/B85M-18e1 - Aluminum-Alloy Die Castings.
- .11 ASTM B177/B177M-11(2017) - Engineering Chromium Electroplating.
- .12 ASTM B209-14 - Aluminum and Aluminum-Alloy Sheet and Plate.
- .13 ASTM B210 -12 Aluminum-Alloy Drawn Seamless Tubes.
- .14 ASTM B211 12e1- Aluminum and Aluminum-Alloy Bar or Cold Finished Bar, Rod, and Wire.
- .15 ASTM B221-14 - Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- .4 American Welding Society
  - .1 AWS (American Welding Society) A2.1 - Standard Welding Chart.
  - .2 AWS (American Welding Society) D1.1 - Structural Welding Code - Steel.
  - .3 AWS (American Welding Society) D1.2 - Structural Welding Code - Aluminum.
- .5 CSA Group
  - .1 CSA W47.1 09(R2014)- Certification of Companies for Fusion Welding of Steel Structures.
  - .2 CSA W47.2 -11 (R2015) Certification of Companies for Fusion Welding of Aluminum.
  - .3 CSA W55.3 -08(R2018) Resistance Welding of Steel and Aluminum.
  - .4 CSA W59 -18 Welded Steel Construction
  - .5 CSA W59.2 -18 Welded Aluminum Construction.

#### 1.04 SUBMITTALS FOR REVIEW

- .1 Section 01 30 00: Submission procedures.
- .2 Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable. Drawings to be sealed for connection design by a professional engineer registered in the province of Ontario.
- .3 Indicate welded connections using standard AWS A2.1 welding symbols. Indicate net weld lengths.
- .4 Complete Schedule M1 of section 01 67 11 and provide supporting documentation demonstrating that paints and coatings applied onsite and

inside the building meets the VOC content requirements of section 01 67 11.  
Submit this information 14 days prior to ordering for approval.

#### **1.05 SUBMITTALS FOR INFORMATION**

- .1 Submit the material cost of metal fabrications by completing Schedule M2 of section 01 67 11 prior to demobilization.

#### **1.06 QUALITY ASSURANCE**

- .1 Welders' Certificates: Submit to Section 01300 certifying welders employed on the Work, verifying qualification within the previous 12 months to CSA W47.1 (steel), CSA W59, CSA W59.2.

#### **1.07 QUALIFICATIONS**

- .1 Prepare Shop Drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the Province of Ontario.
- .2 Welders Certificates: Submit to Section 01 30 00, certifying welders employed on the Work, verifying qualification within the previous 12 months.

### **PART 2 -PRODUCTS**

#### **2.01 MATERIALS**

- .1 Structural Steel Members: Grade and shapes as per drawings
- .2 Anchor bolts, Bolts, Nuts, and Washers: Size and grade as per drawings.
- .3 Welding Materials: Refer to drawings for miscellaneous fabrications – Bench Brackets and supports.
- .4 Ladders: Ministry of Labour Engineering Data Sheet 2-04
- .5 Shop and Touch-Up Primer: SPCC 15, Type 1, red oxide.
  - .1 Anti-corrosive and anti-rust paints applied onsite and used within the weatherproofing system must have a VOC content equal to or less than 250 g/L as per section 01 67 11.

#### **2.02 FABRICATION**

- .1 Fit and shop assemble items in largest practical sections, for delivery to site.
- .2 Fabricate items with joints tightly fitted and secured.
- .3 Continuously seal joined members by continuous welds.
- .4 Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- .5 Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- .6 Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

### **2.03 FABRICATION TOLERANCES**

- .1 Squareness: 1/8 inch maximum difference in diagonal measurements.
- .2 Maximum Offset Between Faces: 1/16 inch.
- .3 Maximum Misalignment of Adjacent Members: 1/16 inch.
- .4 Maximum Bow: 1/8 inch in 48 inches.
- .5 Maximum Deviation From Plane: 1/16 inch in 48 inches.

### **2.04 FINISHES - STEEL**

- .1 Prepare surfaces to be primed in accordance with SPCC SP 2.
- .2 Do not prime surfaces in direct contact with concrete or where field welding is required.
- .3 Prime paint items with one coat.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- .1 Verify that field conditions are acceptable and are ready to receive work.

### **3.02 PREPARATION**

- .1 Clean and strip primed steel items to bare metal where site welding is required.
- .2 Supply steel items required to be cast into concrete with setting templates to appropriate sections.

### **3.03 INSTALLATION**

- .1 Install items plumb and level, accurately fitted, free from distortion or defects.
- .2 Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- .3 Field weld components indicated on shop drawings.
- .4 Perform field welding in accordance with CWB requirements.
- .5 Obtain approval prior to site cutting or making adjustments not scheduled.
- .6 After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

**END OF SECTION**



## **PART 1 - GENERAL**

### **1.01 GENERAL REQUIREMENTS**

- .1 The General Conditions of CCDC 2-2008, Stipulated Price Contract as supplemented in Section 00 73 00, and the General Requirements of Division 1, form part of this Section, and must be read in conjunction with the requirements of this Section, and all related Sections.
- .2 The Work of this Section, and Related Work specified in other Sections shall comply with all requirements of Division 1 – General Requirements.

### **1.02 SECTION INCLUDES**

- .1 Provision of all labour, materials, equipment and incidental services necessary to Provide rigid board insulation

### **1.03 RELATED SECTIONS**

- .1 Section 03 30 00 Cast-In-Place Concrete
- .2 Section 07 26 00 Vapour and Air Barriers
- .3 Mechanical Divisions Insulation for Mechanical Work

### **1.04 REFERENCE STANDARDS**

- .1 Underwriters Laboratories of Canada (ULC):
  - .1 CAN/ULC-S102-2018; Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
  - .2 CAN/ULC -S701.1-2017, Standard for Thermal Insulation, Polystyrene, Boards
  - .3 CAN/ULC-S702.1-2014; Standard for Mineral Fibre Thermal Insulation for Buildings.
  - .4 CAN/ULC-S702.2-2015; Standard for Mineral Fibre Thermal Insulation for Buildings.
  - .5 CAN/ULC-S704-2017; Standard for Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Faced.
  - .6 CAN/ULC-S770-15- REV1; Standard Test Method Determination of Determination of Long-Term Thermal Resistance of Closed-Cell Thermal Insulation Foams.
- .2 ASTM International
  - .1 ASTM C 208-12(2017)e1, Standard Specification for Cellulosic Fiber Insulating Board.
  - .2 ASTM C 591-17, Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation.
  - .3 ASTM C 612-14, Standard Specification for Mineral Fibre Block and Board Thermal Insulation.
  - .4 ASTM C 726-17, Standard Specification for Mineral Fiber Roof Insulation Board.

- .5 ASTM C 728-17a, Standard Specification for Perlite Thermal Insulation Board.
- .6 ASTM C 1126-18, Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation.
- .7 ASTM C 1289-18a, Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
- .8 ASTM E 96/E 96M-16, Standard Test Methods for Water Vapour Transmission of Materials.
- .9 ASTM E2178-13 Standard Test Method for Air Permeance of Building Materials

### **1.05 SUBMITTALS**

- .1 Submit Submittals in accordance with Section 01 33 00
- .2 Product Data Sheets:
  - .1 Submit Product Data Sheets indicating physical characteristics, test results confirming performance characteristics and compliance with referenced standards.
- .3 Samples:
  - .1 Submit duplicate 300mm (12”) long Samples of insulation furring system channels, fasteners and accessories.

### **1.06 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver materials to the Place of the Work in their original unopened packages, bearing all manufacturer's labels.
- .2 Protect packages from damage, and materials from effects of weathering.
- .3 Store insulation materials in dry location, off ground and protected for wetting and traffic.

## **PART 2 - PRODUCTS**

### **2.01 INSULATION**

- .1 Provide board insulation in single thickness, to maximum thickness manufactured, unless Specifications and/or Drawings indicate multiple layers.
  - .1 Refer to drawings for thickness of insulation required. Where following the specified list choices of materials, the contractor shall select appropriate products from such lists on the basis of their total compatibility when incorporated into the entire assembly, as well as their ability to adhere to other components permanently and in a rigid manner.
- .2 General Application:
  - .1 Rigid Insulation; perimeter insulation, extruded polystyrene. Dow 'SM' Owens Corning 'Celfort 300'
    - .1 Board size: 610mm x 2440mm.

- .2 Cement faced insulation board
  - .1 Dow Styrofoam CT board for perimeter foundation walls To meet specified requirements of CSA Standard A101, Type IA, friction fit.
- .3 Semi-rigid insulation: mineral fibre, cavity wall insulation. Roxul ‘Cavityrock’ Owens Corning ‘Fibreglas Type 703’.
- .4 Foamed in Place insulation: CFC free polyurethane foam as manufactured by Instafoam, Hilti, or approved alternate.

## 2.02 ADHESIVES

- .1 For polystyrene: to ASTM E2178 . Mastic adhesive: solvent based polymer modified liquid applied membrane compatible with insulation to be applied, type as manufactured for the attachment of insulation as manufactured by Bakor (airbloc 21) or approved alternate.

## 2.03 ACCESSORIES

- .1 Insulation fasteners: soft washer and pin type; direct fasten type; concrete/block back-up/precast: Grey polyethylene washer, corrosion resistant fastener, pin length to suit application as recommended for pin embedment depth as manufactured by Hilti (X-SW 60 Pins) or approved alternate.
- .2 Insulation attachment to metal studs: galvanized self tapping screws for 12.7mm minimum embedment into metal studs, complete with 25mm diameter plastic retaining washers.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- .1 Prior to commencing the Work of this Section, carefully inspect installed Work of other trades and verify that such Work is complete to the point where Work of this Section may properly commence. Provide Notice in Writing to the Consultant and Contractor of conditions detrimental to the proper and timely completion of the Work of this Section.
  - .1 Ensure substrates are firm, straight, smooth, dry, free of snow, ice or frost, and clean of dust and debris.
- .2 Do not begin installation until all unsatisfactory conditions are resolved. Beginning Work of this Section constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

### 3.02 INSULATION INSTALLATION

- .1 General
  - .1 Install insulation after building substrate materials are dry.
  - .2 Do not install insulation in areas of the building unprotected from water, freezing or similar damaging environmental conditions.
  - .3 Install insulation to maintain continuity of thermal protection to building elements and spaces.

- .4 Fit insulation tightly around electrical boxes, plumbing and heating pipes and ducts, around exterior doors and windows and other protrusions.
- .5 Keep insulation minimum 75mm (3") from heat emitting devices such as recessed light fixtures.
- .6 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.
- .7 Offset both vertical and horizontal joints in multiple layer applications.
- .8 Do not enclose insulation until it has been reviewed by Consultant.
- .2 Batt Insulation
  - .1 Ensure that insulation is supported to prevent settlement.
  - .2 Install friction fit batts snugly between framing members.
- .3 Semi-Rigid Cavity Insulation
  - .1 Install using securement plates as recommended by manufacturer.
  - .2 Apply adhesive around openings and edges.
  - .3 Fasten insulation to substrates at spacing recommended by manufacturer.
- .4 Foundation Wall Insulation
  - .1 Provide cement faced insulation at all exterior face of perimeter foundation walls. Fasten with clips and adhesive.
  - .2 Secure insulation by adhesive if backfilling is not immediately placed to retain panels in place.
  - .3 Prime surfaces before application of adhesive only where and as recommended by adhesive manufacturer.
  - .4 Apply 50 mm diameter pads of adhesive to faces of panels as required to hold board in place on walls.
  - .5 Position and press boards into full contact with adhesive, and temporarily hold them in place until adhesive has set.
  - .6 Ensure that backfilling is completed within 24 hours, and that it does not dislodge or damage insulation.
- .5 Installation of Slab Insulation
  - .1 Lay insulation board over compacted fill for slab base.
  - .2 Secure in place to prevent dislodgement when slab is poured.
  - .3 Ensure that slab is poured within 24 hours.
- .6 Foamed in Place Insulation
  - .1 Install between window and door frames and all rough openings provided for structural attachments through thermal and air/vapour barrier to provide the integrity of a continuous thermal air/vapour barrier in compliance with OBC.

- .7 Adhesive
  - .1 Apply adhesive to substrate by notched trowel in accordance with manufacturer's instructions.
  - .2 Embed insulation boards into adhesive, prior to skinning of adhesive.
  - .3 Leave unbonded joints in insulation board over line of expansion and control joints.

**3.03 ADJUSTMENT**

- .1 Repair and seal breaks, punctures, and other openings in the vapour barrier by application of pressure sensitive vapour barrier tape. Clean surface before taping, and apply smoothly and in full contact.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.01 GENERAL REQUIREMENTS**

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

### **1.02 RELATED REQUIREMENTS**

- .1 Section 03 30 00: Cast-in-place Concrete
- .2 Section 04 22 00: Concrete Unit Masonry
- .3 Section 06 10 10: Rough Carpentry:
- .4 Section 07 21 00: Board and Batt Insulation:
- .5 Section 07 26 00: Vapour and Air Barrier
- .6 Section 07 92 13: Joint Sealants
- .7 Section 08 11 00: Metal Doors and Frames

### **1.03 SYSTEM INTENT**

#### **.1 Thermal Insulation Requirements**

- .1 This section specifies requirements for sprayed polyurethane foam primarily intended for use as thermal insulation. Materials of this section shall provide continuity of thermal insulation, of the air barrier, and of the vapour barrier in conformance with the requirements of the OBC.

#### **.2 Air Barrier Requirements**

- .1 This section specifies additional requirements for sprayed polyurethane foam insulation intended for use as the main component of an air barrier system.
- .2 Prevent exfiltration and infiltration under all conditions of air pressure differentials resulting from mechanical systems of the building, and barometric pressure and wind forces within limited specified and as imposed by jurisdictional authorities.

#### **.3 Vapour Barrier Requirements**

- .1 This section specifies additional requirements for sprayed polyurethane foam insulation intended for use as the designated vapour barrier system.

- .2 Incorporate barriers in construction envelope to ensure that air leakage, and water vapour permeance in excess of 0.025 perms, is prevented through them. Seal each crack, joint and penetration by other components to maintain integrity of barrier.

#### .4 **Interface with Adjacent Systems**

- .1 Coordination between all installers of components of the sprayed foam insulation system is essential to ensure continuity of the air barrier and that junctions between the various components are effectively sealed.
- .2 Verify with Architect, installation procedures of building products incorporated into sprayed foam insulation system including but not limited to, various barrier membranes, sheet metal closers and sealants, as well as continuity with roofing membrane where applicable.
- .3 Materials of this section shall provide continuity of thermal insulation, of the air barrier, and of the vapour barrier at the building enclosure in conjunction with the work of other sections specified.

### 1.04 **REFERENCE STANDARDS**

- .1 Underwriters Laboratories of Canada (ULC)
  - .1 CAN/ULC-S101-14, Standard Methods of Fire Tests of Building Construction and Materials.
  - .2 CAN/ULC-S102-10, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
  - .3 CAN/ULC-S705.1-15, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Material Specification. Includes Amendment 1.2.
  - .4 CAN/ULC-S705.2-05(R2016), Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Application.

### 1.05 **QUALITY ASSURANCE**

#### .1 **Requirements of Regulatory Agencies**

- .1 Install only sprayed foam insulation with an inherent fire hazard classification in all its parts that is within limits established by jurisdictional authorities.
- .2 Validate fire hazard classification only by testing laboratories acceptable to jurisdictional authorities.
- .3 Attach Underwriters' Laboratories labels to packages of fire rated materials, where applicable.
- .4 Completely isolate cavity wall insulation from the interior of the building by non-combustible materials.

**.2 Mock-Up**

- .1 Install insulation for mock-up specified in Section 04 22 00.

**.3 Contractor Qualification**

- .1 Application of sprayed foam insulation shall be by an application certified by CUFCA/NECA (Canadian Urethane Foam Contractors Association/National Energy Conservation Association) and who has adequate plant, equipment and skilled trades people to perform it expeditiously and is known to have been responsible for satisfactory installation similar to that specified during a period of the immediate past 5 years.
- .2 Provide proof of certification upon request.

**.4 Source Quality Control**

- .1 Material manufacturer/distributor must have an on-site quality assurance/control program.
- .2 Maintain at least one (1) copy of installation manual and at least one (1) copy of quality assurance program on site.
- .3 Contractor shall perform daily on-site testing as directed by material manufacturer.

**1.06 ACTION AND INFORMATION SUBMITTALS**

**.1 Documentation**

- .1 Submit manufacturer's instructions, printed product literature and data sheets for polyurethane foam sprayed insulation and include product characteristics, performance criteria, physical size, finish and limitations.
- .2 Submit one (1) copy of the installation instructions.
- .3 Submit 2 copies of WHMIS MSDS Sheets.

**.2 Test Reports:**

- .1 Submit certified test reports for insulation from approved independent testing laboratories, indicating compliance with specifications for specified performance characteristics and physical properties.
- .2 Submit test reports in accordance with CAN/ULC-S101 for fire endurance and CAN/ULC-S102 for surface burning characteristics.



## 1.07 DELIVERY STORAGE AND HANDLING

- .1 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .2 Store insulation materials in off ground, in dry areas, protected from wetting and traffic.
- .3 Store and install insulation materials subject to damage by water, freezing, sunlight or similar adverse environmental conditions with adequate protection against damage.
- .4 Ensure that materials are stored a at minimum temperature of 4°C for 12 hours before installation, and that freezable adhesives are stored only at temperatures above 0°C at all times

## 1.08 SITE CONDITIONS

### .1 Environmental Requirements

#### .1 Ambient/Substrate Temperature

- .1 Do not apply insulation or system components when surface or ambient air temperatures are below 5°C.
- .2 Consult Material Manufacturer when there is a difference of 17°C or more between the ambient air temperature and the substrate temperature for recommendations for suitable practices.

#### .2 Moisture/Humidity

- .1 Consult Material Manufacturer when the relative humidity rises above 80%.

#### .3 Wind

- .1 Insulation shall not be installed on the exterior when wind speeds exceed 24km/h unless wind screens are used adjacent to the immediate work area.

## 1.09 WARRANTY

### .1 Extended Warranty

- .1 Warrant the work of this Section for a period of not less than 10 years.

- .2 Contractor warrants that the sprayed foam insulation system is suitable for use in this type of installation.
- .3 Promptly correct, at own expense, defects or deficiencies which become apparent within the warranty period. Without restricting generality of warranty, defects shall include failure to stay in place, loss of thermal value, deterioration of insulation, undue expansion, splitting of materials, staining or other damage to surrounding or adjacent surfaces or materials.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

#### **.1 General**

1. Ensure that all materials of an insulation system, and the construction with which it is in contact, are compatible, including but not limited to thru-wall flashings, air barrier systems, roofing membranes.

#### **.2 Sprayed Foam Insulation**

- .1 Foam Insulation: sprayed/frothed polyurethane foam to CAN/CGSB-51.23-92, RSI 1.05 (R6/1") at density of 32.8 kg/cu.m. (2lb/cu.ft): Insul - Barrier or approved alternative.
- .2 Insulation Foam Air Barrier Sealant: Closed cell single component liquid system with density of 27.2 kg./cu.m. (1.7 lb.cu.ft.) RSI 1.0 (R5.7/1") and compressive strength of 10% compression at 96.5 kpa (14 psi);
- .3 Acceptable products: BASF Waltite, Demilec/ Cornell Heatlock 0240/ Airmetic 0223/ PFSI Polar Foam 7300.

#### **.3 Firestopping**

- .1 **Horizontal firestopping:** Preformed angle from minimum 1.2mm (18ga) steel core with zinc coating conforming to ASTM A525 (G90-galvanized). Angle fabrication shall be such that horizontal section of angle perpendicular to substrate shall protrude past the finished face of spray insulation by 13mm to allow for subsequent installation of mineral fibre firestop to this angle by Section 04200.
- .2 **Vertical firestopping:** Preformed angle from minimum 0.38 (28ga) steel core with zinc coating conforming to ASTM A525 (G90 galvanized). Angle fabrication shall be such that vertical section of angle perpendicular to substrate shall protrude past the finished face of spray insulation for the full depth of the cavity to contact the backside of the veneer to close off the cavity.

---

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- .1 Before commencing installation of insulation, ensure that all surfaces to which insulation is to be applied, are clean, reasonably smooth with no abrupt changes in plane, free of grease and with protruding fins of mortar or concrete removed, and that the surfaces are otherwise acceptable for insulation application as specified.
- .2 Verify that surfaces and conditions are ready to accept the Work of this section. Application of Work of this Section shall be deemed acceptance of existing work and existing conditions. Report in writing defects in substrates which may adversely affect the performance of the foam insulation.
- .3 Examine joints before sealing to ensure configuration, surfaces and widths are suitable for foam sealant. Report in writing the location of joints which are deemed unacceptable for the application of joint sealant.

### **3.02 GENERAL**

#### **.1 Vapour Retarder**

- 1. Ensure specified integrity of vapour barrier perm rating and air barriers are maintained. The extreme care that the barriers are sealed where elements penetrate them, and that they extend across and are sealed at junctions between other parts of the barrier system.

#### **.2 Install Air Seal Barriers to Ensure**

- .1 That they are supported, secured in a manner to withstand differential air pressure forces without displacement, loss of air seal properties.
- .2 That continuity of the air seal barrier system is maintained in the exterior walls enclosing the building.
- .3 That the air seal is maintained intact at junctions of partitions, stack locations and other components with wall and roof construction, penetrations of the barrier by other construction components, and by careless foam insulation.
- .4 Provide airtight seal at penetrations of sprayed foam insulation systems, and at junctions of such systems with other construction.
- .5 Where shown on Drawings, install foam insulation to ensure continuity of vapour retarder, air barrier and insulation systems. Install in sufficient depths in order to match R value of surrounding wall/window/door/roof system.

### 3.03 PREPARATION

1. Surfaces to receive foam insulation shall be free of frost, loose or foreign matter which might impair adhesion of materials.
2. Prepare surface by brushing, scrubbing, scraping or grinding to remove loose mortar, dust, oil, grease, oxidation, mill scale and other contaminants which will affect adhesion and integrity of the foam insulation system. Wipe down metal surfaces to remove release agents or other non-compatible coatings, using clean sponges or rags soaked in a solvent compatible with the foam insulation. Ensure surfaces are dry before proceeding.
3. Prepare joints to receive foam air barrier sealant by brushing, scrubbing, wiping, scraping or grinding to remove loose mortar, dust, oil, grease, solvents, oxidation, mill scale and other contaminants which will affect adhesion and integrity of foam sealant.

### 3.04 APPLICATION

- .1 Apply foam insulation in strict accordance with manufacturer's written instructions, specifications or recommendations.
- .2 Apply foam insulation only when surfaces and ambient temperatures are within limits prescribed by the material manufacturer.
- .3 Fill joints with foam sealant making allowances for post expansion of foam.
- .4 Finish joints shall be free from air pockets and imbedded foreign materials. Cut back excess foam sealant after cutting flush with surrounding surfaces unless otherwise directed and/or detailed.
- .5 Apply foam insulation to within the following tolerances: +6.4mm (1/4") mm of thicknesses indicated on drawings.
- .6 Finished sprayed foam insulation shall be free of voids and embedded foreign materials.
- .7 Do not allow foam insulation to cover or mark adjacent surfaces. Use masking materials if necessary.
- .8 Remove over-spray and masking materials immediately after foam has cured to hard surface film.
- .9 Clean and make good surfaces soiled or damaged by Work of this section. Consult with Section of Work soiled before cleaning to ensure methods used will not damage their Work.
- .10 Do not permit adjacent Work to damage Work of this Section. Damage to Work of this Section caused by other sections shall be made good by this Section at the expense of the Section which caused the damage.

### 3.04 FIELD QUALITY CONTROL

- .1 The insulation system will be inspected after installation to verify its total integrity.
- .2 Inform the Architect when portions of the system have been installed and before they are covered by other construction or their accessibility for inspection is otherwise impeded.

- .3 Arrange to have a technical representative who is familiar with specified products and their installation on site during application of the materials and to inspect system when completed.
- .4 Density and adhesion/cohesion tests shall be performed and recorded for each job site/each day/for each batch used/for each substrate.

**3.05 ADJUSTMENT**

- .1 Examines completed system. Repair and seal all breaks in system to ensure maintenance of its integrity.

**END OF SECTION**

**PART 1 - GENERAL**

**1.01 RELATED SECTIONS**

- .1 Section 03 30 00 - Cast in Place Concrete
- .2 Section 04 22 00 - Unit Masonry
- .3 Section 06 10 00 – Rough Carpentry
- .4 Section 07 21 13 – Board and Batt Insulation
- .5 Section 07 21 29 – Sprayed Insulation Polyurethane
- .6 Section 07 92 00 – Joint Sealants

**1.02 REFERENCES**

- .1 Canadian General Standards Board (CGSB)
- .2 Canadian Standards Association (CSA International)
- .3 ASTM A653 / A653M - 18 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- .4 National Electrical Manufacturers Association (NEMA)
  - .1 ANSI/NEMA LD3-2005, High-Pressure Decorative Laminates (HPDL).

**1.03 SUBMITTALS**

- .1 Samples:
  - .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Submit duplicate samples of joints, edging, cutouts and postformed profiles.
  - .3 Submit 216 mm X 280 mm samples of membranes.
- .2 Manufacturer's Instructions:
  - .1 Submit manufacturer's installation instructions.

**1.04 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver, handle, store and protect materials of this section in accordance with manufacturer's printed instructions.
  - .1 Maintain relative humidity between 25 and 60% at 22 degrees C during storage and installation.
  - .2 Ensure that sealants and joint sealing tape are stored at a minimum temperature of 4 degrees C for 12 hours before installation, and that freezable adhesives are stored only at temperatures above 0 degrees C at all times.
  - .3 Do not store air barrier membrane materials in areas with temperatures

above 38 degrees C.

**1.05 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials.

**PART 2 - PRODUCTS**

**2.01 SHEET VAPOUR BARRIER**

- .1 Air/Vapour Barrier:
  - .1 Polyethylene film: 0.15 mm thick.
- .2 Under slab Vapour Barrier
  - .1 Vapour barrier membrane shall meet or exceed requirements of ASTM E 1745 Classes A, B & C.
  - .2 Maximum Water Vapour Transmission Rate: ASTM E 96, 0.014 Grains/ft<sup>2</sup>/hr.
  - .3 Maximum Permeance: ASTM E 96, 0034 Perms
  - .4 Resistance to Organisms and Substrates in Contact with Soil: ASTM E 154, Section 13, 0.051 Perms.
  - .5 Tensile Strength: ASTM E 154, Section 9, 9 N/mm (52 Lbf/inch)
  - .6 Puncture Resistance: ASTM D 1709, Method B, 3,770 Grams.
  - .7 Water Vapour: ASTM E 1745, Meets or exceeds Class A.
  - .8 Thickness of plastic: ACI 302.1R-06, Not less than 0.38 mm (15 mils).
  - .9 Acceptable Products:
    - .1 “PERMINATOR”, 15 mil, by W. R. Meadows.
    - .2 ‘Stego-Wrap’, 15 mil, by Stego Industries.
    - .3 Griffolyn ‘Griffolyn 15 Mil Green’.

**2.02 AIR SEAL BARRIER**

- .1 When design intent and another material is not indicated typically on Drawings, and where approved by Architect, an air seal barrier may be provided by, but

not limited to, the following:

- .1 : roofing membrane
  - .2 : glass
  - .3 : poured dense concrete
  - .4 : metals
  - .5 : suitable sealants
  - .6 : suitable reinforced asphalt or plastic membranes
- .2 These materials shall not substitute for a system indicated on Drawings as typical for Project without approval of the Architect.
  - .3 Polyethylene film material when used as a vapour barrier is NOT regarded as being a component of an air seal.
  - .4 Sheet Metal: Galvanized sheet steel to meet specified requirements of ASTM Specification A563,
  - .5 Provide air seal barrier sufficient strength to resist forces of wind and air pressure which may act on it. Wind pressure criteria to be established by maximum wind loading requirements of jurisdictional authorities

### **2.03 AIR BARRIER MEMBRANE SYSTEM**

- .1 Membrane: self adhesive, sheet, 1 mm minimum thickness,
- .2 Sealtight Air-Shield by W. R. Meadows, Perm-A-Barrier by W.R. Grace and Company of Canada, or Blueskin SA by Bakor Inc., or Sopraseal Flam 180 by Soprema or approved alternatives. Exoair 110/110LT by Tremco Canada.
- .3 Primers, mastics, adhesives, to be of manufacturers' standard compatible with membrane.
- .4 Membrane width shall be not less than 450 mm to suit masonry ties.

### **2.04 ACCESSORIES**

- .1 Joint sealing tape: air resistant pressure sensitive adhesive tape, type recommended by vapour barrier manufacturer, 50 mm wide for lap joints and perimeter seals, 25 mm wide elsewhere.
- .2 Sealant: To Section 07 92 00: compatible with vapour retarder materials, recommended by vapour retarder manufacturer.
- .3 Staples: minimum 6 mm leg.
- .4 Moulded box vapour barrier: factory-moulded polyethylene box for use with recessed electric switch and outlet device boxes.
- .5 Foam Insulation:
  - .1 One or two part, polyurethane, with a nominal density of 40 kg/cubic meter, coefficient of linear expansion of 0.00006 mm/m/deg C, water vapour transmission of 73 Ng/Pa5sq.m and thermal conductivity of



0.02 W/mdeg,K.

- .2 Similar to products as produced by BASF Canada Inc.

### **PART 3 - EXECUTION**

#### **3.01 INSTALLATION**

- .1 Ensure services are installed and inspected prior to installation of retarder.
- .2 Install sheet vapour retarder on warm side of exterior wall ceiling and floor assemblies prior to installation of gypsum board to form continuous 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.

#### **3.02 VAPOUR RETARDER**

- .1 Ensure integrity of vapour barrier perm rating and air barriers are maintained. The extreme care that the barriers are sealed where elements penetrate them, and that they extend across and are sealed at junctions between other parts of the barrier system.
- .2 Apply vapour barrier to cover face of insulation board toward interior of building, and to form an integral monolithic membrane barrier against water vapour and air penetration. Seal barrier to adjacent barrier systems, and take care that it is not punctured during installation.
- .3 Secure vapour barrier to furring so that joints are sealed.

#### **3.03 INSTALL AIR SEAL BARRIERS**

- .1 Air Seal Barriers shall be supported and secured in a manner to withstand differential air pressure forces without displacement, loss of air seal properties.
- .2 That continuity of the air seal barrier system is maintained in the exterior walls and roof enclosing the building.
- .3 That the air seal is maintained intact at junctions of partitions, stack locations and other components with wall and roof constructing, penetrations of the barrier by other construction components, and by careless installation.
- .4 Provide airtight seal at penetrations of vapour and air retarder systems, and at junctions of such systems with other construction.
- .5 Where shown on drawings, install foam insulation to ensure continuity of vapour retarder, air barrier and insulation systems. Install in sufficient depths in order

to match R value of surrounding wall / window / door / roof system.

### **3.04 EXTERIOR SURFACE OPENINGS**

- .1 Cut sheet vapour retarder to form openings and ensure material is lapped and sealed to frame.

### **3.05 PERIMETER SEALS**

- .1 Seal perimeter of sheet vapour barrier 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 staples through lapped sheets at sealant bead into wood substrate.
  - .4 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

### **3.06 LAP JOINT SEALS**

- .1 Seal lap joints of sheet vapour barrier 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 staples through lapped sheets at sealant bead into wood substrate.
  - .5 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

### **3.07 ELECTRICAL BOXES**

- .1 Seal electrical switch and outlet device boxes that penetrate vapour barrier as follows:
  - .1 Install moulded box vapour barrier Wrap boxes with film sheet providing minimum 300 mm perimeter lap flange.
  - .2 Apply sealant to seal edges of flange to main vapour barrier and seal

wiring penetrations through box cover.

**3.08 FIELD QUALITY CONTROL**

- .1 The air seal barrier system will be inspected after installation to verify its total integrity.
- .2 Inform the Architect when portions of the system have been installed and before they are covered by other construction or their accessibility for inspection is otherwise impeded.
- .3 Arrange to have a technical representative who is familiar with specified products and their installation, on site during application of the materials and to inspect system when completed.

**3.09 ADJUSTMENT**

- .1 Examine completed air seal barrier system. Repair & seal all breaks in system to ensure maintenance of its integrity.

**END OF SECTION**

---

## **PART 1 - GENERAL**

### **1.01 DESCRIPTION**

#### **.1 General Requirements**

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

#### **.2 Work Performed by Other Sections Related to This Section is Specified in**

- .1 Section 04 22 00: Concrete Unit Masonry
- .2 Section 07 52 00: Modified Bituminous Membrane Roofing
- .3 Section 07 62 00: Sheet Metal Flashing and Trim
- .4 Section 07 21 29: Sprayed Insulation – Polyurethane Foam
- .5 Section 07 26 00: Vapour and Air Barrier.

#### **.3 Installation of Work Which Shall be Supplied by This Section is Specified in**

- .1 Section 07 62 00: To install prefinished metal flashing.

#### **.4 This Section Shall Include Performance of Work Which is Specified in**

- .1 Section 07 26 00: Vapour and Air Barrier
- .2 Section 07 92 00: To specify caulking and sealants

### **1.02 QUALITY CONTROL**

#### **.1 Subcontractor Qualifications**

- .1 The fabrication and erection of preformed metal installation specified in this Section shall be executed by an approved Subcontractor who has had at least five (5) years of experience with similar installations.

### **1.03 REFERENCES**

#### **.1 Reference Standards**

- .1 Meet specific requirements of CAN/CSA-S136-16, North American Specification for the Design of Cold Formed Steel Structural Members, and requirements of applicable jurisdictional authorities for each preformed metal system.
- .2 Requirements specified in this Section are intended to modify, supplement, or clarify specifications contained in CAN/CSA-S136-16.
- .3 Recommendations contained in Standard Specifications and Technical Bulletins of the Canadian Sheet Steel Building Institute for materials and performance of system will establish minimum standards for work not

specified in CAN/CSA-S136-16, by jurisdictional authorities, or in this Section.

- .4 Reference standards quoted in Contract Documents refer to:
  - .1 ASTM International
    - .1 ASTM A446-76(1981)e1 , Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality
    - .2 ASTM A525-81, Specification for Steel Sheet Zinc-Coated (Galvanized) by the Hot Dipped Process
    - .3 ASTM A780/A780M-09(2105), Standard Practice for Repair of Damaged and uncoated Areas of Hot-Dip Galvanising Coatings.
    - .4 ASTM A792M/A792M-10(2015) Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
    - .5 ASTM A924/A924M-18 Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
  - .2 Canadian General Standards Board
    - .1 CGSB Specification 19-GP-5M, Sealing Compound, One Component, Acrylic Base, Solvent Curing.
    - .2 CAN/CGSB-19.24-M90, Sealing Compound, Multi-Component, Chemical Curing.
  - .3 Canadian Standards Association
    - .1 CSA G164-18, Hot Dip Galvanizing of Irregularly Shaped Articles.
    - .2 CAN/CSA-S136-16, Cold Formed Steel Structural Members.

#### 1.04 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for building panels, hardware, and accessories and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit electronic copies of WHMIS MSDS
- .2 Shop Drawings:
  - .1 Indicate on drawings:
    - .1 Dimensions, wall openings, head, jamb, sill and mullion detail,

materials and finish, anchor details, compliance with design criteria and requirements of related work.

- .3 Samples: Submit 300 x 300 samples of finish coating and profile.

#### **1.05 DELIVERY STORAGE AND HANDLING**

- .1 Package materials to protect finished surfaces of siding from staining and marring.
- .2 Store materials flat at site under protection to prevent staining from the ground or from collection of water on material, or both; and secured against wind damage.
- .3 Store insulation and adhesives in dry areas, heated as required to prevent damage to adhesives.

#### **1.06 WARRANTY**

- .1 Extended Warranty
  - .1 Warranty contained in GC24 is, with respect to Section 07 46 13, extended from 1 year to 5 years. Without restricting generality of warranty, defects shall include leaking, failure to stay in place under expansion, lifting, deformation, deterioration, etc.
  - .2 Contractor hereby warrants that system is suitable for use in this type of installation.

### **PART 2 - PRODUCTS**

#### **2.01 SIDING SYSTEMS**

- .1 General
  - .1 Siding system shall be one system, applied to vertical surfaces.
  - .2 System shall consist of exterior preformed metal skin on galvanized framing and shall include all flashings and closures.
- .2 Materials - Siding
  - .1 Acceptable manufacturers: Vicwest or approved alternate by Flynn.
  - .2 Exposed preformed metal profile (or matching profile by Flynn).
  - .3 Sub-girts:
    - .1 preformed galvanized metal sheet, 1.22mm (18Ga) minimum base steel nominal thickness, notched for drainage.
    - .2 Adjustable clips as required to suit site conditions.
  - .4 Accessories: exposed trim, end and flute closures, inverted corner sections, cap pieces etc. shall be of the same metal material, finish, and colour as cladding.

- .5 Preformed sheet metal:
- .6 Metal Sheet:
  - .1 Aluminium -zinc alloy coated sheet steel to ASTM A792M with coating designation AZM150 to ASTM A924/A924M.
  - .2 Accessories and Hardware: Zinc coated steel to match specified requirements of CAN/CSA-G164, hot dip galvanized after fabrication.
- .7 Preformed sheet metal finish for exposed sheet metal: To match existing profile, gauge and colour. Similar to “Channelwall” profile by Vicwest.
- .3 Materials - Soffit
  - .1 Acceptable manufacturers: Longboard by Mayne.
  - .2 Exposed preformed metal T&G profile.
  - .3 Accessories: exposed trim, end and flute closures, inverted corner sections, cap pieces etc. shall be of the same metal material, finish, and colour as cladding.
  - .4 Colour to match existing on site.

## **2.02 FABRICATION**

- .1 Roll form profiled panels, and other shapes unless impossible because of special design. Use other forming methods only with approval.
- .2 Form metal panels with bends sharp and true.
- .3 Fabricate to conform to shop drawings, and to allow for structural movements within the systems.
- .4 Fabricate systems for use with exposed fasteners wherever possible.
- .5 Fabricate miscellaneous framing members of specified materials as required to provide support of metal skin.
- .6 Fabricate systems to prevent entry of water into building and from collection within system assembly, and to prevent infiltration of air through system.
- .7 Join intersecting parts together to provide tight, accurately fitted joints with adjoining surfaces in true planes.
- .8 Fabricate system to conform to requirements of reference standards specified.
- .9 Cooperate with applicable Sections to ensure required coordination for installations specified in this Section in conjunction with masonry, structural steel framing, metal deck, membrane roofing, sheet metal work, and similar installations by other Sections.
- .10 Exterior Sheet
  - .1 Profile: Corrugated 2-2/3” x 7/8” by Vicwest corrugated profile.
  - .2 Thickness: Minimum 0.122 mm (18 gauge)

- .3 Colour: to match existing.
- .4 Fastening: exposed fasteners with colour of screw heads to match siding colour

### **PART 3 - EXECUTION**

#### **3.01 EXAMINATION**

- .1 Take site measurements to ensure that fabrications are provided to fit structure; surrounding construction; around obstructions and projections in place, or as shown on Drawings and to suit locations of services.
- .2 Verify that backup and support construction is aligned for proper installation of preformed metal system before commencing erection of metal skin.
- .3 Before proceeding with application, ensure that:
  - 1. Metal support is constructed smoothly; in true planes and to match whatever is the design intent.
  - 2. Edges of metal are supports to prevent deflection.
  - 3. Adjacent construction and installation of other work to be incorporated is complete.
  - 4. Work which penetrates system has been installed.

#### **3.02 ERECTION OF PREFORMED SIDING**

- .1 Erect systems complete with flashings forming part of system, sub-girts, clips, fasteners, closures & caulking to meet same design criteria as specified for fabrication.
- .2 Cut and flash system penetrations.
- .3 Erect panels in straight lines that are true, level, and plumb.
- .4 Provide for differential thermal and structural movement between systems and structure as well a between elements of system.
- .5 Attach systems to supporting structure and to other siding components with fasteners of the same material and colour as the exterior panels except where other materials are approved.
- .6 Seal joints within system watertight.
- .7 Caulk between preformed metal specified in this Section and installations of other Sections to meet specified requirements of Section 07 92 00 and to provide a watertight installation.
- .8 Erect systems by its fabricator or approved agent.



### **3.03 FIELD QUALITY CONTROL**

- .1 Arrange to have a technical representative of membrane manufacturer who is familiar with specified products and their installation review shop drawings for work of this Section, to be on site during installation of the membrane and perform inspection of membrane before covering.

### **3.04 ADJUSTMENT AND CLEANING**

- .1 After erection, touch up galvanized coatings removed or damaged during erection.
- .2 Remove damaged, dented, defaced, defectively finished, or tool marked components and replace with new.
- .3 Refinish shop applied finishes in field only with approval.
- .4 Clean off dirt resulting from erection from surfaces exposed to view.

**END OF SECTION**

## PART 1 - GENERAL

### 1.01 DESCRIPTION

#### .1 General Requirements

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

#### .2 Work Performed by Other Sections Related to this Section is specified in

- .1 Section 02 41 00 – Selective Demolition
- .2 Section 06 10 00 – Rough Carpentry
- .3 Section 07 62 00 - Flashing and Sheet Metal
- .4 Section 07 72 33 - Roof Hatches
- .5 Section 07 92 13 - Joint Sealants
- .6 Mechanical Divisions - Roof Drains
- .7 Mechanical Divisions - Vent Stack Covers and Flashing

#### .3 This Section shall include performance of Work which is specified in

Section 07 62 00 - For field quality control of flashing installation contiguous with the work of this Section.

#### .4 Work Performed by this Section to Meet Requirements of the Following

Section 07 26 00 – Vapour and Air Barrier

#### .5 Scope of Work

- .1 To remove the existing roof membrane, insulation, metal flashing, wood cants, and materials down to existing roof deck on existing school.
- .2 Preparation of new and existing decks to receive new roofing.
- .3 Install a new 2-ply modified bitumen membrane roof to the new addition and provide tie in to existing roofing.

### 1.02 QUALITY ASSURANCE

#### .1 Subcontractors Qualifications

- .1 Execute Work of this Section only by a Subcontractor approved by the membrane manufacturer and who has adequate plant, equipment and skilled tradesmen to perform it expeditiously, and is known to have been responsible for satisfactory installations similar to that specified during a period of at least the immediate past five years.
- .2 Install membrane approved by the personnel who have been trained and who are approved by the membrane manufacturer.
- .3 Ensure that the roofing Subcontractor's suppliers and subcontractors have the same qualifications.

**.2 Requirements of Regulatory Agencies**

- .1 Ensure that materials, including adhesives, and roof anchorage meet requirements of jurisdictional authorities.
- .2 Ensure that roofing materials, including adhesives and roof anchorage, are listed by Factory Mutual as approved roofing components; and that details of roofing anchorage conforms to Factory Mutual requirements.

**.3 Source Quality Control**

- .1 Review Drawings and inform Architect of conditions which will not ensure a satisfactory installation.
- .2 Arrange for a site meeting for review of installation procedures with a representative of membrane manufacturer.

**.4 Compatibility**

- .1 Assure that all roofing components are compatible with each other.
- .2 Ensure that all roofing components are compatible with other systems to which attachment or other physical interface is required.

**1.03 REFERENCE STANDARDS**

- .1 ASTM International
  - .1 ASTM A653/A653M-18, Specification for Steel Sheet, Zinc Coated (Galvanized) by Hot Dip Process
  - .2 ASTM D3686-13 Standard Practice for Sampling Atmospheres to Collect Organic Compound Vapours (Activated Charcoal Tube Absorption Method)
- .2 Canadian General Standards Board
  - .1 CGSB Specification 51-GP-20M, Thermal Insulation, Expanded Polystyrene.
  - .2 CGSB Specification 37-GP-56M, Membrane, Modified, Bituminous , Prefabricated and Reinforced for Roofing
- .3 Canadian Standards Group
  - .1 CSA Standard A82.27-M1977, Gypsum Board Products
  - .2 CSA Standard A123.4-04(R2018), Asphalt for Constructing Built Up Roofing Coverings and Waterproof Systems

**1.04 SUBMITTALS**

**.1 Inspection Company Reports**

- .1 Submit roof inspection reports as the Work progresses.
- .2 Upon completion of roofing Work, submit duplicate certificates of acceptance issued by the roofing inspection company.

**.2 Shop Drawings**

- .1 Submit shop drawings for approval of system and as required for composite membrane.

**.3 Samples**

- .1 Submit samples and manufacturer's literature before ordering materials and proceeding with the Work.

**1.05 DELIVERY STORAGE AND HANDLING**

- .1 Store materials in dry protected area as recommended by manufacturer to ensure that they are not damaged.
- .2 Do not store roofing materials on roof. Store them under cover while roofing Work is not in progress.
- .3 Package roofing materials and identify on attached labels the manufacturer, brand, contents, weight as applicable, and product and specification numbers.
- .4 Store materials in dry protected areas between temperatures of 15°C (60°F) and 27°C (80°F), except for membrane. If materials are exposed to lower temperatures, restore them to specified range prior to use.

**1.06 SITE CONDITIONS**

- .1 Environmental Requirements
  - .1 Do not apply any part of the roofing system over damp materials, nor during a period of damp weather, rain, snow, or otherwise inclement conditions.
  - .2 Apply membrane and components only when air and surface temperatures are within limits recommended by manufacturer and not less than 5°C (40°F).

**1.07 WARRANTY**

**.1 Extended Warranty**

- .1 Warranty contained in GC24 is, with respect to Section 07 52 00, extended from 1 year to 10 years. Without restricting generality of warranty, defects shall include leaking, failure to stay in place, undue expansion, lifting, deformation, loosening, failure to adhere, splitting of same, deterioration, blisters, etc.
- .2 Membrane manufacturer will issue a written document in the Owner's name, valid for 10 years, stating that they will repair any leaks in the roofing membrane to restore the roofing system to a dry and watertight condition, to the extent that membrane manufacturing or installation defects caused water infiltration. The warranty must cover entire cost of repairs including labour and materials, for the full duration of the warranty period.
- .3 Contractor will issue a written and signed document in the Owner's name, certifying that the work executed will remain in place and free of any workmanship defect for a period of 10 years, starting from the date of acceptance.
- .4 Contractor shall arrange with Architect and/or Owner, about 1 month before warranty expires, to visit site, examine roofing installation specified in this Section, and make necessary arrangement through no fault or neglect of Owner or Architect, then period of warranty shall extend to one month after such arrangement is made.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

Note: Use only compatible materials in roofing system.

- .1 **Sheathing Board** – Silicone treated fibreglass-mat faced gypsum roof board to ASTM C1177/C1177M-04, 12.7 mm thick, 1219mm wide boards x 2438 mm long min. Ends cut square; DensDeck Prime as manufactured by Georgia-Pacific, or approved alternate.
- .2 **Gypsum Board Tape** – Sopraguard Tape as manufactured by Soprema, "V-8086" Contractor's sheathing tape as manufactured by 3M Canada, "Tuck 20502" Contractor's Sheathing tape as manufactured by Canadian Technical Tape Ltd. or approved alternate.
- .2 **Primer (for heat welded of asphalt adhered membranes)** – A blend of elastomeric bitumen, volatile solvents and adhesive enhancing additives used to prime, concrete, metal or gypsum board substrates prior to the application of torch applied or asphalt adhered membranes; Elastocol 500 by Soprema, or approved alternate.
- .3 **Primer (for self-adhesive membranes)** – Composed of SBS synthetic rubber, volatile solvents, adhesive enhancing resins used to prime porous and nonporous substrates such as wood, concrete, metal or gypsum board to enhance the adhesion of self-adhered membranes at temperatures above -10°C; Elastocol Stick by Soprema, or approved alternate.
- .4 **Roofing Asphalt** - Type 2 oxidized asphalt with a softening point between 75°C - 83°C conforming to CSA A123.4M.
- .5 **Vapour Retarder (Steel deck areas)** – Self-adhesive air/vapour barrier membrane composed of bitumen modified with thermoplastic polymers and high density polyethylene film; Soprapap'r 40 by Soprema, or approved alternate.
- .6 **Mechanical Fasteners** - Screw fasteners with 3" round galvanized metal stress plates, self-tapping corrosion resistant screw, length as required to ensure minimum 19 mm penetration into deck; Dekfast #14 screws complete with 3" round Galvalume steel insulation plates as manufactured by SFS Intec Inc. or approved alternate.
- .7 **Membranes -**
  - .1 **Membrane Base Sheet:** A membrane sheet, composed of Styrene Butadiene Styrene (SBS) modified bitumen and reinforced with non-woven polyester mat, weight 180 g/m<sup>2</sup>, thickness of 2.2 mm., with a thermofusible poly film top surface and a lightly sanded underside to meet CGSB 37-GP-56M, Type 2, Class C, Grade 2 for base sheets; Elastophene 180 PS, by Soprema, or as supplied by IKO Roofing Products, Bakor, or other approved manufacturer.
  - .2 **Base Sheet Flashings:** A membrane sheet, composed of Styrene Butadiene Styrene (SBS) modified bitumen and reinforced with a heavy duty glass mat, weight 130 g/m<sup>2</sup>, thickness of 2.5 mm., with a thermofusible poly film top surface and a self adhesive underside protected by a silicone release film, to meet CGSB 37-GP-56M, Type 2, Class C, Grade A for base sheets; Sopraflash Flam Stick as supplied by Soprema, or as supplied by IKO Roofing Products, Bakor or other approved manufacturer.
  - .3 **Membrane Cap Sheet and Flashing Cap Sheet:** A membrane sheet, composed of Styrene Butadiene Styrene (SBS) modified bitumen and reinforced with a non-woven polyester mat, weight 250 g/m<sup>2</sup>, 4 mm thickness, with ceramic mineral granules embedded into top surface and a thermofusible poly film on the underside, meeting CGSB 37-GP-56M Type 1, Class A, Grade 2, for cap sheets; Sopralene Flam 250 GR supplied by Soprema, or as supplied by IKO Roofing Products, Bakor or other approved manufacturer.

- .4 **Base Sheet Perimeter Membrane:** A membrane sheet, composed of Styrene Butadiene Styrene (SBS) modified bitumen and reinforced with a heavy duty combination of non-woven polyester with glass grid composite, weight 170 g/m<sup>2</sup>, thickness of 2.2 mm., with a lightly sanded top and bottom surface and a 200mm wide selvedge on both sides of the roll, to meet CGSB 37-GP-56M, Type 2, Class C, Grade 2 for base sheets; Perimet'r by Soprema, or as supplied by IKO Roofing Products, Bakor, or other approved manufacturer.
- .5 **Cap Sheet Starter** - A membrane sheet, composed of Styrene Butadiene Styrene (SBS) modified bitumen and reinforced with a non-woven polyester mat, weight 250 g/m<sup>2</sup>, 4 mm thickness, with ceramic mineral granules embedded into top surface and a thermofusible poly film on the underside, meeting CGSB 37-GP-56M Type 1, Class A, Grade 2, for cap sheets; Starter Flam GR supplied by Soprema, or as supplied by IKO Roofing Products, Bakor or other approved manufacturer.
- .8 **Waterproofing Mastic** – Composed of synthetic rubbers, plasticized with bitumen and solvents; Sopramastic by Soprema, or approved alternate.
- .9 **Asphalt Kettles** - to have thermometer accurately measuring the temperature of the asphalt in the kettle.
- .10 **Caulking** - CGE Silpruf or DOW 790 Low Modulus Silicone Sealant.
- .11 **Vent Stack Covers** - Lexsuco insulated, tamper proof or approved alternate.

### PART 3 - EXECUTION

#### 3.01 EXAMINATION

- .1 Before proceeding with roofing application, ensure that:
  - .1 All existing roof membrane, insulation, metal flashing and cants have been removed from the designated roof area to receive new roofing systems.
  - .2 Existing roof deck is sound; in true planes; and level, or sloped to drains, whichever is design intent.
  - .3 New roof deck is constructed smoothly; in true planes, and level, or sloped to drains, whichever is design intent.
  - .4 Edges of all panels of metal roof deck are supported to prevent deflection.
  - .5 Roof drains have been set and anchored by others at a level to drain and are connected to drainage system.
  - .6 Roof decks are clean and sufficiently dry for application under specified warranty.
  - .7 Adjacent construction and installation of other work incorporated with roof is completed.
  - .8 Roofing surfaces are free of cracks that are wider than bridging ability of roofing materials.
  - .9 Preparations have been made for bases on which equipment will be installed.
  - .10 Work that penetrates roof has been installed.
- .2 Defective roofing Work resulting from application to unsatisfactory previously completed

Work will be considered the responsibility of those performing the Work of this Section.

### 3.02 PREPARATION

- .1 Sweep roof deck completely free of dust, dirt and debris.
- .2 Protection
  - .1 Ensure that stored porous materials absorb no moisture. Remove wet materials from Project site.
  - .2 When using adhesives and sealants containing petroleum distillates keep them away from open flames and do not breathe their fumes.
  - .3 Protect membrane from punctures by sharp materials on both their top and bottom sides.
  - .4 Protect surrounding work, and adjacent building and other property from damage during roofing operations.
  - .5 This Section shall make payment for repair of damage caused by its Work.
  - .6 Install temporary blocking and otherwise protect drains during roofing operations, and remove at completion of roofing Work.
  - .7 Protect insulation from sunlight at all times while in storage.

### 3.03 INSTALLATION

- .1 **General**
  - .1 Apply roofing in accordance with Drawings, Specifications, requirements of jurisdictional authorities, and material manufacturer's printed directions which shall establish minimum requirements not otherwise specified.
  - .2 Roofing system to be installed to meet requirements of Factory Mutual 1-90.
  - .3 Apply roofing as soon as possible after new roof has been installed.
  - .4 Make adjustments to specified roofing procedures caused by weather and site conditions only when approved.
  - .5 Maintain equipment in good working order to ensure control of roofing operations and protection of Work. Use only roofing equipment recommended and approved by membrane manufacturer.

### 3.04 VAPOUR RETARDER (Self-adhesive)

- .1 Ensure substrate is suitable prior to installation of vapour retarder.
- .2 Beginning at the bottom of the slope, without adhering the membrane, unroll onto the substrate for alignment. Do not immediately remove the silicone release sheet.
3. Align the roll parallel to the corrugations of the steel deck. Make sure the membrane overlaps are supported along their entire length. Place a thin sheet of metal spanning the flutes of the deck under any end laps of membrane as support for the lap.
4. Peel back approx. 12" at one end of the of the silicone release sheet and adhere this part of the membrane to the deck. Peel back the remaining release sheet at a 45° angle to avoid wrinkles in the membrane.

5. If the membrane is not properly aligned, do not try to adjust it. Instead, cut the roll and start again, making sure that it is properly aligned and that it overlaps the end of the misaligned piece by 150mm.
6. Overlap adjacent membranes by 75mm (3"). Overlap end laps by 150mm (6"). Stagger end laps by at least 300mm (12").

### 3.05 VAPOUR RETARDER (Mopped)

- .1 Ensure substrate is suitable prior to installation of vapour retarder.
- .2 Apply a coat of asphalt primer to substrate at a rate of 0.15 to 0.25 L/m<sup>2</sup>. All surfaces to primed must be free of rust, duct, or any residue that may hinder adhesion. Cover primed surfaces with roofing membrane as soon as possible. Allow primer to flash and dry sufficiently before application of membrane.
- .3 Unroll vapour retarder membrane dry onto substrate for alignment purposes. Overlap side laps by 75 mm and end laps by 150 mm. Laps shall be staggered a minimum of 300 mm. Begin work at bottom of slopes.
- .4 Unroll vapour retarder into layer of hot asphalt spread at a rate of 1 kg/m<sup>2</sup> to 1.5 kg/m<sup>2</sup>.
- .5 Apply asphalt on roof at a temperature of about 230°C and heat in kettle to approximately 250°C taking care to never exceed the asphalt flash point temperature. Follow suppliers recommendations. In colder temperatures (below 10°C), warm membranes underside by sweeping a torch over rolls entire width.
- .6 The roof vapour retarder must meet and overlap the air/vapour barrier on adjoining walls to ensure total air/vapour seal. Incorporate heat-resistant air/vapour barrier continuity strip at these overlaps.
- .7 Install vapour retarder membrane at insulation perimeters and around each element piercing the insulation to ensure sealed connections with base sheet at upstands.

### 3.06 ROOF MEMBRANE

- .1 Provide a 2-ply modified bitumen membrane (mopped base, torch cap) over the overlay board.
- .2 Base Sheet:
  - .1 Unroll base sheet dry onto substrate with first side lap lined up with centre of drain and parallel to edge of roof. Allow membrane to relax for 15 minutes prior to application. In cold weather (below 10°C) burn the plastic film on the top surface in zag-zag pattern with a propane torch to hasten relaxation.
  - .2 Overlap side laps by 75 mm, along lines provided for this purpose, and overlap end laps by 150 mm. Stagger end laps by at least 300mm.
  - .3 Re-roll base sheet and unroll again onto a bed of hot asphalt. Apply asphalt to one half of side only and seal the remaining outside half with a torch. Burn off the poly film at all end laps before adhering with asphalt.
  - .4 Pour hot asphalt in front of each roll at a temperature of about 230°C and heat in kettle to approx. 250°C taking care not to exceed the flash point of the asphalt. Minimum temperature at point of contact should be 220°C to 230°C. Ensure hot asphalt in kettle is in constant use to avoid distillation.
  - .5 Do not spread asphalt more than 3 metres in front of each roll. In colder weather (below 15°C) do not spread asphalt more than 1 metre in front of each roll.
  - .6 Below 10°C heat the membrane underside by sweeping a torch over entire roll's width. Be careful not to direct flame toward the bitumen.



- .7 Hot asphalt must never be applied on vertical surfaces at levels higher than 25mm above horizontal base sheet roofing surface.
- .8 Avoid forming wrinkles, air pockets or fishmouths.
- .9 Install reinforcements at penetrations (drains, stack flashings, cone flashings) at 45° degree angle to the field membrane rolls and in accordance with manufacturer's recommendations.
- .10 Always seal overlaps at the end of the workday with propane torch and hot trowel.

.3 Base Sheet Flashing

- .1 Before applying primer or membranes, always remove the plastic film on the section of field membrane to be covered by overlaps.
- .2 Apply a coating of primer to parapet, curb, upstand substrates including overlaps and allow to flash-off and dry.
- .3 Precut one (1) metre wide pieces of sufficient length to completely cover the parapet, curb, upstand detail complete with a minimum 100mm (4") overlap to the field membrane.
- .4 Position pre-cut membrane piece. Peel back 100 to 150mm (4" to 6") of the silicone release paper and adhere this part of the membrane at the top of the parapet, curb or upstand. Gradually peel back the remaining silicone release paper, pressing down on the membrane with an aluminium applicator to ensure good adhesion. Use the applicator to ensure a perfect transition between the upstand and the field surface. Smooth the entire membrane surface with a roller for full adhesion. Fasten outside edge of membrane at face of parapet at 300mm (12") O.C. with round-top roofing nails.
- .5 Overlap side laps 75mm (3") and stagger by at least 300mm (12") from base sheet side laps to prevent excessive layering.
- .6 Cut off corners at end laps to be covered by the next roll.
- .7 Install a reinforcing gusset at all inside and outside corners.
- .8 Always seal overlaps at the end of the workday with propane torch and hot trowel.

.4 Cap Sheet:

- .1 Once base sheet is applied and no defects are apparent, proceed with cap sheet installation, starting at the roof drains.
- .2 Begin with a double selvage starter roll. If starter roll is not used, side laps covered in granules must be degranulated by embedding a 100mm (4") side lap in torch-heated bitumen.
- .3 Unroll cap sheet at drain. Carefully centre roll on drain and align side lap parallel to roof edge.
- .4 Weld cap sheet onto base sheet with torch recommended by membrane manufacturer. During application, simultaneously melt both designated contact surfaces so a bead of bitumen is apparent as cap sheet unrolls.
- .5 Avoid overheating.
- .6 Unless overlap widths differ between cap and base sheets, make sure joints between the two layers are staggered by at least 300 mm.
- .7 Overlap cap sheet side laps by 100mm (4") and end laps by 150 mm. Cut off corners at end laps to be covered by next roll. All overlap surfaces must be granule-free or degranulated.

- .8 Complete perfect welds between two membranes. Leave no zone unwelded. In cold weather, adjust welding time to obtain homogenous seam (it may be necessary to slow down in certain cases.)
- .9 Once cap sheet is installed, carefully check all overlapped joints.
- .10 During installation, care should be taken to avoid excessive bitumen bleed-out at joints.

.5 Cap Sheet Flashing Installation

- .1 The cap sheet flashing must be installed in one (1) metre wide strips. The side laps must overlap by 75mm (3") and must be staggered by at least 100mm (4") with respect to the joints of the cap sheet on the field surface, to avoid areas of excessive layering. The overlaps to the field surface must be 150mm (6") minimum and exceed those of the base sheet flashing overlap by at least 50mm (2"). At end laps, angle cut the corners that will be covered by the following piece.
- .2 Use chalk line to draw a straight line on the field surface 150mm (6") from the inside of the parapets, curbs, upstands, etc. Using a propane torch and round nose trowel, embed the surface of the granules in the a layer of hot bitumen, starting from the chalk line on the field surface to the bottom edge of the parapet, curb or upstand.
- .3 Heat weld cap sheet flashing directly to the base sheet membrane, proceeding from top to bottom. This technique softens both membranes in order to obtain an even, continuous weld.
- .4 During installation, be careful not to overheat the membrane or to create excessive bitumen bleed out at the joints.

**3.07 METAL FLASHINGS**

- .1 Replace any metal flashing removed from equipment fans, etc., and replace with new metal.
- .2 Fabricate and install metal copings, fascias, and counter flashing as indicated on drawings.
- .3 New counter flashing and cap flashings as detailed shall be coloured metal shapes to match existing flashing if any.
- .4 Fabricate metal flashing and other sheet metal work in accordance with applicable CRCA FL series details. Make allowance for expansion at joints. In general, flat locked seams shall be used. Seal joints watertight. Form sections square, true and accurate to size, free from distortion and other defects. Double back exposed edges at least 12 mm. Flashings to be fastened with clips secured to masonry walls with nail-ins by competent mechanical fasteners or approved equal at 2'.

**3.08 PROTECTION OF WORK**

- .1 At the completion of each day's work, all exposed edges of unfinished roof membrane system must be sealed by means of a temporary water cut off.

### 3.09 FIELD QUALITY CONTROL

- .1 Arrange for a review of the complete roofing installation by a representative of the membrane manufacturer to ensure that work has been performed in compliance with specified requirements.
- .2 Engage the roofing inspection company selected by the Architect to supervise installation of roofing and to verify its completion in accordance with this Specification for Work included in both Section 07 52 00 and 07 62 00.
- .3 Provide supervision of roofing installation by a representative of the membrane manufacturer.
- .4 Notify designated Owner's representative and roofing inspection company at least seventy-two hours before roofing operations commence, and arrange for a job site meeting to be held the day before the roofing starts with the following present: Owner's representative; Contractor's superintendent; roofing inspector; and a principal of the roofing Subcontractor's firm. Subsequently, give two working day's prior notice to the roofing inspector of the commencement of each phase of Work, and provide him with materials and installation information as required.
- .5 Payment for roofing inspection will be made from Cash Allowance listed in Section 01 21 00.

### 3.10 ADJUSTMENT AND CLEANING

- .1 Install membrane patches over punctures and tears in membrane in strict accordance with manufacturer's written recommendations.
- .2 Remove all roofer's equipment and debris as Work progresses, and at completion of roofer's Work.
- .3 Remove all debris and soil from all areas and surfaces that was caused from roofing operations.

### 3.11 PROTECTION

- .1 Coordinate work to ensure that special protection against damage from traffic or Work performed on top of completed roofing is installed as specified in Div 01.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.01 RELATED SECTIONS**

- .1 Section 07 52 00 – Modified Bitumen Roofing.
- .2 Section 07 62 00 Sheet Metal Flashing and Trim
- .3 Section 07 92 13 Joint Sealants
- .4 Mechanical Division for new roof top equipment curbs.

### **1.02 SECTION INCLUDES**

- .1 Provision of all labour, materials, equipment and incidental services necessary to complete the following work.
  - .1 Roofing repair and tie in to existing conditions.
  - .2 Roof test cuts to verify existing system components prior commencement to ensure compatibility of new materials.
  - .3 Selective demolition of existing roofing system and installation of new roofing components complete with all curbs and flashings.
  - .4 Inspection of existing rooftop conditions including, but not limited to, the roof deck, accessories, units, drainage, penetrations, etc. in the location of the work.
  - .5 Coordination with other trades for removal of existing roof hatch and installation of new mechanical curbs, flashing and trims.

### **1.03 REFERENCE STANDARDS**

- .1 ASTM International Inc.
  - .1 ASTM C726-17, Standard Specification for Mineral Wool Roof Insulation Board.
  - .2 ASTM C728-17a, Standard Specification for Perlite Thermal Insulation Board.
  - .3 ASTM C1002-18, Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
  - .4 ASTM C 1177/C 1177M-17, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
  - .5 ASTM C 1396/C 1396M-17, Standard Specification for Gypsum Board.
  - .6 ASTM D 1863-05(2018), Standard Specification for Mineral Aggregate Used on Built-up Roofs.
  - .7 ASTM D4637/D4637-15, Standard Specification for EPDM Sheet Used In Single-Ply Roof Membrane.

- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-51.34-M86(R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
- .3 Canadian Roofing Contractors' Association (CRCA)
  - .1 CRCA Roofing Specification Manual 1997.
- .4 Canadian Standards Association (CSA International)
  - .1 CSA A123.21-14, Standard Test Method for the Dynamic Wind Uplift Resistance of Membrane-Roofing Systems
  - .2 CSA A231.1/A231.2-14(R2018), Precast Concrete Paving Slabs/Precast Concrete Pavers.
  - .3 CSA O121-17 Douglas Fir Plywood.
  - .4 CSA O151-17, Canadian Softwood Plywood.
- .5 Underwriters' Laboratories of Canada (ULC)
  - .1 CAN/ULC-S701.1: 2017, Standard for Thermal Insulation, Polystyrene, Boards.
  - .2 CAN/ULC-S702-2014, Standard for Mineral Fibre Thermal Insulation for Buildings.
  - .3 CAN/ULC-S704.1-2017, Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
  - .4 CAN/ULC-S706-2016, Standard for Wood Fibre Thermal Insulation for Buildings.

#### **1.04 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Provide manufacturer's printed product literature, specifications and datasheets for membranes and insulation and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Provide two copies of WHMIS MSDS in accordance with Section 01 35 43 - Environmental Procedures.
- .3 Provide shop drawings:
  - .1 Submit drawings indicating flashing, insulation, penetration and field fabricated seams details.
- .4 Manufacturer's Installation Instructions: indicate special precautions required for selective demolition, tie in to existing components and seaming the membrane.

### 1.05 QUALITY ASSURANCE

- .1 Installer qualifications: company or person specializing in application of EPDM roofing systems with 5 years experience and approved by manufacturer.
  - .1 Submit written certification that the Roofing Contractor is an approved applicator of the manufacturer's products.

### 1.06 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions
- .2 Storage and Handling Requirements:
  - .1 Provide and maintain dry, off-ground weatherproof storage.
  - .2 Store materials on supports to prevent deformation.
  - .3 Remove only in quantities required for same day use.
  - .4 Store uncured flashing and jointing materials to prevent premature curing and freezing.
  - .5 Store insulation protected from sunlight and weather and deleterious materials.
  - .6 Store roofing materials in accordance with manufacturer's written instructions, to prevent damage or loss of performance.

### 1.07 SITE CONDITIONS

- .1 Ambient Conditions:
  - .1 Apply EPDM membrane only when surfaces and ambient temperatures are within manufacturers' prescribed limits.
  - .2 Do not install EPDM membrane when air and substrate temperature remains below 5 degrees C and in accordance with manufacturer's recommendations or when wind chill gives equivalent cooling effect.
  - .3 Install EPDM membrane on dry substrate, free of snow and ice. Use only dry materials and apply only during weather that will not introduce moisture into system.
- .2 Ventilation and Work Restrictions:
  - .1 Ventilate area of Work as directed by Consultant by use of approved portable supply and exhaust fans.
  - .2 Work shall be completed outside of operating hours when occupants not present.
  - .3 All equipment will be kept away from ventilation intakes.

## **1.08 WARRANTY**

- .1 For the Work of this Section 07 53 23 - Ethylene-Propylene-Diene-Monomer Roofing, 12 months warranty period is extended to 60 months.

## **PART 2 - PRODUCTS**

### **2.01 DESCRIPTION - ROOFING SYSTEM**

- .1 EPDM elastomeric membrane roofing consisting of: non-reinforced membrane for use in fully adhered system.

### **2.02 PERFORMANCE CRITERIA**

- .1 Compatibility between components of system and adjacent materials is essential.
  - .1 Provide a written declaration to Consultant stating that all materials and components, as assembled in system, meet this requirement.
- .2 Roofing system: to CSA A123.21 for wind uplift resistance.

### **2.03 DECK COVERING**

- .1 To match existing or as recommended by Roofing Manufacturer to ensure compatibility with existing system.
  - .1 Gypsum board: to ASTM C 1396/C 1396M, Water-resistant thickness to match existing as indicated.  
Plywood: to CSA O121, Sheathing Grade. Thickness to match existing.

### **2.04 VAPOUR RETARDER**

- .1 As recommended by Manufacturer and compatible with existing materials.

### **2.05 MEMBRANE**

- .1 Ethylene propylene diene monomer (EPDM sheet membrane): to match existing and in accordance with ASTM D 4637.
  - .1 Type 1, Class A, 1.6 mm thick, non-reinforced membrane for use in fully adhered system.
  - .2 Self-curing, EPDM based membrane for use as flashing as required by membrane manufacturer.

### **2.06 RIGID INSULATION**

- .1 Rigid insulation: To match existing or as recommended by Manufacture to ensure compatibility with existing system and maintain Warrantee.

### **2.07 OVERLAY BOARD**

- .1 To match existing roofing system thickness to match existing.
  - .1 Asphalt based recovery board with non-woven glass facers, as recommended by the membrane manufacturer.
  - .2 Asphalt impregnated fiberboard.

## **2.08 OVERLAY BOARD ADHESIVE**

- .1 Adhesive for securing overlay board and insulation:
  - .1 To Manufacturers recommendations.

## **2.09 SEALERS**

- .1 Sealants: asbestos-free sealant, compatible with systems materials, recommended by system manufacturer. In accordance with Section 07 92 13 - Joint Sealants.

## **2.10 FASTENERS**

- .1 Sheathing to steel deck: As recommended by Manufacturer
- .2 Insulation to substrate: As recommended by Manufacturer. Fasteners and plates must meet FM Approval Standard #4470 for wind uplift and corrosion resistance.
- .3 Membrane to substrate: fasteners and spacing as recommended by manufacturer.

## **2.11 PROTECTION MAT**

- .1 Non woven polypropylene needle punched felt as recommended by manufacturer.

## **2.12 FASTENING**

- .1 Bar, with prepunched holes and screws as recommended by manufacturer.
- .2 Screws and washers as recommended by manufacturer.

## **2.13 ADHESIVES, TAPES AND PRIMERS**

- .1 Adhesive, tapes and primers, in accordance with manufacturer's recommendations.

## **PART 3 – EXECUTION**

### **3.01 QUALITY OF WORK**

- .1 Compliance: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.
- .2 Do examination, preparation and roofing Work in accordance with Roofing Manufacturer's Specification Manual and CRCA Roofing Specification Manual except where specified otherwise.

### **3.02 SUBSTRATE EXAMINATION**

- .1 Verification of Conditions: examine substrates and immediately inform Consultant in writing of defects.
- .2 Evaluation and Assessment: prior to beginning work ensure:
  - .1 Substrates are firm, straight, smooth, dry, free of snow, ice or frost, and swept clean of dust and debris.



- .2 Curbs have been built.
- .3 Drains have been installed at proper elevations relative to finished surfaces.
- .4 Plywood and lumber nailer plates have been installed to walls and parapets as indicated.

### **3.03 PROTECTION OF IN-PLACE CONDITIONS**

- .1 Cover walls, walks and adjacent work where materials hoisted or used.
- .2 Use warning signs and barriers:
  - .1 Maintain in good order until completion of Work.
- .3 Dispose of rain water away from face of building until drains or hoppers installed and connected.
- .4 Protect from traffic and damage:
  - .1 Comply with precautions deemed necessary by Consultant.
- .5 Place plywood runways over work to enable movement of material and other traffic.
- .6 At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed Work and materials out of storage.
- .7 Seal exposed edges.
- .8 If metal connectors used, treat connectors and decking with rust proofing or galvanization.

### **3.05 DECK SHEATHING**

- .1 Mechanically fasten Sheathing to steel deck with reversible mechanical attachments as recommended by manufacturer and spaced 400mm on centre each way.
- .2 Place with long axis of each sheet transverse to steel deck ribs, with end joints staggered and fully supported on ribs.

### **3.06 VAPOUR RETARDER (STEEL DECK)**

- .1 Adhere laminated vapour retarder using solvent based adhesive as per manufacturer's instructions.

### **3.07 INSULATION: FULLY ADHERED, ADHESIVE/BITUMEN APPLICATION**

- .1 Adhere insulation to match existing system using solvent-based adhesive or Bitumen to match existing conditions and as recommended by manufacturer.
- .2 Place boards in parallel rows with ends staggered, and in firm contact with one another.
- .3 Apply in continuous ribbons at 300 mm on centre and as recommended by manufacturer.
- .4 Cut end pieces to suit.

---

### 3.08 (EXPOSED) CONVENTIONAL MEMBRANE ROOFING (CMR) APPLICATION

- .1 Membrane, adhered, exposed application:
  - .1 Position membrane over insulation starting at highest point.
  - .2 Allow membrane to relax for ½ hour.
  - .3 Apply adhesive to membrane and substrate in accordance with manufacturer's written instructions.
- .2 Lap joints:
  - .1 Clean both mating surfaces, apply primer and splicing contact cement in accordance with manufacturer's written instructions.
  - .2 Apply double-sided adhesive tape in accordance with manufacturer's written instructions.
  - .3 Solvent clean edge and apply lap sealant.
  - .4 Perimeter securement with adhesive in accordance with manufacturer's written instructions.
- .3 Edge securement:
  - .1 Adhesive recommended by manufacturer.
- .4 Flashings:
  - .1 Install cured or uncured EPDM membrane flashings in accordance with manufacturer's written instructions.
- .5 Penetrations:
  - .1 Install drain pans, vent stack covers and other penetration flashings and seal to membrane in accordance with manufacturer's recommendations and details.

### 3.09 FIELD QUALITY CONTROL

- .1 Inspection:
  - .1 Inspection and testing of EPDM membrane application will be carried out by independent testing laboratory designated by Owner.
  - .2 Owner will pay for inspection and tests.

### 3.10 CLEANING

- .1 Clean Work in accordance with Section 01 74 11 - Cleaning.
- .2 Clean to Consultant's approval, soiled surfaces, spatters, and damage caused by Work of this Section.
- .3 Check drains to ensure cleanliness and proper function, and remove debris, equipment and excess material from site.

- .4 Waste Management: separate waste materials for reuse and recycling.
  - .1 Collect, package and store EPDM membrane cut-offs and waste material for recycling, and return to recycler.
  - .2 Plan and co-ordinate insulation work to minimize generation waste.
  - .3 Place used hazardous sealant tubes, adhesive containers and materials defined as hazardous or toxic in designated containers and dispose of appropriately.
  - .4 Ensure emptied containers are sealed and stored safely.
  - .5 Separate and dispose of unused sealant, gypsum, geotextiles and wood materials at acceptable recycling and waste receives.

**END OF SECTION**

---

## **PART 1 - GENERAL**

### **1.01 DESCRIPTION**

- .1 General Requirements
  - .1 Division 1 and General Requirements, is a part of this Section and shall apply as if repeated here.
- .2 Work Performed by Other Sections Related to this Section is Specified in
  - .1 Section 04 22 00: Concrete Masonry Units (Forming Reglets).
  - .2 Section 04 22 00: Concrete Unit Masonry (Sheet Metal Built In Masonry)
  - .3 Section 07 46 13: Preformed Metal Siding.
  - .4 Section 07 52 00: Modified Bituminous Membrane Roofing
  - .5 Section 07 92 00: Sealants and Caulking (Other Than Sheet Metal Joints)
  - .6 Section 09 90 00: Painting and Finishing
  - .7 Mechanical Divisions : Flashings Specified for Mechanical Installations
  - .8 Electrical Divisions : Flashings Specified for Electrical Installations
- .3 Supply of Work Which Shall be Installed by This Section
  - .1 To furnish pre-coated sheet metal
- .4 Installation of Work Which Shall be Supplied by This Section is Specified in
  - .1 Section 03 30 00: Cast in Place Concrete (To install flashing reglets).
- .5 This Section Shall Include Performance of Work Which is Specified in
  - .1 Section 07 52 00: Modified Bituminous Roofing (To specify field quality control and submission of inspection reports).
  - .2 Section 07 92 00: Sealants (To specify caulking at sheet metal joints).
- .6 Work Included in This Section
  - .1 Generally the work of this section will include, but will not be limited to the following:
    - .1 All galvanized metal flashings for counter flashings at all parapets, curbs, roof openings not normally exposed to view,
    - .2 All flashings not specifically covered or detailed by other related sections.

### **1.02 QUALITY ASSURANCE**

- .1 Subcontractor Qualifications
  - .1 Provide sheet metal specified in this Section only by a Subcontractor who has adequate plant, equipment and skilled tradesmen, and is known to have been responsible for satisfactory installations similar to that specified during a period of at least the immediate past five years.

**1.03 REFERENCES**

- .1 Reference Standards
  - .1 Reference standards quoted in Contract Documents refer to:
  - .2 ASTM A525-91be1, Specification for General Requirements Steel Sheet, Zinc Coated (Galvanized) by the Hot-Dip Process.
  - .3 ASTM A1063/A1063M-17 Standard Specification for Steel Sheet, Twin-Roll Cast, Zinc-Coated (Galvanized) by the Hot-Dip Process
  - .4 CGSB Specification 1-GP-108M, Paint, Acid and Alkali Resistant, Black.
  - .5 CSA A123.3-05(R2015) Asphalt Saturated Organic Roofing Felt

**1.04 SUBMITTALS**

- .1 Samples
  - .1 Submit samples of pre-coated finish and sheet metal joints if requested.

**1.05 DELIVERY STORAGE AND HANDELING**

- .1 Protect sheet metal during handling and storage to prevent rusting, staining, abrasion of finish coatings, bending and denting.
- .2 Protect surfaces of pre-coated metal to prevent scratching.

**1.06 WARRANTY**

- .1 Extended Warranty
  - 1. Warranty contained in GC24 is, with respect to Section 07 62 00, extended from 1 year to 5 years. Without restricting generality of warranty, defects shall include leaking, failure to stay in place under expansion, lifting, deformation, deterioration, etc.
  - 2. Contractor hereby warrants that system is suitable for use in this type of installation.
  - 3. Contractor shall arrange with Consultant and/or Owner, about 1 month before warranty expires, to visit site, examine installation specified in this section and make necessary repairs. Should Contractor fail to make such arrangement through no fault or neglect of Owner or Consultant, then period of warranty shall extend to one month after such arrangement is made.

---

**PART 2 - PRODUCTS**

**2.01 MATERIALS**

- .1 Galvanized Steel Sheet
  - .1 ASTM Specification A525, zinc coating designation Z275; flashings, 0.5 mm thick; cleats and edge strips, 1.6 mm thick; other work in thickness indicated on drawings or specified.
  - .2 Pre-coated Finish
    - .1 Use sheet metal with pre-coated finish where metal is exposed to view.
    - .2 Baked enamel or other coatings as may be specified in other sections, applied to galvanized sheet steel in shop by continuous coating line, by Stelco or Dofasco.
    - .3 Colour to match new corrugated siding.
- .2 Solder
  - .1 New, one half pig lead, one half block tin.
- .3 Flux
  - .1 For galvanized steel, resin type.
- .4 Fasteners
  - .1 Use only nails, bolts, screws and other fasteners of the same metal and with the same finish as the metal being fastened. Use fasteners of a size suitable for the particular fastening condition and service. Use only approved nails, bolts, screws and other fasteners
- .5 Metal Flashing Reglets
  - .1 0.6 mm thick galvanized steel, open type at least 50 mm sloped depth, with receiving slot sloping up 45°, wedges, soft lead.
- .6 Caulking
  - .1 One or two part polysulphide specified in Section 07 92 00.
- .7 Felt
  - .1 No. 15 asphalt saturated roof felt, to meet specified requirements of CSA Standard A123.3.
- .8 Building Paper
  - .1 Smooth, unsaturated quality, rosin-sized paper weighing not less than 0.25 kg/sq.m.
- .9 Bituminous Paint
  - .1 To meet specified requirements of CGSB Specification 1-GP-108.

## 2.02 FABRICATION

- .1 Fabricate all possible sheet metal in shop by brake forming, and bench cutting, drilling and shaping.
- .2 Form bends with straight sharp lines, angles and arises; and sheets into true planes free from twists, buckles, dents and other visual distortions.
- .3 Supply accessories required for installation of sheet metal specified in this Section. Fabricate accessories of same material as sheet metal with which they will be incorporated.

## PART 3 – EXECUTION

### 3.01 INSTALLATION

- .1 General
  - .1 Install sheet metal exposed to view in straight lines, with junctions aligned and on same plane.
  - .2 Install sheet metal wherever possible on runs of equal 2400 mm lengths except where conditions for securing dictates that shorter and equal 1200 mm lengths are preferable.
  - .3 Install pre-coated sheet metal wherever possible in minimum lengths of 3600 mm on typical runs, except where conditions for securing dictates that shorter and equal 1200 mm lengths are preferable.
  - .4 Supply flashing reglets required by this Section, to other Sections responsible for their installation. Assist others in their location.
  - .5 Install sheet metal to prevent entry of water under service and weather conditions.
  - .6 Back paint, with two coats of bituminous paint at rate of 1 L/sq.m., sheet metal that is not given pre-coated finish and that comes into contact with another kind of metal, or masonry or concrete.
  - .7 Install sheet metal with concealed fastenings. Exposed fastenings will be permitted only as approved when concealed fastenings are impossible. Fasten sheet metal, clips and other components in an approved manner, with fasteners weather tight and evenly and neatly located. Do not use pop rivets.
  - .8 Join sheet metal by slip lock seams to permit thermal movement. Space joints evenly where exposed. Lock seam and solder internal corners. Form mitres with standing seams in pre-coated metal.
  - .9 At exposed sheet metal, install expansion joints with 200 mm wide hooked covers, bedded in caulking compound, fastened at one side only, and at intervals of approximately 6.0 m., or as otherwise shown on Drawings or approved.
  - .10 Install 50 mm X 75 mm cleats where required to fasten sheet metal. Secure each cleat to backing with 2 nails, space cleats at 300 mm o.c. generally.

- .11 Install edge strips in lengths of approximately 2400 mm, continuously, and with 6 mm between each length. Fasten at 300 mm o.c.
- .12 Do not form open joints or pockets that fail to drain water.
- .13 Caulk all reglets and open sheet metal joints that do not mechanically provide weather tight construction, in accordance with Section 07 92 00.
- .14 Apply No. 15 roofing felt under sheet metal installed directly over masonry, concrete, or wood. Secure felt in place, and lap joints 100 mm as sheet metal is installed. Turn up edges 150 mm where used on horizontal surfaces. Lay rosin-sized building paper over felts.
- .15 Secure sheet metal by nailing at 150 mm o.c. where concealed, unless otherwise specified or indicated on Drawings.
- .2 Flashings
  - .1 At masonry: Wedge flashings into joints and reglets with lead at 300 mm o.c. Caulk remainder of joint and reglet.
  - .2 Install metal flashings as indicated on Drawings or as otherwise required where building components penetrate exterior construction, and for which flashing is not specified by other Sections. Fasten by cleats in doubled back edges of drips.
  - .3 Roof Edge Trim
    - .1 Install 0.5 mm thick galvanized steel trim secured by nailing and edge strip.
- .3 Roof Control Joints
  - .1 Install 0.5 mm thick galvanized sheet cover secured by edge strips to joint movement.
- .4 Copings
  - .1 Install 0.5 mm thick galvanized steel secured by edge strips.
- .5 Fascias
  - .1 Install prefinished 0.5 mm thick galvanized steel as indicated on drawings with bottom secured by edge strips to match existing conditions.
- .6 Scuppers and Downspouts
  - .1 Fabricate of prefinished 0.5 mm thick galvanized steel to profiles and sizes to match existing conditions. Install these items using galvanized fasteners.



**3.02 CLEANING**

- .1 Remove flux residue completely from surfaces and crevices, remove other deposits, stains or protection and wash metals left unpainted and exposed to view as recommended by the manufacturer of the metal.

**END OF SECTION**

## **PART 1 – GENERAL**

### **1.00 SCOPE OF WORK**

- .1 Work is related to the demolition of adjacent assemblies around an existing access hatch and access ladder to be salvaged and reused in a different location.

### **1.01 RELATED SECTIONS**

- .1 Section 07 62 00 – Sheet Metal Flashing and Trim
- .2 Section 07 92 00 - Sealants.
- .3 Section 07 52 00 - Modified Bituminous Roofing
- .4 Section 09 91 99 – Painting

### **1.02 REFERENCES**

- .1 American Society for Testing and Materials International, (ASTM)
  - .1 ASTM A653/A653M-18, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 Canadian General Standards Board (CGSB).
  - .1 CAN/CGSB 1.105-M91, Quick-Drying Primer.

### **1.03 SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures
- .2 Product data: Refer to manufacturer's printed product literature, specifications and data sheets.
- .3 Shop Drawings:
  - .1 Indicate size and description of components, materials, attachment devices, description of frame and finish, and construction details.
  - .2 Manufacturer's Instructions:

### **1.04 CLOSEOUT SUBMITTALS**

- .1 Provide information required in accordance with Section 01 78 00 – Closeout Submittals.

### **1.05 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 – Waste Management and Disposal

---

## **PART 2 - PRODUCTS**

### **2.01 ROOF HATCH**

- .1 Existing Hatch assembly to be relocated.
- .2 Gaskets: extruded resilient santoprene, with full recovery after 50% compression.
- .3 Fasteners: screws to manufacturer's standard.
- .4 Sealants: in accordance with Section 07 92 00 - Sealants
- .1 Metal Cover:
  - .1 Existing
- .2 Curbed Frame;
  - .1 Preformed metal curb: minimum 305mm height, insulated galvanized steel sandwich construction with minimum 25mm rigid insulation core, deck flanges for attachment and steel butt hinges with brass pins.
- .3 Accessories:
  - .1 Opening device: fully enclosed compression spring operator to permit smooth opening and closing of hatch cover.
  - .2 Hold-open device: automatic hold-open arm with vinyl grip.
  - .3 Latch: self-latching, outside turn handle, inside lever handle with interior and exterior padlock hasps.
  - .4 Lift assistance: Compression spring operators enclosed in telescopic tubes. Automatic hold open arm with grip handle release.
  - .5 Resilient gasket/seal to inner face of lid in contact with hatch lid support frame.
- .4 Acceptable Manufacturer: Existing assembly.
- .5

### **2.02 HATCH RAILING: existing Assembly to be reused.**

- .1 32mm (1.25") Aluminum rail with high visibility safety yellow powder coat finish.
- .2 Self closing and latching gate
- .3 Non-penetrating fastening directly to the roof hatch capflashing.
- .4 Size to suit roof hatch.

### **2.03 FABRICATION**

- .1 Fabricate components free of twists, bends, or visual distortion and insulated. Weld corners and joints.

- .2 Assemble roof hatch components as indicated.
- .3 Ensure continuity of weather-tight seal.
- .4 Design flashings to collect and lead off accumulated condensation.
- .5 Zinc plate hardware and attachments and shop prime ready for field painting.
- .6 Touch-up prime damaged prime coated surfaces with compatible primer.

### **PART 3 - EXECUTION**

#### **3.01 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.

#### **3.02 INSTALLATION**

- .1 Erect components plumb, level and in proper alignment.
- .2 Ensure continuity of building envelope air barrier and vapour retarder systems.
- .3 Adjust and seal assembly with provision for expansion and contraction of components.
- .4 Secure prefabricated curb assembly to structure.
- .5 Secure and seal frame to curb.
- .6 Site finish all exposed surfaces in accordance with Section 09 91 00 – Painting.

#### **3.03 CLEANING**

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.01 DESCRIPTION**

- .1 General Requirements
  - .1 Division 1, General Requirements, is a part of this Section and shall apply as if repeated here.
- .2 Work Related to This Section Performed by Other Sections
  - .1 Section 03 30 00: Concrete surface preparation
  - .2 Section 04 22 00: Concrete Unit masonry
  - .3 Section 09 21 16: Gypsum Board Assemblies
- .3 Work Related to This Section Specified Elsewhere
  - .1 Fire stopping and smoke seals within mechanical assemblies and electrical assemblies are specified in Divisions 15 and 16 respectively.

### **1.02 QUALITY ASSURANCE**

- .1 Requirements of Regulatory Agencies
  - .1 Install only firestopping with an inherent fire hazard classification in all its parts that is within limits established by jurisdictional authorities.
  - .2 Validate fire hazard classification only by testing laboratories acceptable to jurisdictional authorities.
  - .3 Attach Underwriters' Laboratories labels to packages of fire rated materials.

### **1.03 REFERENCES**

- .1 Reference Standards
  - .1 ULC Standards:
    - .1 CAN/ULC-S115-2018, Standard Method of Fire Tests of Firestop Systems
    - .2 CAN/ULC-S101-14, Standard Methods of Fire Endurance Tests of Building Construction and Materials.

### **1.04 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Samples
  - .1 Submit duplicate 300mm x 300mm samples showing actual firestop materials in accordance with Section 01 30 00.
- .2 Shop Drawings
  - .1 Submit shop drawings to show proposed materials reinforcement, anchorage, fastenings and method of installation. Shop drawing details must accurately reflect actual job conditions.

- .2 Submit manufacturer's product data for materials and prefabricated devices, providing descriptions sufficient for identification on job site. Submit manufacturer's printed instructions for installation.

## 1.05 DELIVERY, STORAGE AND HANDLING

- .1 Package firestopping materials and label to designate manufacturer and type.
- .2 Store firestopping materials in dry areas, protected from wetting and traffic.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- .1 Firestopping and smoke seal systems shall be in accordance with
  - .1 CAN/ULC-S115; asbestos-free materials and systems capable of maintaining an 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.
- .2 Service penetration assemblies; certified by ULC in accordance with
  - 1. CAN/ULC-S115, and listed in ULC Guide No. 40 U19.
- .3 Service penetration firestop components; certified by ULC in accordance with CAN/ULC-S115, and listed in ULC Guide No. 40 U19.3 and ULC Guide No. 40 U19.5 under the Label Service of ULC.
- .4 Firestop systems ratings shall be in accordance with Drawings and as specified herein.
- .5 Fire resistance rating of installed firestopping assembly not be less than the fire resistance rating of the surrounding floor and wall assembly.
- .6 Firestopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal; do not use cementitious or rigid seal at such locations.
- .7 Firestopping and smoke seals at openings around penetrations for pipes, ductwork, and other mechanical items requiring sound and vibration control: elastomeric seal; do not use a cementitious or rigid seal at such locations.
- .8 Primers - to manufacturer's recommendations for specific material, substrate and end use.
- .9 Water - potable, clean and free of injurious amounts of deleterious substances.
- .10 Damming and back-up materials, supports and anchoring devices: to manufacturer's recommendations, and in accordance with tested assembly

being installed as acceptable to authorities having jurisdiction.

- .11 Sealants for vertical joints: non sagging.

## **2.02 JOINT FIRESTOPS**

- .1 Vertical Joints

- .1 Type "MW" insulation, packaging marked with ULC label, minimum 95 mm depth, as supplied by Instant Firestop Inc., North York, Ontario.

## **2.03 HORIZONTAL JOINTS**

- .1 "A/D Firebarrier Mineral Wool" insulation, packaging marked with ULC label, minimum 88 mm depth, as supplied by A/D Fire Protection Systems Inc.

## **2.04 SERVICE PENETRATIONS**

- .1 For both horizontal and vertical separations.
- .2 Permanent Forming Material: mineral wool insulation minimum density of 70.5 kg/m<sup>3</sup>.
- .3 Temporary Forming Material: nominal 25 mm thick, polystyrene boards.
- .4 Fire Stop System Component: Type "Fire Stop Sealant, Cat. 2000 or CS 2400" by Dow Corning Canada Inc. or A/D Firebarrier Silicone by A/D Fire Protection Systems Inc. Tremstop Fyre-Sil Silicone by Tremco Canada.

## **PART 3 - EXECUTION**

### **3.01 PREPARATION**

- .1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials. Ensure that substrates and surfaces are clean, dry and frost free.
- .2 Prepare surfaces in contact with firestopping materials and smoke seals to manufacturer's instructions.
- .3 Maintain insulation around pipes and ducts penetrating fire separation.
- .4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces.

### **3.02 INSTALLATION**

- .1 Install firestopping and smoke seal materials and components in accordance with ULC certification and manufacturer's instructions.

- .2 Install firestopping assemblies of same fire resistance rating as for the fire resistance rating of the floor or wall or partition.
- .3 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 and maintained.
- .4 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.
- .5 Tool or trowel exposed surfaces to a neat finish.
- .6 Remove excess compound promptly as work progresses and upon completion.

### **3.03 JOINT FIRESTOPS**

- .1 Vertical Joints
  - .1 Install specified insulation in one piece in accordance with manufacturers printed recommendations, width of insulation to be not greater than 75% of uncompressed width of insulation, to meet requirements of ULC System No. JF3.

### **3.04 HORIZONTAL JOINTS**

- .1 Install specified insulation to minimum 88 mm depth, uncompressed width of insulation to be 1/3 wider than opening, butt end joints; to meet requirements of ULC System No. JF9.

### **3.05 SERVICE PENETRATIONS**

- .1 For both horizontal and vertical separations.
- .2 To meet requirements of ULC System No. SP83.
- .3 For floor assembly:
  - .1 Install 70 mm mineral wool centred in opening.
  - .2 Install 12.7 mm thick firestop component to top side (floor).
- .4 For wall assembly:
  - .1 Install 57 mm mineral wall centred in opening.
  - .2 Install 12.7 mm thick firestop component to both sides of opening.

### **3.06 INSPECTION**

- .1 Notify both Architect and authorities having jurisdiction when ready for inspection and prior to concealing or enclosing firestopping materials and service penetration assemblies.

### **3.07 SCHEDULE**

- .1 Install firestop and smoke seal at:



- .1 Penetrations through fire resistance rated masonry, concrete and gypsum board partitions and walls.
- .2 Edge of floor slabs at curtain wall and precast concrete panels.
- .3 Top of fire resistance rated masonry and gypsum board partitions.
- .4 Intersections of fire-resistance rated masonry and gypsum board partitions.
- .5 Control and swag joints in fire resistance rated masonry and gypsum board partitions and walls.
- .6 Penetrations through fire-resistance rated floor slabs, ceilings and roofs.
- .7 Openings and sleeves installed for future use through fire separations.
- .8 Around mechanical and electrical assemblies penetrating fire separations.
- .9 Rigid ducts: firestopping to consist of bead of firestopping materials between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

### **3.08 CLEANING**

- .1 Remove excess materials and debris and clean adjacent surfaces immediately after application.
- .2 Remove temporary dams and forming after initial set of firestopping and smoke seal materials.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.01 GENERAL REQUIREMENTS**

- .1 The General Conditions of CCDC 2-2008, Stipulated Price Contract as supplemented in Section 00 73 00, and the General Requirements of Division 1, form part of this Section, and must be read in conjunction with the requirements of this Section, and all related Sections.
- .2 The Work of this Section, and Related Work specified in other Sections shall comply with all requirements of Division 1 – General Requirements.

### **1.02 SECTION INCLUDES**

- .1 Provision of all labour, materials, equipment and incidental services necessary to Provide all caulking and sealing of joints between building components, including joint preparation. Typical joints include, but are not limited to:
  - .1 Exterior Joints
    - .1 Perimeter of door, window, vent, & equipment frames in exterior walls,
    - .2 Joints between dissimilar materials,
    - .3 Control and expansion joints,
  - .2 Interior Joints
    - .1 Perimeter of metal frames in interior walls,
    - .2 Base of metal frames at floor,
    - .3 Joints between dissimilar materials,
    - .4 Control and expansion joints,
    - .5 Perimeter of plumbing fixtures,
    - .6 Perimeter of fixed equipment,

### **1.03 RELATED SECTIONS**

- |    |                  |                               |
|----|------------------|-------------------------------|
| .1 | Section 07 84 00 | Firestopping & Smoke Seals    |
| .2 | Section 08 11 13 | Hollow Metal Doors and Frames |
| .3 | Section 09 21 13 | Gypsum Board Systems          |

### **1.04 REFERENCE STANDARDS**

- .1 American Society for Testing and Materials (ASTM):
  - .1 ASTM C 510 - Standard Test Method for Staining and Color Change of Single- or Multicomponent Joint Sealants.
  - .2 ASTM C 661 - Standard Test Method for Indentation Hardness of Elastomeric Type Sealants by Means of a Durometer.
  - .3 ASTM C 719 - Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle).
  - .4 ASTM C 794 - Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants
  - .5 ASTM C 834 - Specification for Latex Sealants.
  - .6 ASTM C 920 - Specification for Elastomeric Joint Sealants.
  - .7 ASTM D 412 - Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension.

- .8 ASTM D 624 - Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
- .9 ASTM D 2203 - Standard Test Method for Staining from Sealants.
  
- .2 Reference Standards quoted in Contract Documents refer to:
  - .1 CGSB 19-GP-5M, Sealing Compound, One Component, Acrylic Base, Solvent Curing.
  - .2 CGSB 19-GP-9Ma, Sealing Compound, One Component, Silicone Base, Chemical Curing Sealing Compound, One Component, Elastomeric, Chemical Curing.
  - .3 CGSB 19.13-M87 Sealing Compound, Elastomeric, Chemical Curing
  - .4 CAN/CGSB-19.24-M90, Sealing Compound, Multi-Component, Chemical Curing.

### 1.05 SUBMITTALS

- .1 Submit Submittals in accordance with Section 01 33 00
- .2 Product Data Sheets:
  - .1 Submit Product Data Sheets indicating physical characteristics, test results confirming performance characteristics, finishes and compliance with referenced standards for the following:
    - .1 Each sealant which will be used for this Project and recommendations for use of the sealant.
    - .2 Each type of primer, backer rod and bond breaker which will be used on this Project.
- .3 Samples:
  - .1 Submit duplicate Samples of each type of sealant and backing to be used on the Project.
- .4 Quality Assurance Submittals:
  - .1 Submit Installer Qualification statements confirming installer meets requirements as specified in this Section prior to commencement of the Work of this Section.

### 1.06 QUALITY ASSURANCE

- .1 Installer Qualifications:
  - .1 Minimum five (5) years continuous experience in the installation of Products specified in this Section; who has equipment and skilled tradesmen to perform the Work expeditiously; and has completed work similar to that specified, approved by manufacturer. If requested by Owner or Consultant, submit proof of experience to Consultant prior to commencement of the Work of this Section.
- .2 Mock-Ups:
  - .1 Test sealant in contact with samples of materials to be caulked to ensure that proper adhesion will be obtained and no staining of the material will result.

- .2 Prepare sample joints at the Place of the Work of each type of sealant for each joint condition. Reviewed installations shall become part of the finished Work.
  - .1 Submit Notice in Writing to Consultant minimum forty-eight (48) hours in advance of anticipated time mock-up will be ready for review.
  - .2 Allow twenty-four (24) hours for review of mock-up by Consultant before proceeding with remainder of Work.
- .3 Mock-up will be reviewed by Consultant. If rejected, correct mock-up and request re-review by Consultant. If accepted, mock-up will remain in place and will serve as the minimum acceptable standard for Work of this Section and related Sections.

#### **1.07 SITE CONDITIONS**

- .1 Apply sealants only to completely dry surfaces, and at air and material temperatures above minimum established by manufacturer's specifications.

#### **1.08 EXTENDED WARRANTY**

- .1 Submit Extended Warranty documents in accordance with Section 01 78 00
- .2 Installation Warranty: Submit installation Warranty certificate in the name of the Owner warranting installation of Products installed will be free of defects for their intended use for a period of three (3) years from the date of Substantial Performance of the Work, including materials and application.
  - .1 Replacement of joint sealants shall include removal of defective materials, preparation for and application of new material, and the repair and making good of damaged adjacent materials.
  - .2 Defective joint sealant installation shall include, but not be restricted to, joint leakage, hardening, cracking, crumbling, melting, bubbling, shrinkage, running, sagging, change of colour, loss of adhesion, loss of cohesion, and staining of adjoining of adjacent materials or surfaces.

### **PART 2 - PRODUCTS**

#### **2.01 MATERIALS**

- .1 All materials utilized in a sealant system shall be compatible and non-staining.
- .2 Specified proprietary products are minimum acceptable quality. Products of other manufacturers of equal or superior quality will be acceptable where specifically accepted by Consultant.
- .3 Provide sealant formulation recommended by manufacturer for type of joint, substrate and service conditions applicable.
- .4 Colours of sealants will be selected by Consultant from manufacturer's full standard range.

#### **2.02 SEALANTS**

- .1 Refer to Sealant Schedule for utilization of the following sealants:

- .1 Two Part Urethane Sealant:
  - .1 To meet specified requirements of CAN/CGSB-19.24-M90, and as recommended by manufacturer for conditions.
  - .2 Dymeric 240 by Tremco Canada.
  
- .2 Two Part Urethane Sealant:
  - .1 To meet specified requirements of CAN/CGSB-19.24-M90, and as recommended by manufacturer for conditions.
  - .2 Dymeric 240 by Tremco Canada.
  
- .3 One Part Urethane Sealant:
  - .1 To meet specified requirements of CAN/CGSB-19.13-M87, and as recommended by manufacturer for conditions.
  - .2 Vulkem 45 SSL by Tremco Canada
  - .3 Tremco Canada Dymonic FC
  
- .4 Silicone Sealant: One Part Sealant:
  - .1 To meet specified requirements of CAN/CGSB-19.13-M87. Tremsil 200 by Tremco (Canada) Ltd., or as otherwise approved.
  
- .5 Two Part Polyepoxide Urethane Sealant:
  - .1 To meet specified requirements of CAN/CGSB-19.24-M90. Dymeric by Tremco (Canada) Ltd.
  
- .6 One Part Polysulphide Sealant:
  - .1 To meet specified requirements of CAN/CGSB-19.13-M87.
  
- .7 Two Part Polysulphide Sealant:
  - .1 For use in joints except where subjected to traffic:
  - .2 To meet specified requirements of CAN/CGSB-19.24-M90, non-sag, with a Shore "A" hardness range of 20 to 35.
  
- .8 Two Part Polysulphide Sealant:
  - .1 For use at surfaces subjected to traffic:
  - .2 To meet specified requirements of CAN/CGSB-19.24-M90, self-levelling, with a Shore "A" hardness range of 35 to 40.

## **2.03 ACCESSORIES**

- .1 Primer: Type recommended by sealant manufacturer.
  
- .2 Backer Rod: extruded, closed cell polyethylene rod, 30% greater diameter than joint width, with Shore "A" hardness of 20, and 830-900KPa tensile strength, and manufactured especially for the purpose.
  
- .3 Bond Breaker: for installation where minimum specified depth of joint is unobtainable; pressure sensitive plastic tape, 3M #266 or #481.

- .4 Acrylic Solvent Release, One Part, Sealant: To meet specified requirements of CGSB Specification 19-GP-5. PTI 738 by P.T.I. Sealants Ltd
- .5 Void Filler: Mineral fibre as specified in Section 07 20 00.
- .6 Bond Breaker: For installation where minimum specified depth of joints is unobtainable. Pressure sensitive plastic tape, 3M 3266 or #481.

### **PART 3 - EXECUTION**

#### **3.01 EXAMINATION**

- .1 Prior to commencing the Work of this Section, carefully inspect installed Work of other trades and verify that such Work is complete to the point where Work of this Section may properly commence. Provide Notice in Writing to the Consultant and Contractor of conditions detrimental to the proper and timely completion of the Work of this Section.
  - .1 Verify joint configuration and surfaces have been provided as specified in other Sections to meet intent of sealant specification; that joint conditions will not adversely affect execution, performance or quality of completed sealed joints; and that they can be put into acceptable condition by means of preparation specified in this Section. If in doubt, verify site conditions together with manufacturer's representative of the sealant to be applied.
  - .2 Verify that sealers and coatings applied to sealant substrates are compatible with the sealant used and that full bond between sealant and substrate is attained. Request samples of the sealed or coated substrate from their fabricators for testing of compatibility and bond if necessary.
  - .3 Verify that specified environmental conditions are ensured before commencing joint sealing. Defective sealed joints resulting from application to unsatisfactory joint conditions will be considered the responsibility of this Section.
- .2 Do not begin installation until all unsatisfactory conditions are resolved. Beginning Work of this Section constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

#### **3.02 PREPARATION**

- .1 Remove loose mortar, dust, oil, grease, oxidation, mill scale, coatings and all other materials affecting bond of compounds from surfaces to which sealant compounds must adhere, except for painted surfaces, by brushing, scrubbing, scraping or grinding.
- .2 Clean down caulked metal surfaces with clean cellulose sponges or rags soaked in solvent recommended by sealant manufacturer, and wipe dry with clean cloths. Ensure that solvent is not injurious to painted surfaces.
- .3 Use methods of preparation suitable for substrate as recommended by sealant manufacturer, and that does not damage adjacent surfaces.
- .4 Ensure that releasing agents, coatings or other treatments have either not been applied to joint surfaces, or that they are entirely removed.

### 3.03 APPLICATION

- .1 Except where specified in other Sections, seal open joints in surfaces exposed to view, and to make the building weathertight and airtight as applicable; as indicated typically on Drawings, and as otherwise specified and instructed by Consultant. Refer to Sealant Schedule.
  - .1 Perimeter joints of exterior and interior pressed steel opening frames where installed in masonry and a weathertight joint is otherwise required.
  - .2 Perimeter joints of exterior and interior aluminum opening frames.
  - .3 Perimeter joints of exterior louvre and vent frames.
  - .4 Joints between underside of window sills and walls.
  - .5 Exposed control joints in masonry walls.
  - .6 Exposed expansion joints in masonry walls.
  - .7 Exposed control joints in concrete except for floors.
  - .8 Exposed expansion joints in concrete.
  - .9 Raked joints at masonry wall junctions and masonry to concrete junctions.
  - .10 Interior and exterior exposed joints, between dissimilar materials, and not concealed from view.
  - .11 Exposed control joints in gypsum/fiber reinforced gypsum panels.
  - .12 Joints at wall floor junctions, and at floors unless indicated on Drawings.
  - .13 Full length of exterior door saddles.
  - .14 Close-fitted space between mechanical and electrical ducts, conduits and pipes, and walls and also at floors where fire separations must be maintained.
  - .15 Joints between base angle and structure at preformed metal siding.
  - .16 Prime surfaces to receive sealants as required by substrate and manufacturer's specifications to ensure positive and permanent adhesion, and to prevent staining.
  - .17 Pack joints tightly with sealant backing set at depth specified for sealant. Fill other voids with filler.
  - .18 Install bond breaker tape in bottom of joints in lieu of sealant backing where proper depth cannot be obtained when backing is installed.
  - .19 Install sealant in joints over 50 mm wide only after consultation with and approval of sealant manufacturer.
  - .20 Fill joints with sealant compound to specified or indicated depths as indicated. Perform joint sealing in accordance with compound manufacturer's specifications, under his supervision, and using pressure guns and other equipment as approved by him. Finish joints with a full bead so that they are smooth; and free from ridges, wrinkles, air pockets and embedded foreign materials.
  - .21 Tool surface of joints to a slight concave profile.
  - .22 Make compounds workable only as manufacturer specifies.
  - .23 Caulk joints in site painted materials after adjacent surfaces have been painted. Match compound to paint colour.
  - .24 Do not allow sealants to cover or spot surfaces outside of joints. Use masking tape protection to prevent coating of adjacent surfaces if necessary.

- .2 Maintain depth of sealant as follows:

JOINT WIDTH	JOINT DEPTH
6mm (1/4") minimum	6mm (1/4")
6mm (1/4") to 13mm (1/2")	depth = joint width
13mm (1/2") to 25 mm (1")	depth = 1/2 joint width
25mm (1") to 50 mm (2")	Max depth of 13 mm (1/2")

- .3 Maximum widths of joints are as follows:
- .1 Exterior: 19mm (3/4").
  - .2 Interior: 10mm (3/8").
  - .3 Install sealant in joints over 50 mm wide only after consultation with and approval of sealant manufacturer.
- .4 Fill joints with sealant compound to specified or indicated depths as indicated. Perform joint sealing in accordance with compound manufacturer's specifications, under his supervision, and using pressure guns and other equipment as approved by him. Finish joints with a full bead so that they are smooth; and free from ridges, wrinkles, air pockets and embedded foreign materials.
- .5 Tool surface of joints to a slight concave profile.
- .6 Make compounds workable only as manufacturer specifies.
- .7 Caulk joints in site painted materials after adjacent surfaces have been painted. Match compound to paint colour.
- .8 Do not allow sealants to cover or spot surfaces outside of joints. Use masking tape protection to prevent coating of adjacent surfaces if necessary.
- .9 All Work shall be performed in accordance with manufacturer's specifications.

### 3.04 CLEANING

- .1 Remove sealant smears and droppings, and masking tape immediately on completion of joint sealing.
- .2 Do not use chemicals, scrapers, or other tools which would damage surfaces from which excess compounds or droppings are removed. Make good materials damaged by cleaning by the installer of the damaged material and at the expense of this Section.

### 3.05 CAULKING SCHEDULE

- .1 Type 1 Sealant
  - .1 One or Two Part Polysulphide Sealant, or
  - .2 One or Two Part Urethane Sealant, or
  - .3 One Part Silicone Sealant, or
  - .4 Use at all locations except where another is specified.
- .2 Type 2 Sealant
  - .1 Use at exterior joints between window frames and masonry.



- .3 Type 3 Sealant
  - .1 One part Clear Silicone Sealant, mildew resistant.
  - .2 Use at joints between:
    - 1. Washroom fixtures and wall,
    - 2. Washroom fixtures, water closets and floor,
    - 3. Countertops and wall,
    - 4. Cabinets and walls and adjacent finishes.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.01 DESCRIPTION**

#### **.1 General Requirements**

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

#### **.2 Work Performed by Other Sections Related to This Section is Specified in**

- .1 Section 07 92 00: Sealants (Caulking Frames)
- .2 Section 08 71 10: Door Hardware by Cash Allowance
- .3 Section 09 90 00: Painting and Finishing

#### **.3 Installation of Products Supplied by This Section is Specified in**

- .1 Section 04 20 00: Concrete Unit Masonry (To build anchors/frames in masonry).
- .2 Section 06 20 00: To set up frames in masonry openings.
- .3 Section 06 20 00: To install hollow metal doors.
- .4 Section 09 21 16: To install and anchor frames in drywall partitions.

### **1.02 QUALITY ASSURANCE**

#### **.1 Subcontractor Qualifications**

- .1 Provide fabrications specified in this Section only by a Subcontractor who has adequate plant, equipment and skilled tradesmen to perform it expeditiously, and is known to have been responsible for satisfactory installations similar to that specified.

#### **.2 Requirements of Regulatory Agencies**

- .1 Construct fire rated doors and frames of ratings indicated in accordance with validating label requirements, otherwise required by jurisdictional authorities.
- .2 Ensure hardware and installation meet CAN/ULC-S104 requirements, Standard Method for Fire Tests of Door Assemblies adopted by Insurance Advisory Organization, when applicable.
- .3 Doors and frames indicated as labelled, to meet conditions of NFPA No. 80, for installation, and shall have attached ULC labels.

### 1.03 REFERENCES

#### .1 Reference Standards

- .1 ASTM International
  - .1 ASTM A1008/A1008M-18, Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable
  - .2 ASTM A653/A653M-18, Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, General Requirements.
  - .3 ASTM A780/A780M-09(2015), Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized coatings.
- .2 Canadian General Standards Board
  - .1 CAN/CGSB 1.132-M90 Zinc Chromate Primer, Low Moisture Sensitivity
  - .2 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
  - .3 CGSB 41-GP-19Ma-84, Rigid Vinyl Extrusions for Windows and Doors.
- .3 CSA Group
  - .1 CSA Standard G164-18, Hot-Dip Galvanizing of Irregularly shaped Articles.
- .4 ULC Standards:
  - .1 CAN/ULC-S101-14, Standard Methods of Fire Endurance Tests of Building Construction and Materials.
  - .2 CAN/ULC S104-15 Standard Method for Fire Tests of Door Assemblies
  - .3 CAN/ULC-S115-2018, Standard Method of Fire Tests of Firestop Systems

### 1.04 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide product data: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide shop drawings: 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 and fire rating and finishes.
  - .2 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and reinforcing, fire rating and finishes.

- .3 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.
- .4 Submit test and engineering data, and installation instructions.

### **1.05 DELIVERY STORAGE AND HANDLING**

- .1 Brace frame units to prevent distortion in shipment. Protect finished surfaces by sturdy protective wrappings.
- .2 Ensure that doors are stored in a secure dry location to ensure they are not damaged until hung. Remove wrappings when finally stored in location secure from damage. Store doors vertically, resting on planks, with blocking between to allow air to circulate.
- .3 Repair damage to finishes immediately as it occurs with matching specified finish materials.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

#### **.1 Steel Sheet**

- .1 Cold-rolled, stretcher levelled to meet specified requirements of ASTM Specification A1008/A1008M or SAE Specification 1010: galvanized sheet, commercial quality, to meet specified requirements of ASTM Specification A653/A653M.

#### **.2 Prime Paint**

- .1 General: Ensure that primers are compatible with specified finish paint.
- .2 Primer: To meet requirements of CGSB Specification CAN/CGSB 1.132 or CAN/CGSB-1.181.

#### **.3 Galvanizing**

- .1 Full galvanized sheet steel; coating to meet specified requirements of ASTM Specification A653/A653M, zinc coating designation Z275.
- .2 Wiped coated sheet steel; zinc wiped coating to meet specified requirements of ASTM Specification A653/A653M, zinc coating ZF75.
- .3 Galvanized accessories; zinc coating to meet specified requirements of CSA Standard G164, including Appendix A.

#### **.4 Zinc Rich Paint**

- .1 To meet specified requirements of CGSB Specification CAN/CGSB-1.181.

**.5 Panel Insulation**

- .1 At exterior: Polyurethane: closed cell rigid board, density; 32 kg/cubic metre.

**.6 Grilles**

- .1 E.H. Price, Series STG1, steel, prime painted, sizes as shown on Door Schedule.

**.7 Door Bumpers**

- .1 Single stud rubber at interior openings.

**.8 Door Core Materials**

- .1 Honeycomb: Structural small cell 25mm (1”) maximum Kraft paper ‘honeycomb’. Weight: 36.3 (80lb) per ream (minimum). Density: 16.5kg/m<sup>3</sup> (1.03pcf) minimum, sanded to required thickness.
- .2 Temperature Rise Rated (TRR): Solid slab core of non-combustible, inorganic composite to limit temperature rise on the “unexposed” side of door to 250°C at 60 Minutes to ULC CAN/ULC-S104, ASTM E2074-00e1 or NFPA 252-2008.
- .3 Polystyrene: EPS polystyrene, Type 1, density: 16 to 32 kg/m<sup>3</sup> (1 to 2 pcf), thermal values: RSI 1.06 (R 6.0) minimum, conforming to ASTM C578-09e1.

**.9 Adhesives**

- .1 Heat resistant, single component, polyurethane reactive (water) hot melt, thermoset adhesive.
- .2 Rigid insulation cores: Heat resistant, epoxy resin based, low viscosity, contact cement.
- .3 Lock seam doors: fire resistant, resin reinforced polychloroprene, high viscosity sealant-adhesive.

**.10 Acceptable Manufacturers**

- .1 All Steel Doors 2000 Ltd.
- .2 Artek Door (1985) Ltd.
- .3 Daybar Industries Ltd.
- .4 Fleming-Baron Door Products, an ASSA ABLOY group company.
- .5 Trillium Steel Doors Limited.
- .6 Vision Hollow Metal Limited.

## 2.02 DOOR AND FRAME SYSTEMS

### .1 Exterior Framing

- .1 2.0 mm thick steel frames, fully welded; minimum 170 mm jamb depth.
- .2 Frame sizing shall be of the metric size shown in Door and Frame Schedules.

### .2 Interior Frames

- .1 For Masonry Partitions: 1.6 mm thick welded construction; knocked-down construction where Door and Frame Schedule makes reference to "suit existing construction"; minimum 170mm jamb depth factory welded.
- .2 For Drywall Partitions: 1.6 mm thick welded construction; throat size to suit partition.
- .3 Frame sizing shall be of the metric size shown in Door and Frame Schedules.

### .3 Doors

- .1 Interior: Metal
- .2 Door sizing shall be of the metric size shown in Door and Frame Schedule or to suit existing openings.

## 2.03 FABRICATION

### .1 General

- .1 Fit & assemble fabrication in shop where possible. Make trial assembly in shop when not possible.
- .2 Fabricate, reinforce and anchor component parts and assemblies, to support loads usage will impose without deflection detrimental to function, appearance or safety.
- .3 Reinforce components to resist stresses imposed by hardware in use.
- .4 Prepare frames and doors for specified hardware with mortises, and reinforcement. Drill and tap to template information. Incorporate steel reinforcement of
  - .1 : 1.6 mm thick flush bolts, locks & strikes.
  - .2 : 6.4 mm for hinges.
  - .3 : 4.8 mm for push/pulls and panic devices.
  - .4 : 2.7 mm thick for surface mounted hardware, and door closer brackets and arms.
- .5 Install metal mortar guards of minimum 0.76 mm thick steel at cut-outs for hardware in frames installed in masonry walls.
- .6 Reinforce all frames for closers.
- .7 Provide for anticipated expansion and contraction of frames and supports.
- .8 Fit elements at intersections & joints accurately together in true planes, plumb & level.
- .9 Weld frame and door assemblies together. Weld continuously at joint

- exposed to view or at joints through which air or water could penetrate from the exterior of building to the interior.
- .10 Where welding is impossible, connections may be bolted. Ream drilled holes and leave exposed edges clean and smooth.
- .11 Isolate from each other dissimilar metals, and metal from concrete or masonry or prevent electrolysis.
- .12 Ensure that exterior doors and frames are tightly fitted, and drips are installed on frames of out-swinging doors, to prevent entry of water where exposed to weather.

## **.2 Pressed Steel Door Frames and Screen Frames**

- .1 Supply frames to suit construction conditions and dimensions indicated on drawings and in Door and Frame Schedule.
- .2 Schedule of fabrication and delivery must be such that it will not delay the project.
- .3 Fabricate interior frames of wipe coat galvanized steel and exterior frames of full galvanized sheet steel.
- .4 Fabricate steel frames in minimum thickness of 1.6 mm thick sheet steel unless otherwise specified or indicated.
- .5 Use 2.0 mm thick sheet steel for exterior frames.
- .6 Minimum frame material thickness applies only to doors not otherwise requiring heavier gauges to meet specified fire rated construction as required by validating underwriter's test.
- .7 Fabricate removable stops of minimum 0.91 mm thick steel. Do not weld stop corners.
- .8 Install recessed weather stripping in stops of exterior doors.
- .9 Finish frame with one coat of galvanized primer on zinc coated surfaces exposed to view.
- .10 Where members join at corners, cut mitres and weld continuously along inside of sections.
- .11 Where tubular frame sections meet frame members, join by butt welding.
- .12 Attach two 1.2 mm thick steel channel spreaders at bottom of door frames to maintain square alignment, secured to facilitate removal after frames that extend only to finish floor are built in.
- .13 Incorporate structural stiffeners for frame members as shown on Drawings. Securely anchor them at bottom and top. Where they extend above ceiling, anchor to concrete or structural framing to suit site conditions.
- .14 Install 3 bumpers in interior frames at single opening latch jambs, and 2 at double door frame heads.
- .15 Fasten removable stops by countersunk Phillips head screws at approximately 225 mm o.c. symmetrically spaced on stop length.
- .16 Anchor frames at floor by 1.5 mm thick angle clips, welded to frame and provided with two holes for floor anchorage.
- .17 For frames in masonry walls attach adjustable Tee-anchors fabricated from galvanized steel same gauge as frame. Install anchors on each jamb. Install 3 anchors for openings 2285 mm high.

- .18 For frames in stud walls, weld L clip at bottom of frame for anchor to floor slabs.

### .3 Steel Doors and Panels

- .1 Fabricate steel doors and panels to a thickness of 45mm (1-3/4"). Unless indicated otherwise.
- .2 **Insulated doors and panels:**
- .1 Face sheets fabricated from 1.5 mm (0.06") 16 gauge steel.
  - .2 Insulation core: Polystyrene.
  - .3 Longitudinal edges mechanically interlocked.
  - .4 Adhesive assisted with edge seams visible.
- .3 **Interior doors and panels:**
- .1 Face sheets fabricated from 1.5 mm (0.06") 16 gauge steel.
  - .2 Honeycomb core.
  - .3 Longitudinal edges mechanically interlocked
  - .4 Adhesive assisted with edge seams visible.
- .4 **Temperature rise rated doors and panels:**
- .1 Face sheets fabricated from 1.3mm (0.05") 18 gauge steel.
  - .2 TRR asbestos free core.
  - .3 Longitudinal edges mechanically interlocked.
- .5 Fabricate of composite metal face construction with each face formed from flush sheet steel without visible seams, free of scale, pitting, coil brakes, buckles and waves.
- .6 Formed edges shall be true and straight with minimum radius for the thickness of steel used.
- .7 Lock and hinge edges shall be bevelled 3 mm in 50 mm (1/8" in 2") unless hardware or door swing dictates otherwise.
- .8 Top and bottom of doors shall be provided with inverted, recessed, 1.5mm (0.06") 16 gauge steel end channels, welded to each face sheet at 50 mm (2") on centre maximum.
- .9 Prior to shipment, mark each door with an identification number as shown on the approved submittal drawings.
- .10 Exterior doors shall be provided with factory installed flush PVC top caps. Fire labelled exterior doors shall be provided with factory installed flush steel top caps.
- .11 Blank, reinforce, drill and tap doors for mortised, templated hardware. Locate to manufacturer's standard unless indicated otherwise.
- .12 Holes 12.7mm (1/2") and larger shall be factory prepared.
- .13 **Glazing:**
- .1 For glazing materials up to and including 8 mm (5/16") thick, doors shall be provided with 1 mm (0.04") 20 gauge steel glazing trim and snap-in glazing stops.
  - .2 For glazing materials greater than 8 mm (5/16") thick, doors shall receive 1 mm (0.04") 20 gauge steel trim and screw fixed glazing stops. Screws shall be #6 x 32mm (1 1/4") oval head Tek™ (self-drilling) type at 305 mm (12") on centre maximum.



- .3 Glazing trim and stops shall be accurately fitted (within 0.39 mm (0.015”) tolerance), butted at corners, with removable glazing stops located on the ‘push’ side of the door.
- .14 Fabricate closing stiles of paired doors as indicated or scheduled.
- .15 Where indicated in schedule, prepare doors and panels for installation of fire-rated door grilles. If required to meet door grille manufacturer’s rated design, provide reinforcement around door grill opening.

#### **.4 Finishing**

- .1 File and grind exposed welds smooth so that assemblies have appearance of one piece construction. Fill depressions with metal filler and finished
- .2 For primed surfaces, clean, scrape and remove rust, mill scale, grease and other surface deposits from steel following fabrication. Apply full smooth coat of primer in shop. Force paint into corners and open spaces.
- .3 For surfaces with zinc coating, clean and smooth ground surfaces at welds, fill if necessary, and coat all areas from which galvanizing has been removed with zinc rich paint coating of 0.1 mm minimum.

### **PART 3 - EXECUTION**

#### **3.01 EXAMINATION**

- 3.1.1. Take field dimensions of construction into which fabrications of this Section are incorporated before they are fabricated. Field adaption of work fabricated in error or without field check will not be allowed without approval.

#### **3.02 INSTALLATION**

##### **.1 Pressed Steel Frames**

- .1 Setting up of pressed steel frames in masonry walls is included in Section 06 20 00.
- .2 Building in of pressed steel frames is included in Section 04 20 00 of Specification.
- .3 Setting up and building in of pressed steel frames in metal stud drywall partitions is included in Section 05 50 00 and Section 09 21 16.
- .4 Secure frames to floor construction with two fasteners each jamb, set and brace securely to maintain true alignment until built in.

##### **.2 Adjustment and Cleaning**

- .1 Refinish damaged and defective fabrications before completion. Refinish exposed surfaces to ensure that no variation in appearance is discernible.

- .2 Clean surfaces in preparation for specified finishing at completion of installation.
- .3 Final cleaning is specified in Section 01 71 00.

**END OF SECTION**

---

**PART 1 - GENERAL**

**1.1. Description**

**1.1.1. General Requirements**

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

**1.1.2. Work Related to this Section Performed by Other Sections**

Section 08520: Aluminum Windows

**1.1.3. Work Performed by this Section but Specified Elsewhere**

Section 07 92 00: To specify joint sealants.  
Section 08 71 00: NOTE: by cash allowance  
Section 08 80 00: To specify glazing.

**1.2. System Description**

**1.2.1. Tolerances**

1.2.1.1. Fabricate frames to a tolerance of + 1.5 mm for vertical, horizontal, and diagonal dimensions of units under 1830 mm, and + 3 mm for dimensions greater than 1830 mm.

1.2.1.2. Erect component parts within following tolerances  
: Variations from plumb:  
:3 mm maximum variation in storey height or 3 m run, cumulative  
:Variations from level:  
:3 mm maximum variation in any bay or 6 m run, non-cumulative  
:Variations from theoretical calculated plan or elevation location related to established floor lines, column lines and other fixed elements of the structure, including variations for plumb and level:  
:Offsets in end-to-end or edge-to-edge alignment of adjoining members:  
:1.5 mm maximum offset in any alignment.

1.2.1.3. Maintain tolerances for glazing as recommended by glass manufacturer.

1.2.1.4. Maintain locations of mullions related to, and within installed tolerances, of ceilings of walls as indicated on Drawings. Verify location of ceiling grid at each floor.

**1.2.2. Design**

1.2.2.1. The entire exterior skin execution shall be based on the rain screen principle.

1.2.2.2. The system shall provide:  
: Such gaskets, baffles, overlaps and seals as required to provide a rain screen barrier to effectively deter rain water entry into cavities.  
: The necessary air seals to eliminate air passage from system cavities into the building and vice versa, and to assure adequate pressure equalization of the system cavities with the outside.

1.2.2.3. The air and vapour seals required to eliminate air borne vapour infiltration from the building into the system cavities.

- 1.2.2.4. Openings between cavities and outside shall be of sufficient cross section to provide pressure equalization. All openings must be effectively baffled to minimize direct water entry.
- 1.2.2.5. Thermally, the grid members shall have a resistance to heat transfer equal to or better than that of the area along the bottom of the sealed glass units.

1.2.3. **Structural Requirements**

- 1.2.3.1. Entrances must withstand a minimum windload of (30 psf) 1500 Pa with a maximum deflection of span/200.

1.2.4. **Performance**

- 1.2.4.1. Air infiltration shall exceed 3.05 to the power of negative four cu.m/s/sq.m. of exterior surface at 75 Pa pressure difference.
- 1.2.4.2. There shall be no water infiltration into the building under 50% of design wind load.
- 1.2.4.3. No condensation shall form on any interior surfaces of the aluminum members before any of the exposed area of the 25 mm sealed units reaches the dew point temperature.

1.3. **Quality Assurance**

1.3.1. **Glazing Requirements**

- 1.3.1.1. Conform to recommendations of Flat Glass Marketing Association (FMGA), Glazing Manual 1980 (GM) and Glazing Sealing Systems Manual 1970 (GSSM).

1.3.2. **Subcontractor Qualifications**

- 1.3.2.1. Perform Work of this Section only by a Subcontractor approved by one of the systems manufacturers approved for this Project and who has adequate plant, equipment and skilled tradesmen to perform it expeditiously and is known to have been responsible for satisfactory installations similar to that specified during a period of the immediate past five years.
- 1.3.2.2. Basis of Specification: Windspec Inc.  
Approved Suppliers:  
Kawneer  
Windspec Inc.  
Alwind Ltd.  
Alumicor

1.3.3. **Welder Qualifications**

- 1.3.3.1. Perform welding of structural components only by fabricators certified by Canadian Welding Bureau to CSA welding qualification codes; CSA Standard W47.1 for welding of steel, and CSA W47.2 for welding of aluminum.

1.3.4. **Requirements of Regulatory Agencies**

- 1.3.4.1. Conform to requirements of authorities having jurisdiction in the fabrication and installation of components specified in this Section.

1.3.5. **Codes and Standards**

Except as modified by governing codes and by the Contract Documents, comply with applicable provisions and recommendations of the following:

- 1.3.5.1. CSA W47.2-M1987 for welding of aluminum.  
1.3.5.2. CSA W59-M1989 for welding of steel.  
1.3.5.3. AAMA Aluminum Curtain Wall Design Manual.

1.4. **References**

1.4.1. **Reference Standards**

- 1.4.1.1. Reference standards quoted in Contract Documents refer to:  
1.4.1.2. ASTM A167-81a, Specification for Stainless and Heat Resisting Chromium-Nickel Steel Plate, Sheet and Strip.  
1.4.1.3. ASTM A480-81, Specification for General Requirements for Flat Rolled Stainless and Heat Resisting Steel Plate, Sheet and Strip.  
1.4.1.4. ASTM A525-76, Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, General Requirements.  
1.4.1.5. ASTM A780-80, Standard Practice for Repair of Damaged Hot-Dip Coatings.  
1.4.1.6. CGSB Specification 41-GP-19Ma, Rigid Vinyl Extrusions for Windows and Doors.  
1.4.1.7. CGSB Specification 79-GP-1M, Screens, Aluminum Frame, Window.  
1.4.1.8. CGSB Specification 1-GP-108M, Paint, Acid and Alkali Resistant, Black.  
1.4.1.9. CGSB Specification 1-GP-132M, Primer, Zinc Chromate, Low Moisture Sensitivity.  
1.4.1.10. CGSB Specification 1-GP-181M, Coating, Zinc Rich, Organic, Ready Mix.  
1.4.1.11. CAN/CSA3-G40.20/G40.21-M92, Structural Quality Steel.  
1.4.1.12. CSA Standard G164-M92, Hot Dip Galvanizing of Irregularly Shaped Articles.  
1.4.1.13. CSA Standard W47.1-92, Certification of Companies for Fusion Welding of Steel Structures.  
1.4.1.14. CSA Standard W47.2-M1987, Aluminum Welding Qualification Code.  
1.4.1.15. CSA Standard W59-M1989, Welded Steel Construction (Metal Arch Welding).

1.5. **Submittals**

1.5.1. **Shop Drawings**

- 1.5.1.1. Submit shop drawings showing and describing in detail system assemblies, including: large scale details of members and materials, of brackets and anchorage devices, and of connection and jointing details, fully dimensioned layout for positioning of brackets and anchorage devices to structures; dimensions, gauges, thicknesses; glazing details, description of materials, including catalogue numbers, products' and manufacturers' names; aluminum alloy and temper designations, metal

finishing specifications; and degree of torquing required for bolted connections; and other pertinent data and information.

- 1.5.1.2. Shop Drawings shall contain the minimum following details:
- : jamb, head and sill of units at junction of wall faces, including air vapour seal
  - : structure required for system that is supplied with system and not part of building structure
  - : anchorage system
  - : dielectric separator details
  - : separator/slip gasket details
  - : thermal separator details
  - : flashing details

1.5.2. **Samples**

- 1.5.2.1. Submit samples of unit frame profiles, glass and glazed sample assembly prior to fabrication of units. Sample acceptance will be for colour, appearance, glazing methods only.
- 1.5.2.2. Submit samples for each finish and colour required. Submit samples finished on the specified alloy on 600 mm lengths of extrusions or 600 mm square of sheet or plate, showing maximum range or variation in colour and shade, and matching the Architect's samples in each case. Sample submittals and acceptance shall be for colour, texture and specular gloss.

1.5.3. **Maintenance Instructions**

- 1.5.3.1. Submit maintenance instructions for incorporation into Project Data Book.

1.6. **Delivery, Storage and Handling**

- 1.6.1. Suitable storage at site shall be provided by the Contractor. Parts shall be stored in this area to permit natural ventilation over their finished surfaces.
- 1.6.2. Under conditions of high humidity, heating or forced ventilation shall be provided to prevent the accumulation of surface moisture.
- 1.6.3. Deliver, handle and store units by methods approved by manufacturer. Store units at site on wood platforms raised above grade or in enclosures protected from elements and corrosive materials, and with resilient pads provided for full bearing support of frame. Stack units vertically in manner to prevent racking. Do not remove from crates or other protective covering until ready for installation.
- 1.6.4. Protection of this work shall be the responsibility of this Section and the methods used shall be agreed with the Contractor.
- 1.6.5. Do not permit foreign materials such as splashing of concrete, mortar, plaster or paint, which could damage the finish, to remain on the surface of aluminum work. All materials of this nature must be immediately removed, and where conditions are such that this will not be possible, the exposed surface of aluminum exposed to abuse shall be protected by removable aluminized vinyl protection throughout the period that work proceeds on the building. The protective materials must be carefully removed on completion of the building, and in such a manner that no damage occurs to the aluminum finish.

**1.7. Warranty**

**1.7.1. Extended Warranty**

- 1.7.1.1. Warrant installation specified in this Section covering the period for four years beyond the expiration of the warranty period specified in the General Conditions to the Contract.
- 1.7.1.2. Without restricting the generality of the warranty, defects shall include failure to maintain true lines, plumbness and weather tightness under all conditions.
- 1.7.2. Promptly remedy defects and/or failures upon written notification that such exist. Remedy shall include labour, materials, equipment and services required to make good defective work, and to replace such work, without removal of non-defective work, and to make good any work, components and finishes and Owner's property damaged or disturbed in course of remedying defects and/or failures.

**PART 2 - PRODUCTS**

**2.1. Materials**

**2.1.1. Aluminum**

- 2.1.1.1. Extrusions: AA6063-T5, alloy and temper for framing, and otherwise where not exposed to suit specified and fabricator's requirements.
- 2.1.1.2. Exposed Anodized Sheet and Plate: AA 5005-H14, alloy and temper, or AA 1100-H14, anodizing quality.
- 2.1.1.3. Exposed sheets where painted: AA100-H14, alloy and temper.
- 2.1.1.4. Non-exposed sheets: AA3003-H14, alloy and temper, mill finish, or Alcan "Utility Sheet".
- 2.1.1.5. Exposed surfaces of aluminum shall be free of die marks, scratches, blisters, "leave-off" marks, or other blemishes which are visible.

**2.1.2. Steel**

- 2.1.2.1. Steel Framing: To meet specified requirements of CSA Standard G40.21, Grade 300W for rolled sections and Grade 350, Class H, for hollow sections.

**2.1.3. Stainless Steel**

- 2.1.3.1. ASTM Specifications A480-81, and A167-81a, Type 304.

**2.1.4. Finishes**

- 2.1.4.1. Anodic clear coating, Architectural Class 1, AA-M12C22A41 (.0007")

**2.1.5. Glass**

- 2.1.5.1. Exterior: To meet specified requirements of Section 08 80 00; 25 mm sealed insulating units and as specified herein.
- 2.1.5.2. Interior:

2.1.6. **Glazing Gaskets**

- 2.1.6.1. Either neoprene or EPDM (ethylene propylene diene monomer) with dimensional tolerances and durometer hardness and of suitable size and shape to meet requirements of the specifications and their specific application. Gaskets shall be virgin material as manufactured by Tremco Manufacturing Company (Canada) Limited or other approved manufacturer. Gaskets shall conform to Tremco Information Bulletins: For EPDM - TDB-460-1 or equal.  
For Neoprene - TDB-270-1 or equal.

2.1.7. **Glazing Tape**

- 2.1.7.1. Polyisobutylene, with continuous molded-in synthetic rubber shim, in colour selected, Polyshim Tape by Tremco (Canada) Limited, or equivalent as approved.

2.1.8. **Sealants and Sealant Materials**

- 2.1.8.1. To meet specified requirements of Section 07920 and design performance requirements.

2.1.9. **Fastenings**

- 2.1.9.1. Stainless steel, Type 300 series, or double cadmium plated steel, selected to prevent galvanic action between fasteners and components fastened. Where exposed in finished surfaces, use oval-head countersunk Phillips head screws with shank diameter one screw size smaller than the diameter of holes in fastened material, and colour to match adjacent surfaces.

2.1.10. **Exposed Anchors**

- 2.1.10.1. Aluminum or stainless steel with aluminum materials; and otherwise to match metal anchored. Non-exposed: as for exposed or may be galvanized steel.

2.1.11. **Bituminous Paint**

- 2.1.11.1. To meet specified requirements of CGSB Specification 1-GP-108.

2.1.12. **Separator/Slip Gaskets**

- 2.1.12.1. Nylon as suitable for connection detail at moving faces of connections.

2.1.13. **Thermal Separator**

- 2.1.13.1. Solid extruded and thermally resistant sections with a durometer hardness of Shore "A" 50, ±5.

2.1.14. **Supporting Angles, Plates, Bars, Rods and Other Steel Accessories**

- 2.1.14.1. Mild steel CAN3-G40.21-M78, thickness as required to sustain imposed loads and in no case less than 4.8mm thick.



2.1.14.2. Galvanize steel after fabrication where installed on exterior side of vapour retarder/air barrier. Prime paint steel where installed on interior side of vapour retarder/air barrier.

2.1.15. **Thermal Insulation**

2.1.15.1. Rigid glass fibre board, AF530 wall insulation manufactured by Fiberglas Canada Inc. in thickness indicated on Drawings with black coating on outer surface.

2.1.15.2. Loose Insulation: Glass fibre, density of 12 kg/cu.m., by Fiberglas Canada Inc.

2.1.15.3. **Foam Insulation**

2.1.15.3.1. One or two part, polyurethane, with a nominal density of 40 kg/m<sup>3</sup>, coefficient of linear expansion of 0.00006 mm/m/°C, water vapour transmission of 73 Ng/Pa5m<sup>2</sup> and thermal conductivity of 0.02 W/m°K.

2.1.15.3.2. Similar to products as produced by BASF Canada Inc.

2.1.16. **Hardware**

2.1.16.1. Refer to Section 07810.

2.2. **Products**

2.2.1. Specified manufacturers' catalogue references to Windspec Inc. establish the minimum standards for the products listed in this Section.

2.2.2. Unspecified materials which form a part of completed assemblies shall be of manufacturers' standard.

2.2.3. Products of the following manufacturer are considered as acceptable alternatives, provided that they meet the minimum requirements of the products listed and must submit technical literature, samples, drawings and performance data for comparison:

Kawneer  
Alumicor Limited  
Alwind Industries

2.2.4. **Screens and Framing**

2.2.4.1. Framing: 2200 Series or equivalent by Windspec.

2.2.4.2. Finish:

: exterior: Dark Bronze anodized to match existing.

: back sections: Dark Bronze anodized to match existing.

Glazing: 25mm insulating glass units at exterior locations; Type 2.

2.2.4.3. Sills: extruded aluminium, with concealed anchor system or hold down clips, colour and finish to match framing.

2.2.4.4. Style: Combination of mullion depths, glazing rebates and caps as required by Drawings, and including door stops and cut pile weatherstripping.

2.2.5. **Hinged Doors**

- 2.2.5.1. Type: series 2200 thermally broken entrance framing by Windspec. Refer to drawings for dimensions of bottom, mid and top rails and stiles.
- 2.2.5.2. Glass: 25mm insulating glass units at exterior locations.  
Finish: Dark Bronze anodized to match existing.
- 2.2.5.3. Threshold: Extruded aluminum, clear finish, 12mm riser, overall width to match frames.
- 2.2.5.4. Weatherstripping: Cut pile weatherstripping and adjustable door bottoms for exterior doors.
- 2.2.5.5. Door Sweep: KN Crowder W-24S628.
- 2.2.5.6. Hinges: continuous, heavy duty Rotun hinge

2.3. **Fabrication**

- 2.3.1. Ensure glazing rebate provided with depth and width to accommodate specified glass in accordance with glass manufacturer's recommendations. Install glazing gaskets anchored to aluminium extrusions.
- 2.3.2. Provide structural support for air barrier tie-in.

2.3.3. **Framing Members**

- 2.3.3.1. Fabricate generally to dimensions/profiles indicated on drawings. Meet specified requirements and clearances to other construction components.
- 2.3.3.2. Reinforce members and joints with steel plates, bars, rods or angles for rigidity and strength as needed to fulfill performance requirements. Use concealed stainless steel fasteners for jointing that cannot be welded.
- 2.3.3.3. Provide glass setting, supports and stops to minimize possibility of glass breakage caused by structural inadequacy of frames, stops and frame joints, solar and thermal induced forces, within limitations of specified design performance criteria, as recommended by glass manufacturer.
- 2.3.3.4. Design system to ensure that site glazing may be performed in accordance with construction scheduling within environmental limitations specified in Section 08800.

2.3.4. **Assembly of Units**

- 2.3.4.1. Join members by welding where specified and otherwise where practicable.
- 2.3.4.2. Join members where specified, and otherwise where welding is impracticable, by mechanical methods. Reinforcement or fasteners visible on faces of members where exposed to view will not be acceptable.
- 2.3.4.3. Weld with electrodes and by methods recommended by the base metal manufacturer, and in accordance with CSA Standards W47.1, W47.2 and W59 as applicable, and to avoid distortion or discolouration of exposed faces. Make welds continuous unless otherwise shown. Grind exposed welds flush, to match adjacent metal.
- 2.3.4.4. Join members in shop fabricated units to fit flush with hairline joints.

2.3.4.5. Incorporate weepholes to drain off pocketed water. Baffle to prevent entry of driven water to conform to specified performance.

2.3.4.6. Except where shipping makes impossible, fabricate units in shop and ship completely assembled.

2.3.5. **Vapour Retarder and Air Barrier**

2.3.5.1. Maintain integrity of vapour retarder and air barrier system within systems installed by this Section and between systems and adjoining construction.

2.3.6. **Dissimilar Materials**

2.3.6.1. Protect material from electrolytic action when dissimilar metals are in contact with one another with two coats of bituminous paint or other approved means.

2.3.6.2. Protect aluminum concealed in contact with masonry with two coats of bituminous paint.

2.3.7. **Anchors**

2.3.7.1. Incorporate anchorage to structure to support units adequately when subjected to specified loads.

2.3.7.2. Allow for complete adjustment in anchorage for levelling and positioning of units during installation.

2.3.8. **Doors**

2.3.8.1. Fabricate doors with stiles and rails of extruded aluminum with major portions of 3mm minimum thickness.

2.3.8.2. Join stiles to rails with sigma deep penetration welds and mechanical fastening.

2.3.8.3. Provide flush glazing.

2.3.8.4. Incorporate weatherstripping.

2.3.8.5. Provide for master-keyed lock cylinders.

2.3.9. **Fastenings**

2.3.9.1. Where fastenings are exposed to dampness or moisture, use cadmium plated steel for steel-to-steel, aluminium for aluminium-to-aluminium, and stainless steel otherwise or alternatively for all above.

2.3.9.2. Where fastenings are not exposed to dampness or moisture, cadmium plated steel may additionally be used for all combinations of metals noted in immediately preceding sub-paragraph.

2.3.10. **Thermal Movement**

2.3.10.1. Fabricate exterior units and assemblies to provide for expansion and contraction of component members and between units when subjected to surface temperatures from -34 deg.C to 82 deg.C.

2.3.11. **Mullions**

2.3.11.1. Fabricate mullions to provide for specified thermal movement without damage to adjacent units.

2.3.12. **Dissimilar Materials**

- 2.3.12.1. Protect material from electrolytic action when dissimilar metals are in contact with one another.
- 2.3.12.2. Protect aluminium concealed in contact with masonry with a heavy coating of bituminous paint.

2.3.13. **Anchors**

- 2.3.13.1. Incorporate anchorage to structure for units at sills, heads and jambs on 450mm centres generally, and to support units adequately when subjected to specified loads.
- 2.3.13.2. Allow for complete adjustment in anchorage for levelling and positioning of units during installation.

2.3.14. **Attachment of Hardware**

- 2.3.14.1. Match hardware fastenings to metal of hardware.
- 2.3.14.2. Attach hardware by bolts or machine screws into tapped reinforcing plates.

2.3.15. **Weatherstripping**

- 2.3.15.1. Secure weatherstripping in place by mechanical means only, and in a manner to enable its removal and replacement without special tools.
- 2.3.15.2. Ensure that continuity of weatherstripping is maintained around openings.
- 2.3.15.3. Install adjustable metal backed pile cloth weatherstripping recessed in stiles at jamb locations provided with latches and butt hinges, and in top rails of doors.
- 2.3.15.4. Install adjustable sweeps at bottom rails of doors.

2.3.16. **Thermal Break**

- 2.3.16.1. Incorporate a thermal break in frames in which insulating glass units are installed.

2.3.17. **Finishing**

- 2.3.17.1. For surfaces with zinc coating, clean and smooth ground surfaces at welds and prime areas from which zinc has been removed with a coating of zinc rich paint of minimum 0.102 mm thickness. Immediately following damage to galvanized protection prepare and repair surfaces to meet specified requirements of ASTM Specification A780.

**PART 3 - EXECUTION**

**3.1. Examination**

- 3.1.1. Take critical site dimensions to ensure that adjustments in fabrication or installation are provided for, that allowance is made for possible deflection of

structure at heads, and that clearances to other construction have been maintained.

- 3.1.2. Ensure that anchors and inserts, installed by others, are adequate to meet specified requirements, and make adaptations before installation.

### **3.2. Installation**

#### **3.2.1. General**

- 3.2.1.1. Coordinate fabrication of components specified in this Section with requirements of other Sections to ensure proper anchorage and fitting.
- 3.2.1.2. Install components and units plumb, level and in accordance with shop drawings, by qualified experienced tradesmen and to conform to fabricator's instructions at location of testing and at site.
- 3.2.1.3. Do not force units into place, nor superimpose on them loads for which they were not designed.
- 3.2.1.4. Install vapour retarder and air barrier to ensure complete continuity and integration of vapour retarder and air barrier system.
- 3.2.1.5. Provide structural support for air barrier to prevent its displacement or its loss of seal when subjected to forces specified for design performance.
- 3.2.1.6. Install metal flashing to drain cavities in system. Secure flashings permanently to prevent displacement, leaks, and noise.
- 3.2.1.7. Provide for thermal movement to take place between shop fabricated assemblies and between assemblies and adjacent construction.
- 3.2.1.8. Secure units by non-corrosive anchorage materials. Use of wood or fibre is not acceptable.
- 3.2.1.9. Conceal anchors, clips, blocking, and all other attachments.
- 3.2.1.10. Install reinforcing and supporting members as indicated and required structurally as part of the work of this Section.
- 3.2.1.11. Seal metal-to-metal joints between components included in the work of this Section to ensure a weathertight assembly, and in accordance with sealant manufacturer's specifications.
- 3.2.1.12. Install insulation where aluminum is exposed to the exterior to ensure that thermal conductance to interior of building is no more than thermal conductance of insulating glass units.
- 3.2.1.13. Install units with consideration for finish variations. Abrupt variations of appearance or colour in adjacent components will not be acceptable without approval before installation.
- 3.2.1.14. Coat all damaged prime painted surfaces of anchorage with rust inhibiting paint after welding is completed.
- 3.2.1.15. Apply two coats zinc rich paint to metal surfaces bared by removal of galvanizing.
- 3.2.1.16. Apply one coat of prime paint to metal surfaces bared by removal of shop applied primer.

#### **3.2.2. Welding**

- 3.2.2.1. Perform welding in accordance with CSA Specification W59-1977. Exercise care during welding to minimize effect of welding heat. Design welds to prevent tearing at end of welds which could cause a progressive failure.
- 3.2.2.2. Detailed welding procedure covering specified welds on erection and shop drawings may be requested for approval by the Consultant.
- 3.2.2.3. Take precautions during welding to prevent damage or staining of

adjacent surfaces.

3.2.2.4. Remove prime paint from surfaces to be welded.

3.2.3. **Caulking**

3.2.3.1. Caulk joints between frame members and sills and adjacent construction as a part of the work of this Section and in accordance with Section 07920 of the specifications.

3.2.4. **Glazing**

3.2.4.1. Install glass in units, as part of work of this Section and in accordance with Section 08800 of these specifications. Include manufacturer's standard glazing components to create prime seals.

3.3. **Adjustment and Cleaning**

3.3.1. **Adjusting**

- 3.3.1.1. Adjust doors to operate smoothly and fit tightly when closed and locked.
- 3.3.1.2. Adjust hardware to operate smoothly, with proper tension and lubricate.
- 3.3.1.3. Ensure that weatherstripping does not cause binding to prevent closing and locking, and that it makes weathertight contact.
- 3.3.1.4. Adjust closers after doors are glazed, and other hardware and vestibule doors are installed.

3.3.2. **Cleaning on Completion of Installation**

- 3.3.2.1. Remove deposits which affect appearance or operation of units.
- 3.3.2.2. Remove protective materials.
- 3.3.2.3. Clean interior and exterior surfaces by washing with clear water; or with water and soap or detergent; followed by a clear water rinse.
- 3.3.2.4. Clean and restore stained metal surfaces in accordance with manufacturer's recommendations. Replace if cleaning is impossible.
- 3.3.2.5. Final cleaning is specified in Section 01710.

3.4. **Protection**

- 3.4.1. Immediately upon completion of installation, suitably protect vulnerable edges, and exposed corners and surfaces. Protection shall prevent damage by mortar, paint or other hazards from the work of other trades.
- 3.4.2. Protect prefinished surfaces of metal with protective coatings or wrappings to remain in place until construction completion. Use materials recommended by finishers or manufacturers of metals to ensure that method is sufficiently protective, easily removed, and harmless to finish.
- 3.4.3. Remove protection from metal glazing surfaces before installation of glass.
- 3.4.4. Maintain protection from time of installation to final clean up in accordance with Sections 01040 and 01500.

**End of Section**

## **PART 1 - GENERAL**

### **1.1 DESCRIPTION**

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

### **1.2 QUALITY ASSURANCE**

- .1 Qualifications: Provide Work of this Section, executed by a Subcontractor with minimum 5 years' experience in application of Products, systems and assemblies specified and with approval and training of Product manufacturers.

### **1.3 SUBMITTALS**

- .1 Submit required submittals in accordance with Section 01300.
- .2 Shop Drawings: Clearly indicate materials, operating mechanisms, required clearances and electrical connections.

### **1.4 OPERATION AND MAINTENANCE DATA**

- .1 Submit operation and maintenance data for sliding grilles for incorporation into operations and maintenance manuals in accordance with Section 01700.

### **1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Package or crate, and brace Products to prevent distortion in shipment and handling. Label packages and crates and protect finish surfaces by sturdy wrappings.

### **1.6 WARRANTY**

- .1 The warranty period with regard to the Work of this Section is 3 years.
- .2 The warranty is a total system warranty and includes hardware, operators, and finishing, delivery, hanging, fitting and refinishing of overhead door and hardware.

## **Part 2 PRODUCTS**

### **2.1 MATERIALS**

- .1 Aluminum: 6063 alloy, T-5 temper

## 2.2. SLIDING GRILLE – FULL HEIGHT

- .1 Curtain:
  - .1 Top and bottom of each section shall be fitted with an aluminum panel 101 mm (4") high. This panel shall consist of an aluminum extrusion 1.6 mm (1/16") thick and composed of modules with a 15-degree angle between them to facilitate the operation of the closure. The curtain shall be made of vertical rods of 7.9 mm (5/16"). Each rod is contained in an aluminum tube that measures 12.7 mm (1/2") in diameter. Spaced every 76 mm (3"), these rods shall be linked by two series of horizontal modules of 51 mm (2") high. These modules shall be spaced vertically every 305 mm (12").
- .2 Curtain Height: As indicated
- .3 Finish, Exposed Aluminum Parts: Clear anodized
- .4 Locking:
  - .1 Lead post shall be equipped with a hook bolt lock with keyed cylinder by Section 08710.
  - .2 Lead post shall engage a full height wall jamb.
  - .3 Trailing post shall be self-locking at the top and bottom inside the storage pocket.
  - .4 Free floating intermediate posts shall be located at all curves and at intervals not exceeding 3000 mm (10'). Intermediate posts shall be equipped with self-adjusting spring-loaded drop bolts activated from the inside only. Drop bolts shall engage dust proof stainless steel receptacles.
- .5 Overhead Track: Extruded aluminum, 33 mm wide x 40 mm high (1-5/16" x 1-9/16"), with continuous extruded profile seamed together by alignment bars and track pins. Track shall be 6351-T6 aluminum alloy and temper.
- .6 Operation:
  - .1 Manual push-pull operation
  - .2 Provide attached pull rods on closures over 2745 mm (9') in height.



- .7 Acceptable Product: 'System S-12' sliding grille as manufactured by Mobilflex, complete with full egress door. Subject to compliance with the Contract Documents, acceptable equivalent Products of the following manufacturers may be used upon approval:
  - .1 Amstel
  - .2 Cookson
  - .3 Kinnear/Wayne Dalton
  - .4 Dynamic Closures
  - .5 Overhead Door Corporation

### **2.3. SLIDING GRILLE – COUNTERS**

- .1 Curtain:
  - .1 Top and bottom of each section shall be fitted with an aluminum panel 101 mm (4") high. This panel shall consist of an aluminum extrusion 1.6 mm (1/16") thick and composed of modules with a 15-degree angle between them to facilitate the operation of the closure. The curtain shall be constructed of 152 mm (6") wide modules linked together by a continuous aluminum hinge. These hinges shall hold perforated metal panels with a 5 mm (3/16") holes providing a 51% visibility through the panels.
  - .2 Curtain Height: As indicated
  - .3 Finish, Exposed Aluminum Parts: Clear anodized
  - .4 Locking:
    - .1 Lead post shall be equipped with a hook bolt lock with keyed cylinder by Section 08710.
    - .2 Lead post shall engage a full height wall jamb.
    - .3 Trailing post shall be self-locking at the top and bottom inside the storage pocket.
    - .4 Free floating intermediate posts shall be located at all curves and at intervals not exceeding 2000 mm (6'). Intermediate posts shall be equipped with self-adjusting spring-loaded drop bolts activated from the inside only. Drop bolts shall engage dust-proof stainless-steel receptacles.

- .5 Overhead Track: Extruded aluminum, 33 mm wide x 40 mm high (1-5/16" x 1-9/16"), with continuous extruded profile seamed together by alignment bars and track pins. Track shall be 6351-T6 aluminum alloy and temper.
- .6 Operation:
  - .1 Manual push-pull operation
  - .2 Provide attached pull rods on closures over 2745 mm (9') in height.
- .7 Acceptable Product: 'AeroFlex' sliding grille as manufactured by Mobilflex. Subject to compliance with the Contract Documents, acceptable equivalent Products of the following manufacturers may be used upon approval:
  - .1 Amstel
  - .2 Cookson
  - .3 Kinnear/Wayne Dalton
  - .4 Dynamic Closures
  - .5 Overhead Door Corporation

### **Part 3 EXECUTION**

#### **3.1. PREPARATION**

- .1 Examine supports and other conditions under which closures are to be installed.
- .2 Coordinate with responsible entity to correct unsatisfactory conditions and do not proceed with installation until conditions are corrected.

#### **3.2. INSTALLATION**

- .1 Materials are to be installed by the manufacturer or an authorized representative. Prior to commencement of the Work of this Section, examine and be assured that conditions will permit a proper installation.
- .2 Assemble and erect work plumb, true, square, straight, level and accurate to sizes detailed, to reviewed shop drawings, free from distortion and defects detrimental to appearance and performance.
- .3 Isolate metals where necessary to prevent corrosion due to contact between dissimilar metals and between metals and masonry, concrete or plaster. Use bituminous paint or butyl tape.

- .4 Supply adequate instructions, templates, and if necessary, supervise installation of the fastenings or accessories requiring to be built-in by Work of other Sections.

**3.3. ADJUSTMENT, CLEANING AND TESTING**

- .1 Upon completion of Work of this Section, clean down material, lubricate and adjust operation as required to obtain performance.

**END OF SECTION**

## Part 1 General

### .1 General Requirements

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

### .2 Work Performed by Other Sections Related to This Section is Specified in

- .1 Section 07 92 00: Sealants (Caulking Frames)

## 1.1. SYSTEM DESCRIPTION

- .1 Site assembled structural glass screens that act as guards extending from floor to underside of structure, supported at head and floor with structural shapes covered with anodized aluminum facings complete with point supported glass fittings where indicated.
- .2 Vertical glass joints butt glazed with structural silicone glazing sealant.
- .3 Information on Drawings and in the Specifications establishes requirements for system's aesthetic effects are indicated on the Drawings by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines and relationships to one another and to adjoining construction. Performance characteristics are indicated by criteria specified herein subject to verification as specified.
  - .1 Do not modify intended aesthetic effects, as judged solely by Consultant, except with Consultant's written approval and only to the extent needed to comply with performance requirements. Where modifications are proposed, submit comprehensive explanatory data to Consultant for review prior to submittal of shop drawings.

## 1.2. PERFORMANCE REQUIREMENTS

- .1 Design all-glass screens to withstand loads in accordance with the applicable code and the performance requirements without exceeding performance criteria or failure due to defective manufacture, fabrication, installation, or other defects in construction.
  - .1 Drawings are diagrammatic in nature and indicate design intent. They do not show all the connections; relationships between structural glass panels and supporting structure; anchors and fittings required for a complete system.

- .2 Design a complete system incorporating the types and configurations of fittings indicated following the design layouts provided on the Drawings with the materials specified in this Section.
  - .3 Design and size glass and glazing to conform to performance requirements of this Section and OBC Supplementary Standard SB-13 Glass in Guards. Glass sizes indicated are minimum thicknesses. Provide thickness of glass required by Design calculations.
  - .4 Where the all-glass screen acts as a guard as defined by the Ontario Building Code design storefront and glass assembly to resist all loads required by 4.1.5.15 of the Ontario Building Code.
- .2 Structural Performance: All-glass systems shall withstand the effects of gravity loads, dead loads, live loads and stresses within limits and under conditions indicated.
- .1 Deflection Limits: Deflection normal to glazing plane is limited to 1/175 of clear span or 19 mm, whichever is smaller.
  - .2 Seismic Loads: Design and size components to withstand seismic loads and sway displacement as calculated in accordance with the code.
  - .3 Screen assembly and attachments to resist lateral force of 1 kN at any point without damage or permanent set, in accordance with ASTM A935, unless otherwise required by applicable code.
- .3 Design system components to allow removal of glass without disturbing adjacent components.

### 1.3. ADMINISTRATIVE REQUIREMENTS

- .1 Coordination: Coordinate with other work having a direct bearing on work of this Section.
  - .1 Coordinate the Work with installation of adjacent components or materials.
  - .2 Sequencing: Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

### 1.4. SUBMITTALS FOR REVIEW

- .1 Product Data: For glass and aluminum facings.

- .2 Sustainable Design: Submit information supporting LEED compliance outlined in Section 01 67 00.
- .3 Shop Drawings:
  - .1 Indicate system dimensions and thickness, opening requirements and tolerances, connection attachments, anchorage, size and type of fasteners, accessories, affected related Work and expansion and contraction joint locations and details.
  - .2 Prepare Shop Drawings under direct supervision of a professional structural engineer experienced in design of glass structures and licensed in the province of Ontario. Include framing member structural and physical characteristics, calculations, dimensional limitations.
  - .3 Each Shop Drawing to bear seal and signature of professional structural engineer licensed in the province where the Project is located.
- .4 Samples:
  - .1 Two 300 mm long channel sections, as applicable, illustrating metal finishes.
  - .2 Glass: 150 mm square, showing exposed-edge finish.
  - .3 Glazing accessories.

#### **1.5. SUBMITTALS FOR INFORMATION**

- .1 Qualifications Data: For fabricator and installer.
- .2 Professional Structural Engineer's Letters of Assurance:
  - .1 Provide letters or completed prescribed forms signed by the professional structural engineer used to perform inspections certifying that the all-glass screen system has been designed, fabricated and installed in accordance with the structural performance requirements of this section and of the applicable codes, including verification that:
    - .1 Specified products have been used.
    - .2 Designs and installations as tested, have been installed on the Project.
    - .3 Loads and movement requirements have been achieved.

**1.6. CLOSEOUT SUBMITTALS**

- .1 Operation and Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

**1.7. QUALITY ASSURANCE**

- .1 Single source responsibility: Design, structural engineering, and custom fabrication for all-glass screen assembly and supply of all components, materials, and products shall be sole responsibility of single manufacturer. Provision of products from numerous sources for site assembly without complete single source design and supply responsibility is not acceptable.
- .2 Manufacturer: Company specializing in manufacturing all-glass glazing systems with minimum five (5) years documented experience.
- .3 Installer: Manufacturer.

**1.8. DELIVERY, STORAGE, AND PROTECTION**

- .1 Handle Products of this section in accordance with AAMA CW-10.
- .2 Protect finished metal surfaces with wrapping or strippable coating. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.

**1.9. ENVIRONMENTAL REQUIREMENTS**

- .1 Do not install sealants when ambient temperature is less than 5 degrees C during and 48 hours after installation.
- .2 Provide a five-year warranty to include coverage for complete system for failure to meet specified requirements.

**Part 2 Products**

**2.1. MATERIALS – GENERAL**

- .1 Sustainable Design: General LEED compliant material requirements:
  - .1 Minimum Recycled Content: Provide products that meet the minimum recycled content in Section 01 67 00.
  - .2 Low Emitting Materials: Provide sealant products with maximum VOC content in conformance with section 01 67 00.

- .2 Glass Thickness: Where glass thickness is indicated, it is a minimum. Provide glass lites in thickness as needed to conform to requirements specified.

## 2.2. MANUFACTURERS

- .1 Subject to conformance to requirements of this section provide all-glass screens by C. R. Laurence and Co.
- .2 Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - .1 InKan Limited
  - .2 DORMA Canada.

## 2.3. MATERIALS

- .1 Glass: Monolithic single pane heat strengthened clear flat safety glass and heat strengthened laminated safety glass; tempered glass and as follows:
  - .1 Tempered Glass; Tempered float glass as specified in Section 08 80 50; minimum 16 mm thickness.
  - .2 Heat Strengthened Laminated Safety Glass (HSLG): As specified in Section 08 80 50.
- .2 Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
  - .1 Aluminum Extrusions: ASTM B221M.
  - .2 Sheet and Plate: ASTM B 209M.
- .3 Stainless-Steel:
  - .1 Tubing: ASTM A 554, Grade MT 316.
  - .2 Pipe: ASTM A 312 312M, Grade TP 316.
  - .3 Castings: ASTM A 743M, Grade CF 8M or CF 3M.
  - .4 Sheet, Strip, Plate, and Flat Bar: ASTM A 666, Type 316.
  - .5 Bars and Shapes: ASTM A 276, Type 316.



## 2.4. METAL COMPONENTS

### .1 Fitting Configurations:

- .1 All Glass Screens: Continuous glazing channel at top and sides; continuous fitting at bottom.
  - .1 Material: Aluminum extrusions with Type 304 stainless steel cladding.
  - .2 Height: 105 mm
  - .3 Profile: Square
  - .4 End Caps: Manufacturer's standard precision-fit end caps stainless steel cladding Type 304.
- .2 Head and Base Glazing Channels: Subject to conformance to requirements provide manufacturer's standard shoe channel of 6063-T2 aluminum, dry glazed to allow for glass replacement; size to suit glass thickness.
  - .1 Product: Base Shoe and Head of CRL Glass screen System manufactured by C.R. Laurence and Co., or approved equivalent.
- .3 Anchors and Fastenings: Type 300 or 400 Series stainless steel, concealed; types and sizes indicated in shop drawings for concrete and steel anchorage.
- .4 Stainless Steel Base and Head Cladding: Type 304 stainless steel cladding added to exposed shoe base sections; Adhere with double-sided tape and silicone adhesive. Provide end caps where ends of shoe base sections are exposed.

## 2.5. AUXILIARY MATERIALS

- .1 Vison Strips (VS): Refer to section 08 80 50 – Glass Glazing.
- .2 Structural Sealant, Perimeter Sealant and Backing Materials: As specified in Division 07 Section Joint Sealants. Sealant colour to be selected by Consultant.
- .3 Spacers: to match colour of sealant as selected by Consultant.
- .4 Glass Glazing Gaskets: EPDM roll-in glazing gasket to suit application; colour to be selected by Consultant.

## 2.6. FABRICATION

- .1 Fabricate components with minimum clearances and shim spacing at perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- .2 Fabricate glass in accordance with Division 08 Section Glass and Glazing.
- .3 Prepare components to receive anchor devices required for connecting screens to structure. Provide anchors.
- .4 Provide holes and cutouts in glass to receive hardware, rails or patch fittings, as applicable, before tempering glass. Do not cut, drill, or make other alterations to glass after tempering.
- .5 Glass Edges:
  - .1 Butt-Jointed Glass Edges: Flat ground with slight chamfer.
  - .2 Exposed Glass Edges: Polish round.
- .6 Arrange fasteners and attachments to conceal from view.
- .7 Accommodate for expansion and contraction of members and building movement without damage to connections or members.

## 2.7. PROTECTION OF METALS

- .1 Provide protection against galvanic action wherever dissimilar metals are in contact, either by painting the contact surfaces with a heavy coat of zinc chromate primer, or by an application of an appropriate sealant or tape. Bituminous paint not permitted.
- .2 Protect aluminum which is to be in contact with cured concrete with zinc chromate primer, aluminum metal and masonry paint, or clear protective coating, wherever crevices between the contact surfaces may entrap moisture or other corrosive elements.

## 2.8. FINISHES

- .1 Stainless Steel:
  - .1 #4 satin finish.

- .2 Isolate dissimilar metals, other than stainless steel, with rubber isolation pads. Bituminous paint not permitted.

## **2.9. SOURCE QUALITY CONTROL**

- .1 Inspections:
  - .1 Engage a professional structural engineer experienced in design and installation of this work and licensed in the province of Ontario, to perform timely and regular inspections to review fabrication.
  - .2 Verify work conforms to applicable code.

## **Part 3 Execution**

### **3.1. EXAMINATION**

- .1 Verify existing conditions before starting work.
- .2 Verify dimensions, tolerances, and method of attachment with other work.
- .3 Verify that field conditions are acceptable and are ready to receive work.

### **3.2. INSTALLATION**

- .1 Install glass and glazing materials in accordance with reviewed shop drawings and manufacturer's recommended glazing method and to conform to performance requirements.
- .2 Attach supports to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- .3 Install and align components plumb and level, accurately fitted, free of warp, twist or defects. Maintain assembly dimensional tolerances.
- .4 Set, seal, and grout floor closer cases as required to suit hardware and substrate indicated.
- .5 Install joint sealants and backing materials in accordance with Division 07 Section Joint Sealants.

### **3.3. ERECTION TOLERANCES**

- .1 Maximum Variation from Plumb: 1.5 mm/m non-cumulative.

- .2 Maximum Misalignment of Two Adjoining Members Abutting in Plane: 0.8 mm.

### **3.4. CLEANING**

- .1 Remove protective material from pre-finished surfaces.
- .2 Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
- .3 Remove excess sealant by method acceptable to sealant manufacturer.

### **3.5. SITE QUALITY CONTROL**

- .1 Inspections:
  - .1 Engage a professional structural engineer experienced in design and installation of this work and licensed in the province of Ontario, to perform inspections.
  - .2 Perform timely and regular inspections.
  - .3 Verify installation conforms to applicable code.
  - .4 Prepare and submit inspection reports.

### **3.6. PROTECTION OF FINISHED WORK**

- .1 Protect finished Work from damage.

**END OF SECTION**

PART 1 - GENERAL

- .1 Description
  - .1 General Requirements

Division 1, General Requirements, is a part of this Section and shall apply as if repeated here.
  - .2 Work performed by other Sections Related to this Section is specified in

Section 06 20 00: Cabinet Hardware  
Section 06 41 00: Wood Casework.
  - .3 Hardware Specified This Section, Supplied Only, Installed by Other Sections

Section 06 20 00: Finish Carpentry: To install hardware other than as specified.  
Section 06 41 00: Wood Casework: To install hardware other than as specified.  
Section 08 42 40: Glass Entrance Systems – CRLawrence for base & head frames, 150 x 250 centre locks and keepers, and door pivots.  
Section 08 44 00: Aluminum Framed Glazing Systems
  - .4 Selected hardware supplier will become a Subcontractor of the Contractor.
  - .5 Hardware by allowance: refer to appended hardware schedule.
- .2 Quality Assurance
  - .1 Requirements of Regulatory Agencies:  
Install only ULC or ULI listed hardware for fire rated doors and frames.
- .3 Submittals
  - .1 Samples

Submit samples of each hardware item.
  - .2 Templates

Submit templates to Contractor for use by installers and fabricators as required for proper location and installation of hardware.
  - .3 Maintenance and Operating Instructions

Submit maintenance, operating and installation instructions for installation purposes and for incorporation in Project Data Book.
- .4 Delivery, Storage, and Handling
  - .1 Package hardware and label with description of contents and installation location. Refer to hardware list designation, and with door number when applicable.
  - .2 Deliver hardware to location at building site designated by Contractor.

- .5 Warranty
  - .1 Extended Warranty
    - .1 Warranty contained in GC24 is, with respect to Section 08710, extended from 1 year to 5 years.
    - .2 Contractor hereby warrants that system is suitable for use in this type of installation.
    - .3 Contractor shall arrange with Architect and/or Owner, about 1 month before warranty expires, to visit site, examine the hardware, and make necessary repairs. Should Contractor fail to make such arrangement through no fault or neglect of Owner or Architect, then period of warranty shall extend to one month after such arrangement is made.

#### PART 2 - PRODUCTS

- .1 Products
  - .1 Finish hardware fabricated of same materials shall have consistent colour and finish throughout Project.
  - .2 Supply with specified hardware screws, bolts, expansion shields, inserts, and other items and parts required for complete installation and functioning.
  - .3 Reference Hardware Group List for types of hardware used on this project.

#### PART 3 - EXECUTION

- .1 Examination
  - .1 Before supplying materials, ensure by a check of Drawings, shop drawings and details prepared for the Project, that listed hardware is suitable by dimension and function for intended purpose. Inform Architect of discrepancies.
- .2 Installation
  - .1 Provide instructions required for preparation of doors and frames to the appropriate fabricators.
  - .2 Provide instructions required for installation of hardware to Section 06200, and other Sections as applicable.
  - .3 Provide assistance and supervision of installation when requested.
- .3 Adjustment
  - .1 Verify that installed hardware functions properly, and instruct installers accordingly of requirements and procedures for adjustments to ensure satisfactory operation.

End of Section

**(PROPOSED) FINISH HARDWARE SCHEDULE for  
Our Lady of Fatima School Phase 3 Renewal  
545 Baldoon Road,  
Chatham, Ont.**

**Project Number:** 300709

**ARCHITECT:** Wilson Diaz Architects Inc.  
280 Queens Ave., Suite 1Q  
London Ont., N6B 1X3  
TEL: 519-439-0611  
FAX: 519-438-5962

**CONTRACTOR:**

**SCHEDULE BY:**



**150 Exeter Road  
London, Ont., Canada N6L 1G9  
Tel: 519-652-6766 Or 888-741-2253  
Fax: 519-652-2496  
[www.proable.com](http://www.proable.com)**

**SCHEDULE WRITTEN BY:** Brian Lavallee ext 237

**REVIEWED BY:** Jason Landon, EHC ext 226 (02/11/20)

**Written:** February 11, 2020

**(PROPOSED) FINISH HARDWARE SCHEDULE for  
Our Lady of Fatima School Phase 3 Renewal  
545 Baldoon Road,  
Chatham, Ont.**

Project Number: 300709

**PART 1      GENERAL**

**1.01      General Requirements**

- .1 Comply with the General Conditions of the contract, Supplementary General Conditions and the requirements of Division 1.

**1.02      Related Work Specified Elsewhere**

- .1 section 06200 - finish carpentry
- .2 section 08110 - steel doors
- .3 section 08111 - steel frames
- .4 section 08120- aluminum doors & frames

**1.03      Scope of Work Included**

The work of this section includes:

- .1 The supply of all finish hardware product.
- .2 Installation of all B/F operators

**1.04      Quality Assurance**

- .1 Supply only hardware as required by jurisdictional codes.
- .2 Supply only ULC or WHI listed hardware for fire rated construction.
- .3 Supply only ULC and/or CSA listed electrical components.

**1.05      Warranty**

- .1 Provide a warranty as stipulated in the General Conditions, from the date of final completion and acceptance of the Work.

- for a period of Two (2) years

**1.06      Maintenance Manual**

- .1 Provide a triplicate set of maintenance and operating instructions for inclusion in the Data Manual as specified in Division 1.

**1.07      Inspection and Supervision**

- .1 The hardware supplier shall provide a qualified Architectural Hardware Consultant who shall co-operate with the installer and clarify the locations or installation methods of particular items.



**(PROPOSED) FINISH HARDWARE SCHEDULE for  
Our Lady of Fatima School Phase 3 Renewal  
545 Baldoon Road,  
Chatham, Ont.**

Project Number: 300709

**1.08 Delivery Storage and Handling**

- .1 Each item shall be clearly itemized and labelled in accordance with the schedule and delivered in the manufacturer's original cartons.
- .2 The hardware supplier shall arrange delivery time and date to the job site or door manufacturer so that all work may progress without delay or interruption.
- .3 Storage and protection of the hardware is the responsibility of the Contractor.
- .4 All hardware shall be laid out in an organized manner on shelves provided by the Contractor in a properly secure room.
- .5 Deliver & assist in unloading and sorting of hardware. All hardware must be checked in onsite by the contractors designated person.

**PART 2 PRODUCTS**

**2.01 General Requirements**

- .1 All hardware shall be made to template. Furnish templates and template hardware together with the instructions necessary for door and frame preparation.
- .2 All hardware shall be supplied with necessary screws, bolts or other fastening devices to anchor hardware in position neatly and properly in accordance with best practices.
- .3 Kickplates for hollow metal and wood doors are to be supplied with SS screws (**no tape mounting**).

**2.02 Materials**

Only products listed in the hardware schedule or the approved alternates listed in the following list are to be used on this project.

PRODUCT

Hinges  
Latch Sets  
Exit Devices  
Door Closer  
Kickplates  
Wall Stops  
Threshold Weatherstripping  
Door Sweeps  
B/F operators  
Wall Switches  
Power supplies  
Electric Stikes

LISTED PRODUCTS

Ives  
Schlage ND series, Rhodes lever design  
Von Duprin 98 series  
LCN 4040 series  
Gallery  
Gallery  
(KN Crowder)  
(KN Crowder)  
Hunter  
Camden  
Von Duprin  
Hes

**(PROPOSED) FINISH HARDWARE SCHEDULE for  
Our Lady of Fatima School Phase 3 Renewal  
545 Baldoon Road,  
Chatham, Ont.**

Project Number: 300709

**2.03 Finishes**

- .1 The following is a description of hardware finishes as listed in the finish hardware schedule.

26D /626/652	satin chrome plated
AL/627	aluminum – mill finish
CA /628	aluminum – clear anodized
32D /630	satin stainless steel
689	painted aluminum

**2.04 Keying**

- .1 The owner will supply the bitting for all new cylinders
- .2 All new cylinders to be Schlage “G” keyway
- .3 Provide two keys per change, five masterkeys per master, five grandmasterkeys
- .4 Finish hardware supplier will submit a key schedule for owners approval
- .5 All keys must be hand delivered directly to the owner, No permanent keys are to be delivered to the jobsite.

**PART 3 EXECUTION**

**3.01 Examination**

- .1 Before supplying any materials, check all contract documents, shop drawings, details and field dimensions and conditions to ensure that the listed hardware is suitable for intended use. Inform the Consultant of any inaccuracies or discrepancies in writing.

**3.02 Installation**

- .1 Provide instruction and templates to fabricators and to the hardware installers.
- .2 All hardware is to be adjusted for proper closing and latching.
- .3 Install all closers with thru-bolts and template to the degree of opening listed in the schedule  
Adjust door closers for proper strength, back check, closing and latching speeds.
- .4 Adjust all hardware upon completion of the HVAC balancing and testing
- .5 All hardware is to be installed by skilled tradesmen to the manufacturer’s installation templates and instructions at the following mounting heights unless noted otherwise in the hardware schedule.

Latch Sets -	40-5/16”
Deadbolts	40 5/16”
Exit Devices-	39-13/16”
Door pulls	42”

All dimensions are from the centreline of the hardware from bottom of frame unless noted otherwise.

**(PROPOSED) FINISH HARDWARE SCHEDULE for  
Our Lady of Fatima School Phase 3 Renewal  
545 Baldoon Road,  
Chatham, Ont.**

**Project Number:** 300709

**3.03 Installation of Electronic Products**

Following to be included in Finish Hardware Contract:

Installation of Auto Operators

Supply and installation of 24V wiring from operator to wall switches, current transfer, electric strikes.

Termination of 24V at all of the above to be co-ordinated with General Contractor and Electrical Contractor.

**Related items by others:**

120V 5amp power to operators, power supplies

Preparation of recessed boxes for wall switches and card readers

Conduit for wall switches, card readers

**3.04 Adjustment**

- .1 Verify that the installed hardware functions properly.
- .2 Instruct installers of requirements or procedures for adjustments.
- .3 Provide a written inspection report for all hardware installation deficiencies.

**(PROPOSED) FINISH HARDWARE SCHEDULE for  
Our Lady of Fatima School Phase 3 Renewal  
545 Baldoon Road,  
Chatham, Ont.**

**Project Number:** 300709

<u>Opening</u>	<u>Hdw Heading</u>	<u>Opening</u>	<u>Hdw Heading</u>
D100	1	DV01.1	30
D100.1	2	DV01.2	31
D100.2	2	DV01.3	32
D100A	3	DV01.4	33
D101	4	D112.E	34
D102	3	D114.E	34
D103	5	D116.E	34
D104	6	D122.E	34
D104A	7	D124.E	34
D104B	7	D126.E	34
D105	8	D128.E	34
D109	9	D130.E	34
D109.2	9	D133.E	35
D109A	10	D134.E	34
D109B	10	D136.E	34
D113.1	12	D138.E	34
D113.2	12	D162.E	35
D113A	13	D162A.E	35
D113A.1	14	D162B.E	36
D113B	15	D164.E	35
D113C	16	D164A.E	35
D113D	16	D164B.E	36
D113.3	17		
D115	18		
D118	21		
D120	21		
D124	20		
D132	22		
D144	11		
D144A	11		
D150	23		
D154	22		
D159	24		
D159A	25		
D160B	25		
D160	26		
D160A	27		
D166	28		
D168	28		
D170	28		
D172	28		
D-CR6	29		
D-CR10	29		

**(PROPOSED) FINISH HARDWARE SCHEDULE for  
Our Lady of Fatima School Phase 3 Renewal  
545 Baldoon Road,  
Chatham, Ont.**

**Project Number:** 300709

**HEADING #1**

Opening Description: 982 x 2150 x 45 Alum Dr / Alum Fr

1 Single Door #D100	Atrium 01 to Office	100°	LH
3 Hinges	5BB1HW 114 x 114	652	CIV
1 Lockset	ND94PD RHO 50-210-GMK G KEYWAY	626	CSC
1 Closer	4040 XP HEDA TB	689	CLC
1 Wall Stop	GSH 250	C26D	CGA

**HEADING #2**

Opening Description: 982 x 2150 x 45 Alum Dr / Alum Fr

1 Single Door #D100.1	Atrium 01 to Office	100°	RH
1 Single Door #D100.2	Office to Conference 101	100°	LH
6 Hinges	5BB1HW 114 x 114	652	CIV
2 Lockset	ND94PD RHO 50-210-GMK G KEYWAY	626	CSC
2 Closer	4040 XP HEDA TB	689	CLC
2 Wall Stop	GSH 250	C26D	CGA

**HEADING #3**

Opening Description: 915 x 2032 x 45 HMD / HMF

1 Single Door #D100A	Office to VP Office 100A	100°	LH
1 Single Door #D102	Office to Principal Office 102	100°	RH
6 Hinges	5BB1 114 x 102	652	CIV
2 Lockset	ND94PD RHO 50-210-GMK G KEYWAY	626	CSC
2 Kick Plate	GSH 80A 204 x 877 TEK	C32D	CGA
2 Wall Stop	GSH 250	C26D	CGA

**HEADING #4**

Opening Description: 965 x 2150 x 45 Alum Dr / Alum Fr

1 Single Door #D101	Atrium 01 to Conference 101	100°	LH
3 Hinges	5BB1HW 114 x 114	652	CIV
1 Lockset	ND94PD RHO 50-210-GMK G KEYWAY	626	CSC
1 Closer	4040 XP HEDA TB	689	CLC
1 Wall Stop	GSH 250	C26D	CGA

**(PROPOSED) FINISH HARDWARE SCHEDULE for  
Our Lady of Fatima School Phase 3 Renewal  
545 Baldoon Road,  
Chatham, Ont.**

**Project Number:** 300709

**HEADING #5**

Opening Description: 915 x 2032 x 45 HMD / HMF

1 Single Door #D103	Office to Work Room 103	100°	RH
3 Hinges	5BB1 114 x 102	652	CIV
1 Lockset	ND94PD RHO 50-210-GMK G KEYWAY	626	CSC
1 Kick Plate	GSH 80A 204 x 877 TEK	C32D	CGA
1 Wall Stop	GSH 250	C26D	CGA

**HEADING #6**

Opening Description: 965 x 2032 x 45 HMD / HMF

1 Single Door #D104	Corridor CR4 to Staff Room 104	100°	RH
3 Hinges	5BB1HW 114 x 114	652	CIV
1 Lockset	ND92PD RHO 50-210-GMK G KEYWAY	626	CSC
1 Closer	4040 XP EDA TB	689	CLC
1 Kick Plate	GSH 80A 204 x 927 TEK	C32D	CGA
1 Wall Stop	GSH 250	C26D	CGA

**HEADING #7**

Opening Description: 915 x 2032 x 45 HMD / HMF

1 Single Door #D104A	Staff Room 104 from Washroom 104A	100°	LHR
1 Single Door #D104B	Staff Room 104 from Washroom 104B	100°	LHR
6 Hinges	5BB1 114 x 102	652	CIV
2 Privacy Set	ND40S RHO	626	CSC
2 Overhead Stop/Holder	550S-H	652	CGL
2 Kick Plate	GSH 80A 204 x 877 TEK	C32D	CGA

**HEADING #8**

Opening Description: 915 x 2150 x 45 Alum Dr / Alum Fr

1 Single Door #D105	Atrium 01 to Meeting Room 105	100°	LH
3 Hinges	5BB1 114 x 102	652	CIV
1 Lockset	ND94PD RHO 50-210-GMK G KEYWAY	626	CSC
1 Wall Stop	GSH 250	C26D	CGA

**(PROPOSED) FINISH HARDWARE SCHEDULE for  
Our Lady of Fatima School Phase 3 Renewal  
545 Baldoon Road,  
Chatham, Ont.**

**Project Number:** 300709

**HEADING #9**

Opening Description: 965 x 2032 x 45 HMD / HMF

1	Single Door #D109	Atrium 01 from Learning Commons 109	100°	RHR
1	Single Door #D109.2	Corridor CR3 from Learning Commons 109	100°	LHR
6	Hinges	5BB1HW 114 x 114	652	CIV
2	Exit Device	98EO 299 (BLK) 48"	US26D	CVO
1	Exit Device Trim	996L-R&V 06-LEVER	LHR US26D	CVO
1	Exit Device Trim	996L-R&V 06-LEVER	RHR US26D	CVO
2	Rim Cylinder	20-021 50-210-GMK G KEYWAY	626	CSC
2	Closer	4040 XP CUSH TB	689	CLC
2	Kick Plate	GSH 80A 204 x 927 TEK	C32D	CGA
2	Wall Stop	GSH 250	C26D	CGA

**HEADING #10**

Opening Description: 1829 x 2134 x 45 Alum Dr / Alum Fr

1	Single Sliding Door #D109A	Learning Commons 109 to Study Room 109A		SSLH
1	Single Sliding Door #D109B	Learning Commons 109 to Study Room 109A		SSRH
2	Mortise Cylinder	20-013 28 50-210-GMK G KEYWAY	626	CSC
2	Cylinder Turn Knob	124-41-101	32D	CSA

Note: Balance of hardware by aluminum door supplier

**HEADING #11**

Opening Description: 915 x 2032 x 45 HMD / HMF

1	Single Door #D144	Corridor CR2 to Custodian 144	100°	LH
1	Single Door #D144A	Custodian 144 to Storage 144A	100°	LH
6	Hinges	5BB1 114 x 102	652	CIV
2	Lockset	ND96PD RHO 50-210-GMK G KEYWAY	626	CSC
2	Closer	4040 XP EDA TB	689	CLC
2	Kick Plate	GSH 80A 204 x 877 TEK	C32D	CGA
2	Wall Stop	GSH 250	C26D	CGA

**(PROPOSED) FINISH HARDWARE SCHEDULE for  
Our Lady of Fatima School Phase 3 Renewal  
545 Baldoon Road,  
Chatham, Ont.**

**Project Number:** 300709

**HEADING #12**

Opening Description: 2 - 965 x 2150 x 45 HMD / HMF

1 Pair Doors #D113.1	Atrium 01 from Gymnasium 113		100°	LHR\RHR
1 Pair Doors #D113.2	Atrium 01 from Gymnasium 113		100°	LHR\RHR
16 Hinges	5BB1HW 114 x 114		652	CIV
4 Exit Device	9849EO 48" 70" Door LBL		US26D	CVO
2 Exit Device Trim	996L-R&V 06-LEVER	LHR	US26D	CVO
2 Exit Device Trim	996L-R&V 06-LEVER	RHR	US26D	CVO
4 Rim Cylinder	20-021 50-210-GMK G KEYWAY		626	CSC
2 Closer	4021 REG	LH	689	CLC
4 Adapter Plate	4020 18G		689	CLC
2 Closer	4021 REG	RH	689	CLC
4 Overhead Stop/Holder	550S-H		652	CGL

**HEADING #13**

Opening Description: 1@ 1065, 1@ 460 x 2080 x 45 HMD / HMF

1 Pair Doors #D113A	Gymnasium 113 to Gym Storage 113A		100°	LHA
6 Hinges	5BB1HW 114 x 114		652	CIV
2 Flush Bolt	GSH 401 305		C26D	CGA
1 Deadlock	B663P 50-210-GMK G KEYWAY		626	CSC
1 Flush Pull	2632 SPECIAL SIZE 305 X 508 X CYLINDER CUTOUT		C32D	CGA
1 Door Pull	GSH 4312-2 305 C.C. #2		C32D	CGA
1 Overhead Stop/Holder	550S-H		652	CGL
1 Kick Plate	GSH 80A 204 x 1032 STMS		C32D	CGA
1 Kick Plate	GSH 80A 204 x 433 STMS		C32D	CGA
1 Wall Stop	GSH 250		C26D	CGA

Note: "Z" Astragal by hollow metal door supplier

**HEADING #14**

Opening Description: 965 x 2032 x 45 HMD / HMF

1 Single Door #D113A.1	Corridor CR12 from Gym Storage 113A		100°	RHR
3 Hinges	5BB1HW 114 x 114		652	CIV
1 Lockset	ND96PD RHO 50-210-GMK G KEYWAY		626	CSC
1 Overhead Stop/Holder	550S-H		652	CGL
1 Kick Plate	GSH 80A 204 x 927 TEK		C32D	CGA
1 Wall Stop	GSH 250		C26D	CGA



**(PROPOSED) FINISH HARDWARE SCHEDULE for  
Our Lady of Fatima School Phase 3 Renewal  
545 Baldoon Road,  
Chatham, Ont.**

**Project Number:** 300709

**HEADING #15**

Opening Description: 2 - 915 x 2134 x 45 HMD / HMF

1 Pair Doors #D113B	Gymnasium 113 from Chair Storage 113B	110°	RHRA
6 Hinges	5BB1 114 x 102	652	CIV
1 Deadlock	B663P 50-210-GMK G KEYWAY	626	CSC
1 Flush Pull	2632 SPECIAL SIZE 305 X 508 X CYLINDER CUTOUT	C32D	CGA
2 Overhead Stop/Holder	550S-H	652	CGL
2 Kick Plate	GSH 80A 204 x 877 TEK	C32D	CGA

Note: "Z" Astragal by hollow metal door supplier

**HEADING #16**

Opening Description: 965 x 2150 x 45 HMD / HMF

1 Single Door #D113C	Gymnasium 113 to Change Room 113C	100°	RH
1 Single Door #D113D	Gymnasium 113 to Change Room 113D	100°	LH
6 Hinges	5BB1HW 114 x 114	652	CIV
2 Deadlock	B663P 50-210-GMK G KEYWAY	626	CSC
2 Flush Pull	2632 SPECIAL SIZE 305 X 508 X CYLINDER CUTOUT	C32D	CGA
2 Door Pull	GSH 4312-2 305 C.C. #2	C32D	CGA
2 Closer	4040 XP HEDA TB	689	CLC
2 Kick Plate	GSH 80A 204 x 927 TEK	C32D	CGA
2 Wall Stop	GSH 250	C26D	CGA

**HEADING #17**

Opening Description: 965 x 2032 x 45 HMD / HMF

1 Single Door #D113.3	Corridor CR10 from Gymnasium 113	100°	RHR
3 Hinges	5BB1HW 114 x 114	652	CIV
1 Exit Device	98EO 299 (BLK) 48"	US26D	CVO
1 Exit Device Trim	996L-R&V 06-LEVER	RHR US26D	CVO
1 Rim Cylinder	20-021 50-210-GMK G KEYWAY	626	CSC
1 Closer	4040 XP EDA TB	689	CLC
1 Kick Plate	GSH 80A 204 x 927 TEK	C32D	CGA
1 Wall Stop	GSH 250	C26D	CGA

**(PROPOSED) FINISH HARDWARE SCHEDULE for  
Our Lady of Fatima School Phase 3 Renewal  
545 Baldoon Road,  
Chatham, Ont.**

**Project Number:** 300709

**HEADING #18**

Opening Description: 965 x 2150 x 45 HMD / HMF

1 Single Door #D115	Corridor CR12 to Custodian 115	100°	RH
3 Hinges	5BB1HW 114 x 114	652	CIV
1 Lockset	ND96PD RHO 50-210-GMK G KEYWAY	626	CSC
1 Closer	4040 XP EDA TB	689	CLC
1 Kick Plate	GSH 80A 204 x 927 TEK	C32D	CGA
1 Wall Stop	GSH 250	C26D	CGA

**HEADING #20**

Opening Description: 915 x 2032 x 45 HMD / HMF

1 Single Door #D124	Corridor CR12 to Sprinkler Room 124	100°	RH
3 Hinges	5BB1 114 x 102	652	CIV
1 Lockset	ND96PD RHO 50-210-GMK G KEYWAY	626	CSC
1 Closer	4040 XP EDA TB	689	CLC
1 Kick Plate	GSH 80A 204 x 877 TEK	C32D	CGA
1 Wall Stop	GSH 250	C26D	CGA

**HEADING #21**

Opening Description: 915 x 2032 x 45 HMD / HMF

1 Single Door #D118	Corridor CR12 to Washroom 118	90°	LH
1 Single Door #D120	Corridor CR12 to Washroom 120	90°	RH
6 Hinges	5BB1 114 x 102	652	CIV
2 Deadlock	B663P 50-210-GMK G KEYWAY	626	CSC
2 Flush Pull	2632 SPECIAL SIZE 305 X 508 X CYLINDER CUTOUT	C32D	CGA
2 Door Pull	GSH 4312-2 305 C.C. #2	C32D	CGA
2 Closer	4040 XP HEDA TB	689	CLC
2 Kick Plate	GSH 80A 204 x 877 TEK	C32D	CGA
2 Wall Stop	GSH 250	C26D	CGA

**HEADING #22**

Opening Description: 915 x 2032 x 45 HMD / HMF

1 Single Door #D132	Corridor CR5 to Resource 132	100°	RH
1 Single Door #D154	Corridor CR10 to Resource 154	100°	RH
6 Hinges	5BB1 114 x 102	652	CIV
2 Lockset	ND94PD RHO 50-210-GMK G KEYWAY	626	CSC
2 Kick Plate	GSH 80A 204 x 877 TEK	C32D	CGA
2 Wall Stop	GSH 250	C26D	CGA

**(PROPOSED) FINISH HARDWARE SCHEDULE for  
Our Lady of Fatima School Phase 3 Renewal  
545 Baldoon Road,  
Chatham, Ont.**

**Project Number:** 300709

**HEADING #23**

Opening Description: 915 x 2032 x 45 HMD / HMF

1 Single Door #D150	Corridor CR6 to Mechanical 150	100°	LH
3 Hinges	5BB1 114 x 102	652	CIV
1 Lockset	ND96PD RHO 50-210-GMK G KEYWAY	626	CSC
1 Closer	4040 XP EDA TB	689	CLC
1 Kick Plate	GSH 80A 204 x 877 TEK	C32D	CGA
1 Wall Stop	GSH 250	C26D	CGA

**HEADING #24**

Opening Description: 965 x 2150 x 45 HMD / HMF

1 Single Door #D159	Corridor CR11 to Storage 159	100°	LH
3 Hinges	5BB1HW 114 x 114	652	CIV
1 Lockset	ND94PD RHO 50-210-GMK G KEYWAY	626	CSC
1 Kick Plate	GSH 80A 204 x 927 TEK	C32D	CGA
1 Wall Stop	GSH 250	C26D	CGA

**HEADING #25**

Opening Description: 965 x 2150 x 45 HMD / HMF

1 Single Door #D159A	Corridor CR11 to Staff Washroom 159A	100°	RH
1 Single Door #D160B	Corridor CR11 to Staff Washroom 160B	100°	LH
6 Hinges	5BB1HW 114 x 114	652	CIV
2 Privacy Set	ND40S RHO	626	CSC
2 Kick Plate	GSH 80A 204 x 927 TEK	C32D	CGA
2 Wall Stop	GSH 250	C26D	CGA

**HEADING #26**

Opening Description: 965 x 2032 x 45 HMD / HMF

1 Single Door #D160	Corridor CR11 to FDK Classroom 160	100°	RH
3 Hinges	5BB1 114 x 102	652	CIV
1 Lockset	ND94PD RHO 50-210-GMK G KEYWAY	626	CSC
1 Kick Plate	GSH 80A 204 x 927 TEK	C32D	CGA
1 Wall Stop	GSH 250	C26D	CGA

**(PROPOSED) FINISH HARDWARE SCHEDULE for  
Our Lady of Fatima School Phase 3 Renewal  
545 Baldoon Road,  
Chatham, Ont.**

**Project Number:** 300709

**HEADING #27**

Opening Description: 915 x 2032 x 45 HMD / HMF

1 Single Door #D160A	FDK Classroom 160 to Washroom 160A	100°	RH
3 Hinges	5BB1HW 114 x 114	652	CIV
1 Privacy Set	ND40S RHO	626	CSC
1 Kick Plate	GSH 80A 204 x 877 TEK	C32D	CGA
1 Wall Stop	GSH 250	C26D	CGA

**HEADING #28**

Opening Description: 965 x 2032 x 45 HMD / HMF

1 Single Door #D166	Corridor CR12 to Classroom 166	100°	RH
1 Single Door #D168	Corridor CR12 to Classroom 168	100°	LH
1 Single Door #D170	Corridor CR12 to Classroom 170	100°	RH
1 Single Door #D172	Corridor CR12 to Classroom 170	100°	LH
12 Hinges	5BB1HW 114 x 114	652	CIV
4 Lockset	ND94PD RHO 50-210-GMK G KEYWAY	626	CSC
4 Kick Plate	GSH 80A 204 x 927 TEK	C32D	CGA
4 Wall Stop	GSH 250	C26D	CGA

**HEADING #29**

Opening Description: 2 - 1180 x 2134 x 45 HMD / HMF

1 Double Egress Door #D-CR6	Corridor CR2 to/from Corridor CR6	100°	DELHR
1 Double Egress Door #D-CR10	Corridor CR2 to/from Corridor CR6	100°	DELHR
12 Hinges	5BB1HW 114 x 114	652	CIV
4 Fire Exit Device	9849EO-F 48" 7'0" Door LBLAFL	US26D	CVO
4 Closer	4040 XP EDA TB	689	CLC
8 Kick Plate	GSH 80A 204 x 927 TEK	C32D	CGA
2 Steel Astragal	W-8SP 2150		CKN

**(PROPOSED) FINISH HARDWARE SCHEDULE for  
Our Lady of Fatima School Phase 3 Renewal  
545 Baldoon Road,  
Chatham, Ont.**

**Project Number:** 300709

**HEADING #30**

Opening Description: 1005 x 2134 x 57 Alum Dr / Alum Fr

1	Single Door #DV01.1	Exterior from Vestibule V01	110°	RHR
1	Hinges	5BB1HW 114 x 114 TW8	630	CIV
2	Hinges	5BB1HW 114 x 114 NRP	630	CIV
1	Exit Device	QEL 98EO 299 (BLK) 48"	US26D	CVO
1	Cylinder	20-709-XP	626	CSC
1	Door Pull	1180-2 12 C.C. #2 (2-1/4" THICK) 32D		CGA
1	Door Operator	HA-8P-1 41" CLEAR LH\PUSH		DIT1
2	Surface Box	CM-43CBL		CAMD
2	Wall Switch-Logo	CC-0045-4-ENTDOO-05		CAMD
1	Overhead Stop/Holder	550S-H	652	CGL
1	Door Sweep	W-24S 1067	CA	CKN
1	Threshold	CT-10 1067	AL	CKN
1	ELECTRICAL	ELEVATION		PAHS
1	Labour to	INSTALL BARRIER FREE OPERATOR AND ACCESSORIES		PAHS
1	Labour	INSTALL LOW VOLTAGE WIRE		PAHS

Note: Weatherstripping by aluminum door supplier

Access control by Division 28 10 00

**HEADING #31**

Opening Description: 1005 x 2134 x 57 Alum Dr / Alum Fr

1	Single Door #DV01.2	Exterior from Vestibule V01	110°	LHR
1	Hinges	5BB1HW 114 x 114 TW8	630	CIV
2	Hinges	5BB1HW 114 x 114 NRP	630	CIV
1	Exit Device	QEL 98EO 299 (BLK) 48"	US26D	CVO
1	Cylinder	20-709-XP	626	CSC
1	Door Pull	1180-2 12 C.C. #2 (2-1/4" THICK) 32D		CGA
1	Adapter Plate	4020 18G	689	CLC
1	Closer	4021 REG	RH 689	CLC
1	Overhead Stop/Holder	550S-H	652	CGL
1	Door Sweep	W-24S 1067	CA	CKN
1	Threshold	CT-10 1067	AL	CKN
1	ELECTRICAL	ELEVATION		PAHS

Note: Weatherstripping by aluminum door supplier

Access control by Division 28 10 00

**(PROPOSED) FINISH HARDWARE SCHEDULE for  
Our Lady of Fatima School Phase 3 Renewal  
545 Baldoon Road,  
Chatham, Ont.**

**Project Number:** 300709

**HEADING #32**

Opening Description: 1005 x 2150 x 45 Alum Dr / Alum Fr

1 Single Door #DV01.3	Exterior from Vestibule V01		110°	RHR
3 Hinges	5BB1HW 114 x 114	652		CIV
1 Dummy Push Bar	350 48"	US26D		CVO
1 Door Pull	1180-2 12 C.C. #2 (2-1/4" THICK) 32D			CGA
1 Adapter Plate	4020 18G	689		CLC
1 Door Closer	4021 REG	LH 689		CLC
1 Overhead Stop/Holder	550S-H	652		CGL

**HEADING #33**

Opening Description: 1005 x 2150 x 45 Alum Dr / Alum Fr

1 Single Door #DV01.4	Exterior from Vestibule V01		110°	RHR
4 Hinges	5BB1HW 114 x 114	652		CIV
1 Dummy Push Bar	350 48"	US26D		CVO
1 Door Pull	1180-2 12 C.C. #2 (2-1/4" THICK) 32D			CGA
1 Door Operator	HA-8P-1 41" CLEAR LH\PUSH			DIT1
2 Surface Box	CM-43CBL			CAMD
2 Wall Switch-Logo	CC-0045-4-ENTDOO-05			CAMD
1 Overhead Stop/Holder	550S-H	652		CGL
1 ELECTRICAL	ELEVATION			PAHS
1 Labour to	INSTALL BARRIER FREE OPERATOR AND ACCESSORIES			PAHS
1 Labour	INSTALL LOW VOLTAGE WIRE			PAHS

***Description of Operation:***

*Door is normally closed.*

*Use of either wall switch opens door automatically.*

**(PROPOSED) FINISH HARDWARE SCHEDULE for  
Our Lady of Fatima School Phase 3 Renewal  
545 Baldoon Road,  
Chatham, Ont.**

**Project Number:** 300709

**HEADING #34**

Opening Description: 915 x 2032 x 45 Ex Door & Frame

1 Single Door #D112.E	Corridor CR4 to Classroom 112	RH
1 Single Door #D114.E	Corridor CR4 to Classroom 114	LH
1 Single Door #D116.E	Corridor CR4 to Classroom 116	LH
1 Single Door #D122.E	Corridor CR3 to Classroom 122	LH
1 Single Door #D124.E	Corridor CR3 to Classroom 124	LH
1 Single Door #D126.E	Corridor CR5 to Classroom 126	LH
1 Single Door #D128.E	Corridor CR5 to Classroom 128	LH
1 Single Door #D130.E	Corridor CR5 to Classroom 130	RH
1 Single Door #D134.E	Corridor CR5 to Classroom 134	LH
1 Single Door #D136.E	Corridor CR5 to Classroom 136	LH
1 Single Door #D138.E	Corridor CR5 to Classroom 138	LH

33 Hinges	5BB1 114 x 102	652	CIV
11 Lockset	ND94PD RHO 50-210-GMK G KEYWAY	626	CSC
11 Kick Plate	GSH 80A 204 x 877 TEK	C32D	CGA
11 Wall Stop	GSH 250	C26D	CGA

**HEADING #35**

Opening Description: 915 x 2134 x 45 Ex Door & Frame

1 Single Door #D133.E	Corridor CR5 to Storage 133	RH
1 Single Door #D162.E	Corridor CR11 to FDK Classroom 162	LH
1 Single Door #D162A.E	FDK Classroom 162 to Closet 162A	RH
1 Single Door #D164.E	Corridor CR11 to FDK Classroom 164	LH
1 Single Door #D164A.E	FDK Classroom 164 to Closet 164A	RH

15 Hinges	5BB1 114 x 102	652	CIV
5 Lockset	ND94PD RHO 50-210-GMK G KEYWAY	626	CSC
5 Kick Plate	GSH 80A 204 x 877 TEK	C32D	CGA
5 Wall Stop	GSH 250	C26D	CGA

**HEADING #36**

Opening Description: 762 x 2032 x 45 Ex Door & Frame

1 Single Door #D162B.E	FDK Classroom 162 to Washroom 162B	LH
1 Single Door #D164B.E	FDK Classroom 164 to Washroom 164B	RH

6 Hinges	5BB1 114 x 102	652	CIV
2 Lockset	ND94PD RHO 50-210-GMK G KEYWAY	626	CSC
2 Kick Plate	GSH 80A 204 x 877 TEK	C32D	CGA
2 Wall Stop	GSH 250	C26D	CGA

## **PART 1 - GENERAL**

### **1.01 DESCRIPTION**

.1 General Requirements

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

### **1.02 SECTION INCLUDES**

.1 Glass and glazing for sections referencing this Section for products and installation.

.2 Sealed insulating glass units (IGU)

.3 Glass films (FILM)

.4 Glass films Vision Strips (VS)

.5 Back Painted Glass (BPG)

### **1.03 RELATED REQUIREMENTS**

.1 Section 08 11 00 Metal Doors and Frames

.2 Section 08 44 00 Aluminum Framed Glazing Systems

### **1.04 REFERENCE STANDARDS**

.1 Canada General Standards Board

.1 CAN/CGSB-12.2 – M91(2017) Flat, Clear Sheet Glass

.2 CAN/CGSB-12.1-2017, Safety Glazing

.3 CAB/CGSB-12.3-M91(R2017), Flat, Clear Float Glass.

.4 CAN/CGSB-12.8-2017, Insulating Glass Units.

.5 CAN/CGSB-12.10-M76, Glass, Light & Heat Reflecting

.6 CGSB Specification 19-GP-5M, Sealing Compound, One Component, Acrylic Base, Solvent Curing.

.7 CAN/CGSB-19.13-M87, Sealing Compound, One Component, Elastomeric, Chemical Curing.

.8 CAN/CGSB-19.24-M90, Sealing Compound, Multi-Component, Chemical Curing.

### **1.04 PERFORMANCE REQUIREMENTS**

.1 Size glass to withstand dead loads and positive and negative live loads acting normal to plane of glass as calculated in accordance with the Ontario Building Code and to withstand design pressures specified in applicable sections.



- .2 Where glass extends from 1070 mm to floor, design lateral loads, in addition to other load requirements, in accordance with applicable codes.
- .3 Unless otherwise specified, limit glass deflection to L/175 or flexure limit of glass with full recovery of glazing materials, whichever is less.
- .4 Provide tempered, laminated, laminated-heat strengthened and heat soaked glass and related fittings and hardware in doors, side lites, screens, storefronts, glazed curtain walls, and glazed guard rails in accordance with applicable codes and as indicated or scheduled.
  - .1 Unless otherwise specified or indicated, provide tempered glass where sill of glass is less than 300 mm above finished floor.
  - .2 Unless otherwise specified or indicated, provide laminated-heat strengthened and heat soaked glass where glass is a guard.
- .5 Sealed Insulating Glass Units: Provide units free of the following characteristics:
  - .1 Appearance of condensation between panes.
  - .2 Obstruction of vision at unit perimeter.
  - .3 More than 10 percent measurable deterioration of thermal transmission or shading coefficient values.
  - .4 Chipping, cracking, or breakage of glass panes occurring due to manufacturing defects or under specified service conditions.
  - .5 Migration of edge spacer.

### **1.03 SUBMITTALS**

- .1 Submit Samples in accordance with section 01 30 00
- .2 Submit two 300 mm x 300mm samples of each specified type of glass, including tinted glass.

### **1.04 SITE CONDITIONS**

- .1 Environmental Conditions
  - 1. Proceed with glazing only when glazing surfaces are accumulating no moisture from rain, mist or condensation.
  - 2. When temperature of glazing surface is below 4°C, obtain approval of glazing methods and protective measures which will be used during glazing operations.

## 1.05 WARRANTY

- .1 Extended Warranty, Insulating Glass Units
  - .1 Warrant insulating glass covering the period for four years beyond the expiration of the warranty period specified in the General Conditions to the Contract. Without restricting the generality of warranty, defects shall include
    - .1 warping of spacer blocks;
    - .2 dust or film of fogging formation on internal glass surfaces resulting from any cause except glass breakage;
    - .3 glass breakage except form impact by solid objects, or cause by failure of unit edge binding or of framing within limitations of specified performance criteria.
  - .2 Contractor agrees to make good defects and replace defective units. Replacement shall include removal of defective unit and installation of replacement unit. Fogging of glass inside sealed units will be considered sufficient evidence of loss of seal.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- .1 Label each piece of glass, and each container of glazing compound or sealant to indicate manufacturer, type, and quality. Leave labels on glass until final cleaning.

### 2.02 GLASS

- .1 Single Glazed Interior Units
  - .1 Warm edge,
  - .2 IGMAC Certified.
  - .3 Float
  - .4 Glass Thickness: 6mm minimum or as required to meet design requirements.
  - .5 Glass Type A: Tempered as required to meet design requirements.
  - .6 Glazing film to architects selection where noted.
  - .7 Safety Glass Type B: Tempered 8mm with interlayer and 8mm tempered. Interlayer laminate white frosted to be translucent to architects selection where noted.
  - .8 Safety Glass Type C: Tempered 12mm c/w polished edges. Film to architects selection up to three types.
- 2 Insulating Glass Units:
  - .1 Insulating Glass to: CAN/CGSB – 12.8 Double unit. Glass to : CAN/CGSB -12.1 – Safety Glass.

- .2 Warm edge, hermetically sealed, minimum 6mm each lite. Minimum 13 mm space – argon filled double sealed (primary to be polyisobutylene, secondary to be polysulphide or structural silicone glazed units), desiccant filled Bayform “Thermal Edge” spacer (black) with splice connectors at corner of each glass unit.
  - .1 IGMAC Certified.
  - .2 Low E coating on surface #3.
  - .3 Acceptable Products
  - .4 AGC/AFGD'Comfort Ti-AC 40'
  - .5 PPG 'Solarban 60'
  - .6 Cardinal 'LoE2 -172'
  - .7 Versalux
  - .8 Viracon 'Solarscreen 2000 VE 1-2M'
- .3 Glass Thickness: 6mm minimum or as required to meet design requirements.
- .4 Glass Type: Annealed, heat strengthened, or tempered as required to meet design requirements.
- .3 Performance Requirements:
  - .1 Visible light: 68 - 70%.
  - .2 Winter night-time Metric U-value = 1.7
  - .3 Shading Coefficient: within 0.43 - 0.46.
  - .4 Solar heat gain coefficient: within 0.37 - 0.40.
  - .5 Glass Colour: Tinted, as selected by the architect unless otherwise noted.
  - .6 Type 1 exterior lite: tinted, tempered, body colour by architect.
  - .7 interior lite: clear, low emissivity coating on third surface
  - .8 Type 2 exterior lite: tinted, tempered, body colour by architect
  - .9 interior lite: clear, tempered, low emissivity coating on third surface of interior lite.
  - .10 Type 3 Spandrel Glass to CAN/CGSB – 12.9, Opaque (opacicoart) Custom Colour, min. 6mm. Type 1 – Tempered, Class A float glass, silicone coated, form I –insulating Glass.
- .4 Annealed (float) glass:
  - .1 Clear, annealed glass, 6mm thick minimum as required to meet design requirements. To CAN/CGSB-12.3. Glazing Quality. As and where noted - Acid Etched or sand blasted with clear coat finish.

### 2.03 HEAT TREATED SAFETY GLASS

- .1 Tempered glass to meet specified requirements of CAN/CGSB-12.1 for Types 1 and 2 transparent and tinted, Herculite K, by PPG Canada Inc.
- .2 Tempering shall be performed in a convection type oven.
- .3 Tempering and heat strengthened glass shall be treated prior to application of reflective or paint coatings.
- .4 Tempered glass tempered to minimize distortion. Roll-wave distortion not to exceed 0.127mm from peak to valley.
- .5 Orient tempered glass in manner to achieve consistent appearance.
- .6 Thickness: 6mm

#### 2.04 MIRRORS:

- .1 Annealed glass to ASTM C 1503.
- .2 Grade: Mirror cut size.
- .3 Quality: Mirror select quality, allowable distortion shall be less than 80 degrees vision interference angle to ASTM 1036-01.
- .4 Colour: Clear
- .5 Thickness: 6mm.
- .6 Exposed edges shall be ground and polished.
- .7 Products supplied by AFG Glass Inc. are considered as acceptable alternatives.

#### 2.05 GLAZING ACCESSORIES

- .1 Glazing Gaskets: Preformed, EPDM, Silicone compatible, to ASTM C864 and ASTM C1115. Eternaflex by Gibson-Homans Co., Parflex by Parr Sealants, 303 Glazing Tape by P.T.I. Sealants Limited, or Tremco 440 by Tremco (Canada) Ltd.
- .2 Setting Blocks: Neoprene, of durometer hardness of Shore "A" 40 to 50.
- .3 Spacer Shims: Neoprene, of durometer hardness of Shore "A" 40 to 50.
- .4 Safety Film: 14 mil. Security Film, Armourcoat Glass Guard as supplied by Ultimate Reflections - Contact: Scott Hagle (519)476-8584 or (519)690-2636.
- .5 Glass Clamps: CRL - Z series glass clamps 10mm - 12mm glass thickness. Brushed Nickle as supplied by C.R. Laurence.

#### 2.06 GLAZING SEALANTS

- .1 Any of the following specified sealants as utilized for approved glazing system will be acceptable.
- .2 Incorporate sealants as incorporated in manufacturer's standard glazing systems as approved.
- .3 Ensure that glazing sealants are completely compatible with insulating glass unit sealants.
- .4 One Part Acrylic Glazing Sealant: To meet specified requirements of CGSB Specification 19-GP-5, in glazing hardness grade.
- .5 One Part Silicone Glazing Sealant: To meet specified requirements of CAN/CGSB-19.13, in glazing hardness grade.
- .6 One Part Polysulphide Glazing Sealant: To meet specified requirements of CAN/CGSB-19.13, in glazing hardness grade.
- .7 Two Part Polysulphide Sealant: To meet specified requirements of CAN/CGSB-19.24, in glazing hardness grade.

### PART 3 - EXECUTION

#### 3.01 INSTALLATION

- .1 General
  - .1 Install materials in accordance with manufacturer's specification, and ensure that each material in a glazing system is compatible with the others.
  - .2 Ensure that projections have been removed from rebates and that sufficient width and depth clearances are provided for specified glass.

- .3 Remove stops and store during glazing to avoid damage to them.
- .4 Remove excess glazing sealants from adjacent surfaces, including glass, during working life of material, and by methods not harmful to the surfaces.
- .5 Collect broken glass and cuttings in boxes and remove from site.
- .6 Do not set any glass without glazing beds or gaskets.

### **3.02 GLASS**

- .1 Install glass in thicknesses to comply with Ontario Building Code requirements.
- .2 Cut glass to fit openings and to allow clearances which will ensure that glass is held firmly in place and is not subjected to stresses.
- .3 Ensure that glass edges are clean cut, not nipped or seamed.
- .4 Do not cut or nip tempered glass to fit. Replace oversize or flared lights with entirely new units of proper dimensions.

### **3.03 GLAZING AND PREPARATION METHODS**

- .1 Clean glazing rebate surfaces of all traces of dirt, dust, or other contaminants.
- .2 Use glazing sealants without addition of thinners and from only containers with seals unbroken until opened for use.
- .3 Prime all glass rebates for materials affected.
- .4 When glazing commences, arrange for the presence of a technical representative of the glazing materials manufacturer to advise on procedures and methods.
- .5 Ensure that glazing sealants and tapes are in full contact with glazing surfaces.
- .6 Tool gunned sealants with a slight bevel away from glass faces.

### **3.04 POSITIONING GLASS**

- .1 Support glass, in lights of over 2540 mm perimeter, by two setting blocks, one at each quarter point of each light.
- .2 Center glass in rebates. Use spacer shims in lights of over 2540 mm perimeter. Set shims on all four sides of lights at a maximum of 300 mm from the ends and 600 mm o.c. in between.
- .3 Set shims to allow a space of no less than 6 mm between shim edges and sight lines.
- .4 Spacer shims are not required where glazing tape is used.

### **3.05 BEDDING AT FIXED STOPS**

- .1 Apply sealants in sufficient beads that when glass is pressed into place they ooze out slightly.

- .2 Cut tapes of full depth of stop accurately to length on a work table. Set sill and head tapes first at full length of rebated opening. Butt jamb tapes into sill and head tapes tightly to weld them together. Remove protective paper backing only when glass is ready for setting, and ensure that butted joints of tape are positively filled with applied sealant.
- .3 Cut tapes accurately to length on a work table and install in a width less than stop height, so that tape edges are held 5 mm behind sight lines. Set sill and head tapes first at full length of rebated opening. Butt jamb tapes into sill and head tapes tightly to weld them together. Remove protective paper backing only when glass is ready for setting, and ensure that butted joints of tape are positively filled with applied sealant. After glass is set, fill void over top of tape to sight line by gunning in topping sealant.
- .4 Apply heel beads of sealant between edges of glass and frame, except at insulating or heat absorbent glass exceeding 2540 mm perimeter. Fill voids entirely with heel bead, and to ensure a minimum bite on glass of 5 mm.
- .5 Apply heel beads at insulating and heat absorbing glass, at lights exceeding 2540 mm perimeter to fill entire voids under glass at sills and for slight distance up each jamb, and at remaining perimeter of lights, in a bead only partially filling void and into which removable stops are set. Ensure a minimum 5 mm bite on glass at each heel bead.

### **3.06 BEDDING AT STOP BEADS**

- .1 Apply sealants to glazing face of stop. Press stops into place using spacer shims, and tool sealant at a slight bevel away from glass face. Fasten stops if design requires.
- .2 Apply tape to removable stops as specified for fixed stops and with top of tapes held 5 mm behind sight lines. Press stops into place and fasten if design requires. Fill void over top of tape to sight line by gunning in topping sealant, and tool to slight bevel away from glass face.

### **3.07 ADJUSTMENT AND CLEANING**

- .1 Replace scratched, etched, or defective glazing resulting from manufacture, setting, handling, or storage before or during installation. Glass accidentally broken or physically damaged, by other than faulty glazing or materials, after glazing by this Section has been completed shall be replaced as specified in Section 01 71 00.
- .2 Final cleaning of glass is specified by Section 01 71 00.
- .3 Remove stains, deposits, marks or blemishes caused by this Section from surfaces of all materials exposed to view. Replace materials that cannot be cleaned to appear as new.

### **3.08 PROTECTION**

- .1 Following glazing, mark each light of glass, except heat absorbing, to indicate its presence with a material, easily removable and harmless to glass.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.01 DESCRIPTION**

#### **.1 General Requirements**

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

### **1.02 RELATED SECTIONS**

- .1 Section 07 92 00: Sealants and Caulking
- .2 Section 09 51 13: Acoustic Panel Ceilings
- .3 Section 09 91 00: Painting and Finishing
- .4 Mechanical Division: To furnish access panels.

### **1.03 SYSTEM DESCRIPTION**

#### **.1 Tolerances**

- .1 Install board within 3 mm of dimensioned location unless approved otherwise, and flat to a tolerance of 1 mm maximum in 1000 mm and 1 mm maximum in any running 200 mm.
- .2 Install framing members to ensure that deflection of each member does not exceed 1/360 of its span under dead load and loads imposed by mechanical and electrical equipment and fixtures supported by ceiling.

### **1.04 QUALITY ASSURANCE**

#### **.1 Requirements of Regulatory Agencies**

- .1 Install fire separations and fire protection exactly as specified in Underwriters' Laboratories test design specification that validates specified rating. Verify installations specified in other Sections, as a part of the entire assembly, meets applicable validating test design specification.

### **1.05 REFERENCES STANDARDS**

- .1 ASTM International
  - .1 ASTM A116-11(2016), Specification for Metallic-Coated, Steel Woven Wire Fence Fabric
  - .2 ASTM A153/A153M-16a Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

- .3 ASTM A653/A653M-18, Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
- .4 ASTM C475/C475M-17, Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
- .5 ASTM C1002-18, Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or metal Plaster Basess to Wood Studs or Steel Studs.
- .2 CSA Group
  - .1 CAN/CSA-A82.27-M91, Gypsum Board.
  - .2 CAN/CSA-A82.31-M91, Gypsum Board Application.

#### **1.06 DELIVERY STORAGE AND HANDLING**

- .1 Package finish materials.
- .2 Store materials in protected dry areas. Store board flat in piles with edges protected.
- .3 Ensure that finish metal members are not bent, dented, or otherwise deformed.
- .4 Deliver products supplied only by this Section to those responsible for installation, to the place they direct, and to meet installation schedules.
- .5 Package fire rated materials with Underwriters' Laboratories labels attached.

#### **1.07 SITE CONDITIONS**

- .1 **Environmental Requirements**
  - .1 Install interior gypsum board systems only in areas closed and protected against weather, and maintained between 10 deg C and 21 deg C. In cold weather, ensure that heat is introduced in sufficient time, before installation commences, to bring surrounding materials up to these temperatures and that it is maintained until materials installed by this Section have cured.
  - .2 Do not install gypsum board systems in any area unless satisfied that construction in place has dried out, and that no further installation of damp materials is contemplated.

### **PART 2 - PRODUCTS**

#### **2.01 MATERIALS**

- .1 **Gypsum Board**
  - .1 To meet specified requirements of CAN/CSA-A82.27.
  - .2 Plain Gypsum Board: With tapered edges.



.2 **Joint Materials**

- .1 **Gypsum Board Joint Reinforcing Tape:** 50 mm wide glass, fibre mesh.
- .2 **Fiberbond Joint Reinforcing Tape:** 50 mm wide, cross laminated fibre tape.
- .3 **Gypsum Board Joint Compounds:**
  - .1 Latex, resin base, possessing good adhesion, mixed with fresh, unadulterated water having no detrimental effect on compounds.
  - .2 Durabond 45 in powder form to be mix on site in accordance with Manufacturer's printed instructions

.3 **Galvanizing**

- .1 **Zinc Coating:** To meet specified requirements of ASTM Specifications A525, zinc coating designation Z275 for sheet steel; A153, Class B.3 Coating for hardware and bolts; A116, Class 3 Coating for wire and rods.
- .2 **Wiped Coating:** ASTM Specification A525 zinc coating designation ZF75.
- .3 **Hot Dipped:** Zinc coating by hot dipping after fabrication to provide a uniform coating of not less than 2.0 ounces per square foot.

.4 **Fastenings and Ties**

- .1 **Screws:** For securing gypsum board to metal furring: Self-drilling, self-tapping, case-hardened, Phillips head, drywall screws, with corrosion resistant finish; to meet requirements of ASTM Specification C646. #6 x 25 mm for single thickness board fastening, and #7 x 41 mm for double thickness board fastening.
- .2 **Tie Wire:** 1.6 mm dia. galvanized soft annealed steel wire.

.5 **Furring System**

- .1 **Runner (Carrying) Channels:** 1.6 mm thick cold rolled steel, prime painted.
  - :38 mm x 13 mm where supported at centers of 900 mm maximum.
  - :38 mm x 19 mm where supported at centers of 1200 mm maximum.
- .2 **Furring Channels:** 0.55 mm thick cold rolled steel, wiped coated, nominal size of 19 mm deep x 32 mm face, hat type with knurled face.
- .3 **Metal trim:** 13 mm, J - trim, no. 200-A; 13 mm, L - trim, No. 200-B, both as manufactured by Canadian Gypsum Company Inc.
- .4 **Control Joints:** No. 093 as manufactured by Canadian Gypsum

Company Inc.

- .5 At areas of high humidity, use zinc coated runners, furring channels and accessories.

**.6 Partition System**

- .1 **Steel Studs:** 0.85 mm (20 gauge) thick steel, wiped coated, having knurled flanges 32 mm wide with edges doubled back at least 4.8 mm, with girts as required, and with service access holes.
- .2 **Partition Runners:** As specified for studs, with flanges a minimum of 22 mm high at floor, and 51 mm high for double runners at top of partitions and to suit width of studs.
- .3 **Control Joints:** No. 093 as manufactured by Canadian Gypsum Company Inc.

**.7 Ceiling Hanger System**

- .1 **Hanger Anchoring Devices:**
  - Phillips Red Head by Phillips Drill Company of Canada Limited, Thornhill, Ontario
  - : T32 self drilling for use in concrete deck.
  - : WS-3822 wedge anchor with tie wire insert for use in composite concrete .
- .2 **Hangers:**
  - Zinc coated annealed steel wire:
    - : 2.8 mm dia. to support a maximum weight of 68 kg per hanger.
    - : 3.8 mm dia. to support a maximum weight of 140 kg per hanger.
  - Zinc coated annealed steel rod.
    - : 4.8 mm dia. to support a maximum weight of 250 kg per hanger.

**.8 Sealant**

- .1 **Acoustical Sealant:** As manufactured by Tremco Manufacturing Co. (Canada) Ltd. or Presstite Acoustical sealant No. 579.64 as manufactured by Inmont Presstite Ltd.
- .2 **Fire Separation Sealant:** Sealant Type 1 as specified in Caulking Schedule of Section 07920 where exposed to view, and acoustical caulking at concealed locations.

**.9 Column Cover**

- .1 **Glass Reinforced Gypsum column Cover:** Provide Glass Reinforced Column cover, length min. 3200mm. Diameter of 300mm. or less at one location (C5)/

---

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- .1 Before application of board systems commences, ensure that services have been installed, tested, and approved; that conduits, pipes, cables, and outlets are plugged, capped, or covered; and that fastenings and supports installed by other Sections are in place.
- .2 Ensure that environmental conditions and construction completed before installation of gypsum board systems commences are satisfactory and will permit compliance with quality and dimensions required for gypsum board installation specified in this Section. Do not permit installations of others to touch the back of gypsum board.
- .3 Verify that installations performed by other Sections which are a part of an underwriter specification for a fire rated assembly have been done in accordance with that specification.
- .4 Verify that channels installed for rigid insulation are located properly and are well secured.

### **3.02 INSTALLATION**

#### **.1 General**

- .1 Coordinate installation of systems specified in this Section with installations of other Sections for  
: attachment of hangers, fasteners, stiffeners, and reinforcing.  
: support and incorporation of flush-mounted and recessed components. Ensure adequacy of supports by consultation and verification of methods specified in Divisions 15 and 16.
- .2 Install systems in accordance with approved manufacturer's specifications and printed directions, as applicable for materials incorporated.
- .3 Do not install metal framing, trim, casings, or accessories which have been bent, dented, or otherwise deformed.
- .4 Securely attach trim, casings, framing, and accessories.
- .5 Framing and furring shown on Drawings is indicative but do not regard it as exact or complete. Construct systems to provide adequate strength to withstand stresses imposed by use without distortion, and to maintain dimensions indicated on Drawings.
- .6 Provide continuous backing for all edges of board.
- .7 Erect supporting and finish materials to dimensions indicated on Drawings; plumb, level, straight, and square to adjoining elements.

- .8 Provide for movement at intersections with structural members to avoid transference of loads to systems.
- .9 Make allowances for thermal movements in systems.
- .10 Do not support systems from, nor make attachment to, ducts, pipes, conduit, or the support framing installed by other Sections.
- .11 Install materials with the minimum of joints.
- .12 Splice, framing members only where continuous lengths are not available from manufacturer.
- .13 Frame openings on every side with suitable sections. Provide clearances required at mechanical and electrical services, such as grilles, diffusers, access panels, and lighting fixtures only after verification of requirements in each case.
- .14 Cooperate with other Sections. Where the installations of other Sections penetrate board construction, fit openings snugly, and to ensure cover by escutcheons and plates utilized.
- .15 Attach to framing, adequate steel reinforcing members to support the load of, and to withstand the withdrawal and shear forces imposed by, items installed by other Sections upon systems. Such items are, but not restricted to, coat hooks, washroom accessories, handrail anchors, guards, wall-hung cabinets and fittings, shelving, curtain and drapery tracks, and minor mechanical and electrical equipment and fixtures. Heavy mechanical and electrical equipment shall be self-supporting as specified in Divisions 15 and 16.
- .16 Provide fire stopping; bulkheads over doors, frames, screens, and changes in ceiling levels; stair soffits; furred beams; pipe spaces; all as indicated on Drawings.

**.2 Suspended Ceiling Framing and Furring**

- .1 Anchor hangers to structural frame or to hanger anchoring devices installed by this Section. Ensure that anchorage is capable of carrying the imposed loads of the assembly design.
- .2 Space hangers for runner channels to suit structure, to support ceiling load, at a maximum distance of 1200 mm o.c., and at no greater distance than 150 mm from ends of runner channels.
- .3 Install runner channels at 900 mm o.c., generally, and at no greater distance than 150 mm from terminations of supported cross furring members. Bend rod hangers sharply under bottom flange of runners, and wire securely in place with saddle ties.
- .4 Splice runner channels by lapping at least 300 mm, with interlocking flanges, and wired at each end with two loops. Do not bunch or line up splices.

- .5 Install cross furring at 400 mm o.c, generally, and at no greater distance than 150 mm from walls, openings, breaks in continuity of ceiling, and changes of direction. Space furring in all cases to suit incorporated services, and so as to avoid contact with perimeter walls. Span hat-type furring no greater 1200 mm. Use metal studs for greater spans: 42 mm deep spanning to 1525 mm, 63 mm deep to 1800 mm, and 92 mm deep to 2400 mm.
- .6 Secure cross furring to supports with double wire ties or approved equivalent attachment. Splice by nesting and tying together with 200 mm overlap.
- .7 Erect entire hanger and suspension system to adequately support the ceiling assembly, including services incorporated, with a maximum specified deflection for each component member, and free from horizontal movement.
- .8 Enclose ducts, pipes, beams or other components that occur outside the general finished lines of ceilings, soffits and bulkheads with metal furring and gypsum board, in rooms where acoustic treatment for ceilings is specified.

**.3 Metal Stud Framing**

- .1 Secure runner channels at floor and tops of partitions for their full length, at 600 mm o.c with concrete nails, square cut nails, toggle bolts, or sheet metal screws as suitable for base material. Install runner channels also at heads and sills of openings. Secure runners at openings by butting flanges, turning up webs, and screwing to studs.
- .2 Provide partition runners with deep flanges at heads of partitions where deflection and/or creep of structure will occur.
- .3 Butt, not mitre, runners at wall intersections and corners. Lap runners and screw channels together.
- .4 Space studs at 400 mm o.c., generally, or as indicated on Drawings, and at no greater distance than 50 mm from abutting walls, partitions, and corners.
- .5 Secure studs to runners by screws, crimping, or welding, as required by stud type, and in accordance with manufacturer's design specification. Include provisions for deflection of building structure to ensure that structural loads are not transferred to studs.
- .6 Install studs of depth indicated on Drawings: but in no case span studs 42 mm deep more than 2700 mm between supports; 63 mm deep, 3600 mm; and 92 mm deep, 4.5 m.
- .7 Double studs at door jambs. At each jamb or doors exceeding either 900 mm in width or 57 mm in thickness, or both, install a 100 mm hot rolled structural channel, to structure above, and adequately anchored at each end.
- .8 Double studs at all control joints.

- .9 Erect three studs at corner and intermediate intersections of partitions.
- .10 Install partition runners at heads and sills of openings in partitions. Form 150 mm bends in runners and secure bent portion to studs.
- .11 Splice studs by nesting, with an 200 mm minimum lap, and fastened with one screw in each flange.
- .12 Ensure that electrical boxes are not installed back to back in same stud space.
- .13 Install blocking for bases, frames and supports before board in applied.
- .14 Coordinate installation of board systems with other Sections installing horizontal runs of service lines so that all installations are done simultaneously. Where standard holes are too small for installed services, notch studs, and splice notched flanges with splice pieces 300 mm longer than notches, each fastened with two screws.
- .15 Screw, or weld, frame anchor clips, of frames, supplied by Section 08110, to jamb studs, and head and sill runners. Ensure adequate fastenings to prevent movement of the frame within the partition. Remove spreaders at floor after frames are anchored.
- .16 Unless shown otherwise on Drawings, partitions, together with gypsum board facings, shall extend above ceilings to underside of structure above.

**.4 Accessories**

- .1 At External Corners: Install corner beads secured to framing at 150 mm o.c. on alternate flanges.
- .2 At Board Edges: Secure “J” shaped casing beads at 150 mm o.c. at edges exposed to view, where board butts against other materials with no trim to conceal junction, at control joints, at perimeter of ceiling surfaces, at tops of partitions where they stop against continuous ceiling surfaces, and where otherwise indicated on Drawings.
- .3 Install control joints in interior gypsum board systems at no greater spacing than 7.3 m for walls and 9 m for ceilings in each direction, at perimeters of ceilings where they abut walls and other vertical surfaces, or as otherwise indicated. Line up control joints with joints in other construction or with centre lines of mullions, columns, piers, or similar building elements.
- .4 Install casings and thermal breaks at junctions of gypsum board with exterior door, window, or screen frames.

**.5 Application of Gypsum Board to Framing**

- .1 Extend board into door, window, and other opening reveals; behind mirrors, fitments, and other applied items of a fixed nature; and on metal stud partitions to structure above, unless noted otherwise on Drawings.

- .2 Apply board with long dimension perpendicular to supports except at stud partitions where they shall parallel studs.
- .3 Back all joints with a framing member. Locate joints on opposite sides of partitions on different studs, and at least 300 mm from opening jambs.
- .4 Install board in maximum lengths and widths to minimize joints, and in lengths of 1800 mm minimum, and stagger end joints where they are unavoidable. Locate joints in ceilings where least prominently discerned, and never line them up with opening edges.
- .5 Tightly butt board joints, without force, and align them neatly.
- .6 Form neat joints at mill ends and at edges of board panels cut in field. Cut paper on face with a knife. Smooth by sanding and rubbing edges together.
- .7 Do not install board in close proximity to hot pipes or heating ducts.
- .8 Fasten board to metal support members by metal drywall screws.
- .9 Locate fasteners at 10 mm minimum to, and 13 mm maximum from, centre of joints. Space fasteners at walls and ceilings at 300 mm o.c. at edges and in field, unless otherwise specified. At ceilings of fire rated board, space fasteners at 200 mm o.c. at edges and in field, unless otherwise specified. At walls of fire rated board space fasteners at 200 mm o.c. at edges and 300 mm o.c. in field. Locate fasteners opposite one another in adjacent panels.
- .10 Start application on walls at corners of rooms, and on ceilings from centre line of spaces. Do not force adjacent boards into place; allow moderate contact. Install extension clips where required. Drive screws to form a slight depression, but not so paper cover is broken.
- .11 Install board with casing bead at termination of gypsum board edge abutting adjoining surfaces to provide for differential movement at internal corners

**.6 Finishing of Joints and Depressions at Gypsum Board**

- .1 Fill joints, casing beads, corner beads, holes at board fasteners and depressions on board surfaces exposed to view to ensure smooth seamless surfaces and square neat corners. Use jointing compounds and reinforcing tapes in conformance with manufacturer's specifications. Ensure that board is tight against framing members, fasteners are properly depressed, and adhesives have sufficiently cured.
- .2 Fill joints by three-coat method.
  - : Embed reinforcing tape in a cover coat of joint filler.
  - : Apply level coat of joint filler when cover coat has dried.
  - : Feather edges of compounds into surfaces of boards. After skim coat has dried for at least 24 hours, sand to leave smooth for decoration.

Do not sand paper face of board.

- .3 At bevelled joints, apply cover coat 180 mm wide, level coat 250 mm wide, and skim coat 300 mm wide.
- .4 At end joints and butt joints formed at cut edges of board, apply cover coat 355 mm wide, level coat 500 mm wide, and skim coat 600 mm wide. Camber treatment over end joints to 0.8 mm thick at most.
- .5 At Internal Corners: First fill gaps between boards with joint filler. Embed creased reinforcing tape in a thin coat of joint filler applied 50 mm wide at each side of corner. Apply cover coat as specified for bevelled joints. Apply skim coat (as specified for bevelled joints) to just one side of joint, and when dry, apply skim coat to other side.
- .6 At External Corners: Fill to nose of corner bead with joint filler and topping cement as specified for bevelled joints.
- .7 At Casing Beads: As specified for bevelled joints.
- .8 At Board Fasteners: Fill holes and depressions with 2 coat application of joint filler.

**.7 Caulking**

- .1 Caulk between casing beads and other construction where junction exposed to view.
- .2 Caulk junctions between gypsum board fire separations and protection, and other construction to ensure that integrity of fire rating is maintained. Ensure that caulked joints provide a continuous seal and that they are caulked before other installations enclose them.
- .3 Clean joints, and prime and install sealants in accordance with the requirements of Joint Sealants, Section 07 92 00.

**3.03 CLEANING AND ADJUSTMENT**

- .1 Remove droppings and excess of joint compound from property, materials and surfaces of others, and from board and accessories installed by this Section, before it sets.
- .2 Make good to cut-outs for services and other installations, fill in defective joints, holes and other depressions with joint compound.
- .3 Make good defective board installations, and ensure that surfaces are smooth, evenly textured and within specified tolerances to receive finish treatments.
- .4 Clean off beads, casings and other metal trim, and leave all surfaces ready for specified finishes.

**END OF SECTION**



**PART 1 - GENERAL**

**1.1. Description**

**1.1.1. General Requirements**

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

**1.1.2. Work Performed by Other Sections related to this Section is specified in:**

Section 04 20 00 – Unit Masonry  
Section 09 25 00 - Gypsum Drywall

**1.2. Material Supply**

1.2.1. All tile will be supplied by owner from surplus stock.

**1.3. Quality Assurance**

**1.3.1. Subcontractor Qualifications**

1.3.1.1. Perform tile installation specified in this Section only by a Subcontractor who has adequate plant, equipment, and skilled tradesmen to perform it expeditiously, and is known to have been responsible for satisfactory installations similar to that specified during a period of at least the immediate past five years.

**1.4. References**

**1.4.1. Reference Standards**

- 1.4.1.1. Reference standards quoted in Contract Documents refer to:
- 1.4.1.2. ANSI A108.1-1976, American National Standard Specifications for Installation of Ceramic Tile.
- 1.4.1.3. ANSI A118.1-1976, American National Standards Specifications for Dry-Set Portland Cement Mortar. ANSI A118.3-1976, American National Standard Specifications for Chemical Resistant Water-Cleanable Tile-Setting and Grouting Epoxy.
- 1.4.1.4. ASTM C206-79, Specification for Finishing Hydrated Lime.
- 1.4.1.5. ASTM C207-79, Specification for Hydrated Lime for Masonry Purposes. CAN/CGSB-75.1-M77, Tile, Ceramic.
- 1.4.1.6. CAN/CSA-A5-M83, Portland Cements.

**1.5. Submittals**

**1.5.1. Samples**

1.5.1.1. Submit 300mm x 300mm panels, or at least 4 units, of tile selected at random from stock.

1.5.2. **Maintenance Instructions**

- 1.5.2.1. Submit maintenance instructions for incorporation in Project Data Book.

1.6. **Site Conditions**

1.6.1. **Environmental Requirements**

- 1.6.1.1. Install tile only when base surfaces and air temperatures have been maintained between 10°C and 21°C for 72 hours preceding installation and until setting materials have cured.

1.7. **Warranty**

1.7.1. **Extended Warranty**

- 1.7.1.1. Submit a warranty of tile products and installation specified in this Section covering the period for one year beyond the expiration of the warranty period specified in the General Conditions to the Contract.

**PART 2 – PRODUCTS**

2.1. **Materials**

2.1.1. **Setting**

- 2.1.1.1. Floor Tile – TEC 382 mortar.  
2.1.1.2. Portland Cement: To meet specified requirements of CAN/CSA-A5-M83.  
2.1.1.3. Hydrated Lime: To meet specified requirements of ASTM Specification C206 or C207 for Type S.  
2.1.1.4. Sand: To meet specified requirements of CSA Specification A82.56, passing 1.6mm sieve. Use white sand for white grout.  
2.1.1.5. Water Potable, containing no contaminants which cause efflorescence.  
2.1.1.6. Additives: for mortar: to meet specified requirements of ANSI Standard A118.4 and CGSB Specification 71-GP-30M, Type 2; acrylic latex; Keraply by Mapei.  
2.1.1.7. for grout: to meet specified requirements of ANDI Standard A118.6, Kerapoxy by Mapei.  
2.1.1.8. Colour Pigment: Non-fading mineral oxides or carbon black emulsion, unaffected by lime or cement, and which will not stain tile.  
2.1.1.9. Primer: To meet requirements of supplier of bond coat.  
2.1.1.10. Dry Curing Grout: Premixed, dry set, as recommended by tile supplier.

2.1.2. **Porcelain Floor Tile**

- 2.1.2.1. PCT1- Field Tile: Purestone Bianco Natural –300 X 600 by Centura  
2.1.2.2. PCT2- Highlight Tile: Purestone Piombo Natural – 300 X 600 by Centura  
2.1.2.3. Grout Colour: 927 Light Pewter

2.1.3. **Ceramic Wall Tile**

2.1.3.1. PCT 3 – Field: Purestone Bianco Polished –300 X 600 by Centura

2.1.3.2. PCT 4 – Accent Tile: Purestone Piombo Polished – 300 X 300 Mosaic by Centura.

2.1.3.1. Grout Colour: 927 Light Pewter

2.1.4. **Grout**

2.1.4.1. Accucolour XT Floor Grout.

2.1.5. **Cleaner**

2.1.5.1. To meet specified requirements of #1000 Series of Terrazzo, Tile and Marble Association of Canada.

2.1.6. **Galvanizing**

2.1.6.1. To meet specified requirements of ASTM Specifications A525, AF275 Coating Designation for sheet steel: A153 Class B.3 Coating, for hardware, Class 3 Coating, for wire and rods.

2.1.7. **Flooring Accessories**

2.1.7.1. Schluter finishing strip. Finish to be brushed nickel.

2.1.7.1.1. Porcelain Tile to VCT: Schluter Systems RENO-RAMP.  
Provide accessible slope.

2.1.7.1.2. Porcelain Tile to Porcelain Tile: Schluter Systems  
SCHIENE.

**PART 3 – EXECUTION**

**3.1. Examination**

3.1.1. Ensure that environmental conditions and backing surfaces have been provided according to specified requirements.

3.1.2. Defective tile installation resulting from application to unsatisfactory surfaces will be considered the responsibility of this Section.

**3.2. Preparation**

**3.2.1. Protection**

3.2.1.1. Prevent traffic and construction by other Sections on newly laid tile by barricading areas for at least 48 hours following installation.

### 3.3. Installation

#### 3.3.1. General

- 3.3.1.1. Install tile in accordance with details and specifications of Terrazzo, Tile and Marble Association of Canada Installation Manual 200-1979, Ceramic Tile, as applicable, and otherwise in accordance with ANSI Specification A108.1
- 3.3.1.2. Lay out tile according to architectural drawings such that fields are centered on areas, with no tiles of less than half size included. Maintain heights of panels in full courses to nearest indicated dimension.
- 3.3.1.3. Lay tile on vertical surfaces with joints plumb and level.
- 3.3.1.4. Lay tile on floors with joints parallel to walls, at right angles to each other except where pattern is indicated on drawings.
- 3.3.1.5. Lay tile so that wall and floor joints are in line.

#### 3.3.2. Setting

- 3.3.2.1. Place as much tile as possible in one operation before setting bed reaches initial set.
- 3.3.2.2. Clean back and remove bed when it has set before tile is laid.
- 3.3.2.3. Prime entire backing surface for bond coats.
- 3.3.2.4. Immediately prior to applying mortar bed over concrete or concrete block, evenly saturate substrate with clean water.
- 3.3.2.5. Line up joints between tile installed on stairs from tread to tread.

#### 3.3.3. Tile

- 3.3.3.1. Leave or cut openings to correct sizes to receive accessories, fittings, or other items built into tile.
- 3.3.3.2. Cut and grind tile accurately, and without damage, to fit openings, at intersections and against trim finish. Rub exposed cut edges smooth with abrasive stone.
- 3.3.3.3. Drill tile for hardware and for pipes where possible. Otherwise at pipes and fittings, fit tile closely so that escutcheons cover cuts.
- 3.3.3.4. Extend tile into recesses at windows, doors, or other openings.
- 3.3.3.5. Extend wall tile behind fitments, mirrors and other applied items of a fixed nature, by a sufficient amount to ensure overlap.
- 3.3.3.6. Joint Width: 1.6mm wide between ceramic tile units.
- 3.3.3.7. Provide joints coloured to match tile.

#### 3.3.4. Grouting

- 3.3.4.1. Remove spacers, strings, ropes or pegs before grouting.
- 3.3.4.2. Grout tile joints in accordance with grout manufacturer's directions and to fill joints solidly.
- 3.3.4.3. Fill all gaps and skips, cover setting bed completely. Ensure finish grout is uniform in colour, smooth and without voids, pinholes or low spots.
- 3.3.4.4. Damp cure grout for at least 72 hours.

3.3.5. **Adjustment**

- 3.3.5.1. Before Project completion, remove and replace defective, damaged, loose, and unbonded tile; and point defective joints.
- 3.3.5.2. Wash tile surfaces with water.
- 3.3.5.3. Wash unglazed surfaces with #1000 Series cleaner. Use 5% solution of muriatic acid only when preceded and followed by a complete drenching of clean water, and only when other cleaning methods are insufficient.

3.4. **Cleaning**

3.4.1. **Cleaning on Completion of Installation**

- 3.4.1.1. Remove deposits which affect appearance.
- 3.4.1.2. Remove protective materials.
- 3.4.1.3. Clean surfaces by washing with clear water; or with water and soap or detergent; followed by a clear water rinse.
- 3.4.1.4. Clean and restore stained metal surfaces in accordance with manufacturer's recommendations. Replace if cleaning is impossible.
- 3.4.1.5. Final cleaning is specified in Division 01.

3.5. **Extra Stock**

- 3.5.1. At the completion of the work, provide ten (10) new, clean packaged ceramic floor tiles of each colour to be turned over to the owner.
- 3.5.2. At the completion of the work, provide an equivalent to 3 sq. m. of wall coverage, clean packaged ceramic wall tiles of each colour to be turned over to the owner.

**End of Section**

## **PART 1 - GENERAL**

### **1.01 DESCRIPTION**

- .1 General Requirements
  - .1 Division 1 and General Requirements, is a part of this Section and shall apply as if repeated here.
- .2 Work Performed by Other Sections Related to This Section is Specified in:
  - .1 Section 07 92 00 : Joint Sealants
  - .2 Section 09 90 00: Painting and Finishing
  - .3 Section 09 21 16: Gypsum Board Assemblies (Drywall, Bulkheads, Ceilings)
  - .4 Drawings: Mechanical Services
  - .5 Drawings: Electrical Fixtures

### **1.02 SYSTEM DESCRIPTION**

- .1 Tolerances
  - .1 Install ceilings within 3.2 mm of dimensioned height above floor unless approved otherwise. Level within maximum tolerance of 3mm in 3 m.
  - .2 Install framing members to ensure that deflection of each member does not exceed 1/360 of its span under dead load and loads imposed by mechanical and electrical equipment and fixtures supported by ceiling.

### **1.03 QUALITY ASSURANCE**

- .1 Subcontractor Qualifications
  - .1 Install acoustical ceilings specified in this Section only by Subcontractor who has adequate equipment and skilled mechanics to perform it expeditiously, and is known to have been responsible for satisfactory installations similar to that specified during a period of at least five years.

### **1.04 REFERENCE STANDARDS**

- .1 ASTM International
  - .1 ASTM C 423-17, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
  - .2 ASTM C 635/C 635M-17, Standard Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
  - .3 ASTM C 636/C 636M-13, Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
  - .4 ASTM E 1264-14, Standard Classification for Acoustical Ceiling Products.
  - .5 ASTM E 1414/E 1414M-16 Standard Test Method for Sound Attenuation between Rooms Sharing a Common Ceiling Plenum.
- .2 CSA Group
  - .1 CAN/CSA-A82.27-M91, Gypsum Board Products

### 1.05 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for acoustical suspension, acoustic panels, [acoustic tiles], and system accessories. Include product characteristics, performance criteria, physical size, finish and limitations. Samples
- .2 Samples
  - .1 Submit two samples of each specified acoustical board and exposed grid material.

### 1.06 DELIVERY STORAGE AND HANDLING

- .1 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .2 Store materials in protected dry area.
- .3 Ensure that finish metal members are not bent, dented, or otherwise deformed.

### 1.07 SITE CONDITIONS

- .1 Install acoustical ceilings in areas closed and protected against weather, maintained at no less than 10°C.
- .2 Do not install acoustical ceilings in any area unless satisfied that construction in place has dried out, and that no further installation of damp materials is contemplated.

## PART 2 - PRODUCTS

### 2.01 ACCESSORIES

- .1 Fabricate miscellaneous clips, splicers, connectors, screws, other standard accessories of steel, zinc coated or cadmium plated, of strength and design compatible with suspension methods and system specified. Include special accessories to provide complete assembly of acoustical ceilings.

### 2.02 HANGERS

- .1 Galvanized annealed steel wire; 2.8 mm dia. to support a maximum weight of 68 kg per hanger, #9 ga. to support a maximum weight of 140 kg per hanger. Galvanized annealed steel rod; 4.8 mm dia. to support maximum weight of 250 kg/hanger.
- .2 Hanger Anchoring Devices: Acceptable Products
  - .1 Phillips Red Head by Phillips Drill Company of Canada Limited, Thornhill, Ontario
    - .1 T32, self drilling for use in concrete deck.
    - .2 WS-3822 wedge anchor with tie wire insert for use in composite concrete and steel deck.

- .3 SDI-3822 for use in steel floor deck, with screw eye bolts to suit inserts.

### 2.03 EXPOSED TEE CEILING GRID SYSTEM

- .1 **ACT-1** Two directional, 610 mm X 1220 mm.
  - .1 Main Beams: 0.508 mm steel, bulb tees.
  - .2 Cross Tees: 0.508 mm steel, with tongues to interlock with main beams.
  - .3 Wall Moulding: Angle section to match tees.
  - .4 Finish: Baked vinyl enamel, white.
- .2 **ACT-2** Two directional, 610 mm X 610 mm.
  - .1 Main Beams: 0.508 mm steel, bulb tees.
  - .2 Cross Tees: 0.508 mm steel, with tongues to interlock with main beams.
  - .3 Wall Moulding: Angle section to match tees.
  - .4 Finish: Baked vinyl enamel, white.

### 2.04 ACOUSTICAL UNITS

- .1 Acoustical units shall match submitted samples with no perceptible visual variations within a building area. Fabricate edges uniformly and true to fit suspension system, and maintain true lines and surface planes.
- .2 **ACT-1** Acoustic Units: Type 1
  - Pattern: Non-directional Fissured – Cortega 823
  - Colour: White
  - Edge: Regular, lay-in (square)
  - Size: 610 mm X 1220 mm (Imperial)
  - Thickness: 15 mm
  - Noncombustible
  - Manufacturer: Armstrong
- .3 **ACT-2** Acoustic Units: Type 2
  - Pattern: Radar – Fine Fissured - 1728
  - Colour: White
  - Edge: Regular, lay-in (square)
  - Size: 610 mm X 610 mm (Imperial)
  - Thickness: 15 mm
  - Noncombustible
  - Manufacturer: Armstrong



---

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- .1 Ensure that environmental conditions and installations preceding that of this Section are satisfactory, and will permit compliance with the quality and dimensions required of acoustical ceilings.

### **3.02 INSTALLATION**

- .1 Coordinate installation of acoustical ceiling systems specified in this Section with that of other Sections. Ensure that adequate preparation is made for attachment of hangers and fasteners. Install framing for support and incorporation of flush-mounted and recessed service components. Ensure adequacy of supports by consultation and verification of methods and locations of installations specified in Divisions 15 and 16.
- .2 Install hangers before sprayed fireproofing.
- .3 Install hanger anchoring devices in appropriately drilled holes.
- .4 Screw apply hanger anchoring devices to metal floor deck.
- .5 Do not use through the roof hangers.
- .6 Do anchor hangers from or make attachment to, ducts, pipes, conduit, or the support framing installed by other Sections.
- .7 Space hangers for supporting grid at 1220 mm max. centers each way, and to suit structure and ceiling system. Secure hangers to structure by a permanent method as approved. Secure wire hangers to framing by bending sharply upward and wrapping securely with 3 turns. Install hangers free of kinks and at no more than 5° off vertical. Install extra hangers at each corner of lighting fixtures. Reinforce other ceiling equipment with hangers.
- .8 Install the entire hanger and suspension grid to adequately support the ceiling assembly, including services incorporated, with a maximum specified deflection for each component member, and free from horizontal movement.
- .9 Lay out ceilings with acoustic units evenly spaces in each area, with grid lines symmetrical about room axes, columns and service element, and with maximum border widths of equal dimensions on opposite sides of areas, or as indicated on reflected ceiling plans. Provide angle moldings to match exposed grid where ceilings abut walls or other vertical surfaces. At curved or circular element, cut vertical legs and bend track to conform to element.
- .10 Frame around recessed fixtures, diffusers, grilles, and openings.
- .11 Maintain true surface planes, and component and joint lines throughout each area.
- .12 Butt joints between components tightly together.
- .13 Install grid system ceilings as specified by the manufacturer of the system. Ensure that methods of installation used are acceptable to the manufacturer of each system component and Architect.
- .14 Brace system to maintain alignment of grid.
- .15 Install acoustical panels in exposed tee system. Cut panels neatly to fit off-module grid, with sufficient clearances to ensure removal without damage.
- .16 Do not install acoustical units with broken or marred edges exposed to view.

- .17 Install hold-down clips at each panel within the ceiling system within 2400 mm of each door entry system to protect against wind uplift. When doors are open. Adapt installation to provide ceiling access where required for services.
- .18 Mark every access panel location in an unobtrusive manner.
- .19 Where retention clips are specified for rated ceilings, install clips in accordance with manufacturers' written instructions.

**3.03 ADJUSTMENT AND CLEANING**

- .1 Clean soiled/discoloured surfaces of exposed ceiling surfaces on ceiling installation completion.
- .2 Replace components which are visibly damaged, marred, or uncleanable.

**3.04 EXTRA STCOK**

- .1 Provide 2 sealed cartons of each specified acoustical panel for Owner's use. Deliver to site at conclusion of project.

**END OF SECTION**

---

**PART 1 - GENERAL**

1.1 **Description**

.1 **General Requirements**

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

.2 **Work Performed by Other Sections Related to This Section is Specified in:**

- .1 Section 09 65 00: Resilient Flooring.
- .2 Section 09 30 13: Ceramic Tiling.

.3 **Intent**

- .1 It is the intent that the work of this section is the entire scope of work to prepare all existing floor finishes to receive final finish flooring.
- .2 The intent of this section is that a single subcontractor is engaged by the general contractor to carry out all floor repair and preparation prior to the commencement of the main body work.
- .3 The scope of work is to include, but not be limited to:
  - .1 Concrete or Grout infill of existing floor trenches.
  - .2 Concrete or Grout infill of all floor penetrations.
  - .3 Infill of all cracks and slab damages.
  - .4 Levelling of low areas as may be required for the installation of finish flooring.
- .4 All work to prepare the floor shall be completed as one scope of work and the finish of the floor shall be resilient to withstand general interior construction activities.
- .6 All work required to install through floor services as part of the scope of work for Division 15 and Division 16 shall occur after the scope of work of this section.

1.2 **Quality Assurance**

.1 **Subcontractor Qualifications**

- .1 Provision of the scope of work specified in this Section only by a Subcontractor who has adequate equipment and skilled tradesmen to perform it expeditiously, and is known to have been responsible for satisfactory installations similar to that specified during a period of at least the immediate past five years.
- .2 The following contractors are prequalified:
  - Concrete Surface Solutions

---

Toronto Concrete  
Surface Designs

- .3 Contractors that can provide sufficient manpower and experience in providing self-levelling, concrete repair and preparation with in house personnel may receive approval to undertake this work at the discretion of the architect.

1.3 **Delivery, Storage, and Handling**

- .1 Package flooring materials and identify contents of each package.
- .2 Store materials for a minimum 24 hours immediately before installation at not less than 18° C.

1.4 **Site Conditions**

.1 **Environmental Requirements**

- .1 Install all materials only when surfaces and air temperatures have been maintained between 18 degrees C and 24 degrees C for 24 hours preceding installation, and will be so maintained during installation and for 48 hours thereafter. Maintain a minimum temperature of 13degrees C after above period.
- .2 Ensure that adequate ventilation is provided as required by manufacturers recommendations.

**PART 2 - PRODUCTS**

2.1 **Materials**

- .1 Provide each flooring material from the same manufacturer for entire project.
- .2 **Filler/Subfloor Preparation.**
  - .1 The intent of this section is to provide for a full fill and level of existing floors to receive all floor finishes. Contractor is to cover all costs associated with the intent to provide an acceptable substrate for all finishes.
  - .2 Assume an overall average levelling compound thickness of 4mm over entire floor area of 500m2.
  - .3 Provide for shotblasting of all existing surfaces in preparation for filler and levelling compound.
  - .4 Provide Bonding agent as recommended by manufacturer.
  - .5 Levelling Compound: TEC 567.
  - .6 Cementitious bulk concrete filler: TEC fast set deep patch for trench infill.

---

.7 Primer: TEC Multipurpose Primer.

### **PART 3 - EXECUTION**

#### **3.1 Examination**

- .1 Test substrate to ensure that moisture level and acid-alkali balance does not exceed limits recommended by adhesive manufacturer.
- .2 Ensure that environmental conditions have been provided as requested and specified.
- .3 Ensure subfloors have been provided as specified without holes, protrusions, cracks greater than 2 mm wide, unfilled control joints, depressions greater than 3 mm deep, or other major defects.

#### **3.2 Preparation**

- .1 Remove dirt, soil, oil, grease, and other deposits which would lessen the adhesive bond of flooring, and which would telegraph through flooring.
- .2 Remove chalking and dusting from concrete surfaces with wire brushes.
- .3 Remove prime paint and wire brush steel surfaces.
- .4 Grind and scarify surfaces that have volatile glues.
- .5 Fill all defects such as cracks, depressions and scars from damage with filler. Level to smooth surface.
- .6 Prime subfloors if recommended by adhesive manufacturer, and as he specifies.
- .7 Protection: Prevent traffic and work on newly laid floors by barricading until adhesive cures.

#### **3.3 Installation**

##### **.1 General**

- .1 Supply and install all products in accordance with the Manufacturers recommendations.

#### **3.4 Protection**

- .1 After materials have set, and until project completion, coordinate with other Sections to ensure that floors are not damaged by traffic, as specified in Section 01 00 00. Ensure that flooring is not subjected to any static loading during the week following installation.

**End of Section**

## **PART 1 - GENERAL**

### **1.01 DESCRIPTION**

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

### **1.02 QUALITY ASSURANCE**

- .1 Subcontractor Qualifications
  - .1 Install resilient flooring specified in this Section only by a Subcontractor who has adequate equipment and skilled tradesmen to perform it expeditiously, and is known to have been responsible for satisfactory installations similar to that specified during a period of at least the immediate past five years.

### **1.03 REFERENCES STANDARDS**

- .1 ASTM International
  - .1 ASTM F1066-04(2018), Standard Specification for Vinyl Composition Floor Tile.
  - .2 ASTM F 1344-15, Standard Specification for Rubber Floor Tile.

### **1.04 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for resilient tile flooring and include product characteristics, performance criteria, physical size, finish and limitations.
- .2 Samples
  - .1 Submit samples of each specified flooring, base, stair, and accessories that are specified.
  - .2 Submit full size tiles 300 x 300.
  - .3 Submit 216 mm X 280 mm pieces of sheet goods.
  - .4 Submit base and accessories in lengths of 300 mm.
- .3 Affidavits
  - .1 Submit for approval, a list of installation materials intended for use with each flooring material and for each subfloor condition, before installation commences. Accompany the list with an affidavit stating that the manufacturer of each material recommends and approves of its use in each case.
- .4 Maintenance Instructions
  - .1 Submit maintenance instructions for incorporation in Project Data Book.

### **1.05 DELIVERY STORAGE AND HANDLING**

- .1 Package flooring materials and identify contents of each package.

- .2 Store materials for a minimum 48 hours immediately before installation at not less than 19 degrees C.

## 1.06 SITE CONDITIONS

- .1 Environmental Requirements
  - .1 Install resilient flooring only when surfaces and air temperatures have been maintained between 19 degrees C and 48 degrees C for 24 hours preceding installation, and will be so maintained during installation and for 48 hours thereafter. Maintain a minimum temperature of 13degrees C after above period.
  - .2 Ensure that adequate ventilation is provided during installation of flooring and curing of adhesive.
  - .3 Ensure that spark-proof electrical equipment is provided, and smoking is prohibited, in areas where flammable adhesives are used. Store materials to prevent spontaneous combustion.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- .1 Provide each flooring material from same production run for one area and from same manufacturer for entire project.

### 2.02 FLOORING

- .1 Vinyl Composite Tile: 300 X 300 as supplied by Tarkett – Refer to Finish Schedule and drawings.
- .2 Vinyl Quartz: 2.5 mm thick, 300 mm X 300 mm; Precedo Versa Quartz Tile as supplied by Centura. – Refer to Finish Schedule and drawings.
- .3 Solid Vinyl Tile: American Bultrite – 600 X 600 Texas Granite as supplied by Centura. – Refer to Finish Schedule and drawings.
- .4 Resilient Sheet Flooring – Omnisport by Tarkett. – Refer to Finish Schedule and drawings.
- .5 Resilient Sheet Flooring – Sports Floor: DURAmultisport Interflor– Refer to Finish Schedule and drawings.
- .6 Rubber Base: Roppe 100mm high Pinnacle.

### 2.03 RESILIENT BASE- RUBBER

- .1 Top Set: Cove bottom, 2 mm thick, grooved back, preformed external corners.
- .2 Straight: Butted Bottom, 2 mm thick, grooved back, Site Formed Corners.
- .3 Base Height: 100 mm as specified in Room Finish Schedule for each base type.
- .4 Colours: Solid as selected from manufacturer's standard range, not more than 2 colours.

### 2.04 FLOORING ACCESSORIES

- .1 Ensure that accessories are compatible with, and match appearance, thickness and transition between abutting flooring materials.
- .2 Basis of Specification: Schluter Systems – brushed nickel in finish.
- .3 Provide samples for approval by architect for all conditions as transitions.

## 2.05 FILLER/SUBFLOOR PREPARATION

- .1 The intent of this section is to provide for a full fill and level of existing floors to receive all floor finishes. Contractor is to cover all costs associated with the intent to provide an acceptable substrate for all finishes.
- .2 Assume an overall average levelling compound thickness of 4mm.
- .3 Provide for shotblasting of all existing surfaces in preparation for filler and levelling compound.
- .4 Provide Bonding agent as recommended by manufacturer.
- .5 Levelling Compound: Ardex K15
- .6 Cementitious bulk concrete filler: Ardex

## 2.06 PRIMERS AND ADHESIVES

- .1 As recommended by manufacturer of each material for each subfloor condition.  
Use clear adhesive for vinyl polymer flooring.  
Vinyl Composite Flooring: Waterproof, as recommended by manufacturer for specific application conditions and compliant for full flooring warrantee.  
Vinyl Quartz Tile: TEC Rollfast or TEC 752  
Texas Granite Solid Vinyl: ADH610, Waterproof, as recommended by manufacturer for specific application conditions and compliant for full flooring warrantee.  
Sheet Vinyl: TEC 744, Waterproof, as recommended by manufacturer for specific application conditions and compliant for full flooring warrantee.

## 2.07 CLEANER

- .1 Neutral chemical compound that will not damage tile or affect its colour.

## 2.08 FLOOR PROTECTION

- .1 Heavy kraft paper laminated with non-staining adhesive to both sides of glass fibre reinforcing ply, minimum weight of 0.18 kg/sq.m.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- .1 Test substrate to ensure that moisture level and acid-alkali balance does not exceed limits recommended by adhesive manufacturer.
- .2 Ensure that environmental conditions have been provided as requested and specified.
- .3 Ensure subfloors have been provided as specified without holes, protrusions, cracks greater than 2 mm wide, unfilled control joints, depressions greater than 3 mm deep, or other major defects.
- .4 Defective resilient flooring resulting from application to unsatisfactory surfaces will be considered the responsibility of this Section.



### 3.02 PREPARATION

- .1 Remove dirt, soil, oil, grease, and other deposits which would lessen the adhesive bond of flooring, and which would telegraph through flooring.
- .2 Remove chalking and dusting from concrete surfaces with wire brushes.
- .3 Remove prime paint and adhesives in accordance with the manufacturer's requirements.
- .4 Fill all defects such as cracks, depressions and scars from damage with filler. Level to smooth surface.
- .5 Prime subfloors in accordance with the manufacturer's requirements.
- .6 Protection: Prevent traffic and work on newly laid floors by barricading until adhesive cures.

### 3.03 INSTALLATION

#### .1 General

- .1 Lay each material in accordance with manufacturer's specification.
- .2 Lay flooring with joints closely butted. Scribe, cut and fit around floor outlets and openings, door frames, and heavy equipment supports.
- .3 Cut flooring and bases to fit within 0.4 mm of abutting surfaces were exposed to view.
- .4 Avoid abrupt variations in shades between adjacent flooring material. Do not install units that are off-colour or contain untypical pattern variations.
- .5 Carry floor patterns through openings.
- .6 Roll flooring with three-section, 45 kg roller, in two directions from centre of area. Maintain rollers clean and polished.

#### .2 Adhesives

- .1 Apply adhesive uniformly over surfaces with a notched trowel, at rate recommended by manufacturer.
- .2 Cover only an area into which flooring can be set during working time of adhesive. Do not lay flooring over hardened adhesive.
- .3 Use only waterproof type adhesive in all areas where plumbing fixtures or floor drains are installed.
- .4 Protect adjacent surfaces from soil by adhesive.
- .5 Clean trowels and maintain profile of notches as installation of flooring progresses to ensure a constant rate of application.

#### .3 Resilient Tile Flooring

- .1 Lay tile with joints as directed by architect.
- .2 Lay tile in square pattern with grain of adjacent units running in same monolithic direction.
- .3 Lay out tile so that perimeter units are at least one half tile in width except where room irregularities make it impossible.

**.4 Resilient Sheet Flooring**

- .1 Install flooring with joints parallel to long axis of rooms, in full width sheets, with border sheets not less than 600 mm wide, and with cross joints no closer than 1800 mm from each other and not concentrated in isolated areas.
- .2 Cut sheets to sizes required, lay them out flat and allow them to reach room temperature before installation.
- .3 Double cut seams.
- .4 Remove wrinkles and air pockets.
- .5 At seams, using a welding rod, butt sheet tightly together and weld in accordance with manufacturer's written instructions.
- .6 Refer to installation of Resilient Base.

**.5 Resilient Bases**

- .1 Install bases in lengths as long as possible: do not make up runs of short lengths.
- .2 In areas where bases are indicated, install them on built-in fittings, columns, walls.
- .3 Cut and mitre internal corners.
- .4 Double cut seams between adjoining lengths.
- .5 Apply adhesive to wall, masked to prevent spreading above base, and firmly bed base in place.
- .6 Press top set base down to force cove against flooring.
- .7 Install straight base before flooring, with bottom edge against subfloor and top edge level.
- .8 Install top set base in all areas except as noted on Drawings.

**.6 Reducer/Transition Strips**

- .1 Install strips at terminations of flooring where edges are exposed to view.
- .2 Install strips in straight lines and relate their terminations to significant building features and within tolerance of 3 mm in 3 m.
- .3 Install strips under doors at openings.
- .4 Cut and fit strip terminations to profile of abutting construction.
- .5 Secure strips to subfloor with contact bond adhesive to ensure complete bond.

**3.04 ADJUSTMENT, CLEANING, SEALING, WAXING**

- .1 Replace defective resilient flooring installations so that there is no discernible variation in appearance between installed and replaced materials.
- .2 Clean off excess adhesive as installation of flooring progresses and before it sets.
- .3 Clean resilient flooring, but no sooner than 48 hours following installation. Use neutral floor cleaner where required, and proceed as recommended by manufacturer.
- .4 Clean floors on a regular basis at least once per week if no other protection is provided.

- .5 Clean floors before acceptance by Owner.
- .6 Provide sealer, plus 5 (five) coats of wax applied according to manufacturer's technical specifications prior to final acceptance.

**3.05 PROTECTION**

- .1 After materials have set, and until project completion, coordinate with other Sections to ensure that floors are not damaged by traffic, as specified in Section 01010. Ensure that flooring is not subjected to any static loading during the week following installation.
- .2 At completion of flooring installation, install floor protection in areas where finishing operations, repairs and installation of equipment, and foot traffic will occur. Lap joints of material by 150 mm and seal with non-asphaltic tape.

**3.06 EXTRA STOCK**

- .1 Deliver to Owner on completion of Project construction, and as he directs, 3% of the quantity of flooring installed of each material and colour, rounded up to original full cartons and clearly labelled.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 DESCRIPTION**

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

### **1.2. RELATED SECTIONS**

- .1 Form of Tender – Alternate Prices
- .2 Section 03300 – Cast-in-Place Concrete
- .3 Section 09651 – Vinyl Composite Tile & Resilient Base
- .4 Section 11062 – Retractable Stage

### **1.3. SUBMITTALS**

- .1 Samples: Submit samples in accordance with Section 01330 and obtain Consultant's approval before ordering materials and proceeding with Work.
- .2 Extended Warranty:
  - .1 Materials and Installation: Submit a warranty of the Work of this Section in accordance with Section 01001, covering replacement of defective work, against poor workmanship and faulty installation for a period of two (2) years beyond the expiration of the standard one-year warranty included in the Contract under the General Conditions. Defective work shall include, but not limited to, bubbling, loosening, cracking, wearing, splitting and warping, or other deformations. Warranty shall be signed by both manufacturer and installer. Total warranty period shall be three (3) years.
  - .2 Manufacturer's Warranty: Submit a warranty of the Work of this Section in accordance with Section 01701, covering the athletic flooring against wear through the wear layer for a fifteen (15) year period. This warranty must be provided by the manufacturer of the indoor resilient athletic surfacing.
  - .3 Maintenance Instructions: Submit maintenance, cleaning, and refinishing instructions in accordance with Section 01701, for incorporation into Manufacturer's Data Book.

### **1.4. TOLERANCES**

- .1 Level of finish flooring shall be within 3 mm of established elevations in any 6000 mm area and shall be sufficiently even to contact a 3000 mm long straight edge with a tolerance of 3 mm. Allowable tolerances shall be non-cumulative.

**1.5. PRODUCT HANDLING**

- .1 Deliver and store materials undamaged, in original containers, with manufacturer's labels and seals intact.

**1.6. ENVIRONMENTAL CONDITIONS**

- .1 Verify that moisture content of concrete slab is within allowable tolerances of flooring manufacturer.
- .2 Minimum surface and ambient temperatures 10°C, 24 hours before, during and after application, or until cured; adequate controlled ventilation; bright, uniform lighting; broom clean; reasonably dust-free; and kept clear of other tradesmen.

**1.7. MOISTURE TESTS**

- .1 It is essential that calcium chloride moisture tests be taken on all concrete floors regardless of the age or grade level. Conduct one test for every 93 m<sup>2</sup> of flooring (minimum of 3). The test should be conducted around the perimeter of the room, at columns and where moisture may be evident. The moisture emission from the concrete shall not exceed 7.7 kgs/93 m<sup>2</sup> in 24 hours. Submit a diagram of the area showing the location and results of each test to the Consultant. If the test results exceed the limitations, the installation must not proceed until the problem has been corrected.

**1.8. EXTRA MATERIALS**

- .1 Provide maintenance materials of resilient sports flooring and adhesive in accordance with Section 01701 – Closeout Submittals.
- .2 Provide 2% of each colour, pattern and type flooring material required for this project for maintenance use.
- .3 Extra materials to be from same production run as installed materials.
- .4 Clearly identify each container of floor tile and each container of adhesive.
- .5 Deliver to site, upon completion of the Work of this Section.
- .6 Store where directed by Consultant.

**1.9. PROTECTION**

- .1 Protect adjacent surfaces from damage resulting from work of this trade. If necessary, mask and/or cover adjacent surfaces by suitable means. Make good such damage at own expense, to Consultant's satisfaction. Post "NO SMOKING" signs while work is in progress and curing.

## Part 2 Products

### 2.1. MATERIALS

- .1 Resilient Sports Flooring Type 1 (RSF1):
  - .1 Dual-durometer foam backed sheet vinyl flooring design for fully adhered athletic flooring applications, 1500 mm wide x 26400 mm long rolls x 7.0 mm thick; wear layer 2.1 mm thick; backing: very high density, dual-durometer, closed cell foam; two layers of fiberglass reinforcement for dimensional stability and indentation resistance; one layer woven grid fiberglass and additional layer of non-woven fiberglass; wood grained embossed texture.
    - .1 Acceptable Product and Manufacturer: Tarkett OmniSports 7.1 Greenlay. Colour to be selected by architect.
  - .2
    - .1 Alternate Price Product: Interflor DURAmultisport
- .2 Patching or Levelling Compound: As supplied or approved by athletic flooring manufacturer.
- .3 Adhesive: As certified by athletic flooring manufacturer.
- .4 Games Markings: Paint products as supplied by manufacturer; solid colours as per Drawings.
- .5 Transition Strip: Schluter-Schiene and Schiene radius clear anodized aluminum.

## Part 3 Execution

### 3.1. EXAMINATION

- .1 Verify the following:
  - .1 The area in which the indoor resilient athletic flooring will be installed is dry, weather-tight and in compliance with specified requirements.
  - .2 Permanent heat, lighting and ventilation systems are installed and operable.
  - .3 Other work, including overhead work, that could cause damage, dirt, dust or otherwise interrupt installation has been completed or suspended.
  - .4 No foreign materials or objects are present on the substrate and that it is clean and ready for preparation and installation.
  - .5 The concrete slab surface deviation is not greater than 3.2 mm within 3000 mm when measured according to ASTM E 1155.

- .6 The concrete slab complies with ACI 302.2R for concrete design including use of a low-permeance vapour barrier directly beneath the concrete subfloor with sealed penetrations.

### **3.2. PREPARATION**

- .1 Prepare substrates according to manufacturer's written recommendations to ensure proper adhesion of resilient athletic flooring system.
- .2 Concrete Substrates: Prepare according to ASTM F710. Verify that substrates are dry and free of sealers, curing compounds and other additives. Remove coatings and other substances that are incompatible with adhesives using mechanical methods recommended by manufacturer.
- .3 Use manufacturer's (Gerflor's GerPatch) trowelable concrete based patching compound with the same moisture vapour tolerance as the adhesive to fill depressions, holes, cracks, grooves or other irregularities in substrate.
- .4 Place flooring and installation materials into spaces where they will be installed at least 48 hours before installation. Install flooring materials only after they have reached the same temperature as space where they are to be installed.
- .5 Sand the surface of the concrete slab.
- .6 Sweep and then vacuum substrates immediately before installation. After cleaning, examine substrate for moisture, alkaline salts, grit, dust or other contamination. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.3. SHEET ATHLETIC FLOORING INSTALLATION**

- .1 General:
  - .1 Comply with resilient athletic flooring manufacturer's installation instructions.
  - .2 Take necessary precautions to minimize noise, odours, dust and inconvenience during installation.
  - .3 Fit flooring neatly and tightly to vertical surfaces, equipment anchors, floor outlets, and other interruptions of floor surface.
  - .4 Extend flooring into toe spaces, door reveals, closets, and similar openings unless otherwise indicated.
- .2 Lay out flooring as follows:
  - .1 Minimize number of seams and place them in inconspicuous areas.
  - .2 Locate seams as shown on approved Shop Drawings.

- .3 Adhered Flooring: Attach products to substrates using manufacturer's full-spread adhesive applied to substrate to comply with adhesive and flooring manufacturer's instructions.
- .4 Vinyl Sheet Flooring Seams: Finish seams to produce surfaces flush with adjoining flooring surfaces. Comply with ASTM F 1516. Rout joints and use heat welding rod to permanently and seamlessly fuse sections together.

#### **3.4. GAME LINES**

- .1 Lay out game lines as shown on Drawings.
- .2 Mask flooring at game lines and logos, and apply paint of colour indicated to produce clean, sharp and distinct edges.

#### **3.5. CLEANING AND PROTECTION**

- .1 Perform the following operations after completing resilient athletic flooring installation:
  - .1 Remove marks and blemishes from flooring surfaces.
  - .2 Sweep and then vacuum flooring.
  - .3 Damp-mop flooring to remove soiling.
- .2 Protect flooring from abrasions, indentations, and other damage from subsequent operations and placement of equipment, during remainder of construction period.

**END OF SECTION**



---

## **PART 1 - GENERAL**

### **1.01 GENERAL REQUIREMENTS**

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

### **1.02 SCOPE OF WORK**

- .1 This Section of Work shall include all labour, materials, tools, scaffolds and other equipment, services and supervision required to cover with paint the surfaces of the building, or structure, building services and accessories not otherwise protected or covered, as shown on the "Room Finish Schedule" to the full intent of the Drawings and Specifications.
- .2 Refer to Drawings and Finish Schedules for type, location and extent of finishes required, and include all field painting necessary to complete work shown, scheduled or specified, including backpriming and surface preparation as specified herein.

### **1.03 RELATED SECTIONS**

- .1 Section 04 20 00 Concrete Unit Masonry
- .2 Section 08 11 00 Metal Doors and Frames
- .3 Section 09 21 16 Gypsum Board Assemblies.

### **1.04 QUALITY ASSURANCE**

- .1 Subcontractor Qualifications
  - .1 The paint products and Manufacturer shall be listed in the Ontario Painting Contractors Association Specification Manual, latest edition, under Paint Product Recommendation section, or approved equivalent. Ideal and CIL equivalent products are considered equivalents.
  - .2 Perform painting and finishing specified in this Section only by a Subcontractor who has a minimum of five years of proven satisfactory applications similar to that specified. Subcontractor shall have equipment and skilled tradesmen to perform work expeditiously. Journeymen (and apprentices) shall have a provincial Tradesman Qualification certificate of proficiency.
- .2 Requirements of Regulatory Agencies
  - 1. Apply coatings that require fire hazard classification exactly as specified in Underwriters' Laboratories test specification that validates specified rating.
  - 2. Coatings shall meet fire hazard classification requirements of jurisdictional authorities for each material in each installation location as applicable.
  - 3. Fire retardant coatings to meet fire hazard classification requirements of jurisdictional authorities for each installation location.
  - 4. Fire hazard classification ratings shall not exceed for:
    - .1 Flame Spread: 25 for exits, 150 otherwise
    - .2 Smoke Developed: 50 for exits, 300 otherwise.

- .3 Mock-Up
  - .1 Before proceeding with painting, finish one complete space or item of each colour scheme required, showing selected colours, finish texture, materials and workmanship. After approval, the sample rooms or items shall serve as a standard for similar work throughout the building.
- .4 Inspection
  - .1 A painting inspector may be appointed by the Consultant in order to provide independent inspection of all painting and testing where required.
  - .2 The inspector shall review the condition of the substrate prior to application of any paint. The inspector shall review all painting applications in accordance with a predetermined plan agreed upon by the painting contractor, the painting inspector and the Consultant.
  - .3 The painting inspector shall be acceptable to the Architect and the OPCA Association. The cost for the inspection reports shall be paid from the Inspection and Testing Allowance.

#### 1.05 SUBMITTALS

- .1 Approvals
  - .1 Submit a written request to the Architect for approval of equivalent products during bidding period, listing each of the materials proposed, surfaces to be covered. State clearly manufacturer's name and brand name of any proposed equivalent material.
  - .2 Colour Schedule
    - .1 Paint and colours shall be selected by the Architect.
    - .2 Before any painting is to commence, the architect shall furnish a colour schedule showing where the various colours and finishes shall be applied.
- .2 List of Materials
  - .1 Before ordering materials, submit a list of those materials proposed for use for approval. For each material, give manufacturer and descriptive nomenclature that will appear on container labels. Do not order materials that have not been approved.
- .3 Affidavits
  - .1 Submit affidavits from manufacturer to certify that materials supplied for project meet specification requirements and that the manufacturer approves of their use for each proposed application.
- .4 Samples
  - .1 Painter to prepare samples of each type of paint, stain and application specified, on 220 X 280 mm plywood for approval, to be left on the job site until painting contract is complete. Label samples to indicate finish, formula, colour name, number, sheen and gloss.

.5 Inspection Reports

- .1 A painting inspector shall review and submit reports on the quality of the painting contract.

**1.06 GUARANTEE**

- .1 The painting contractor shall furnish a Canadian Painting Contractors two-year Guarantee, or alternatively a 100% two-year Maintenance Bond, on completion of the work. The Guarantee (or Maintenance Bond) shall warrant that the work has been performed in accordance with the standards and requirements incorporated in the Canadian Painting Contractors Architectural Specification Manual, latest edition. The work performed by the Painting Contractor shall be inspected by an independent inspector acceptable to the specifying authority and to the appropriated Provincial Painting and Decorating Contractors Association. The cost of this inspection and the Guarantee (or Maintenance Bond) shall be included in this tender.
- .2 Painting contractors using a Maintenance Bond type of guarantee shall supply with their tenders a facsimile of the bond to be used, together with written proof of their ability to furnish same, at no cost to the owner. In either event, the inspection is as referred to in the CPCA manual.

**1.07 DELIVERY STORAGE AND HANDELING**

- .1 Deliver each container sealed and labelled with manufacturer's name, catalogue number/brand name, colour, formulation type, reducing instructions, and reference standard specification number if applicable.
- .2 Store only acceptable project materials at site, in area specifically set aside for purpose that is locked, ventilated, maintained at a temperature of over 7°C, and protected from direct rays of sun.
- .3 Ensure health and fire regulations are complied with in storage area. Provide carbon dioxide fire extinguishers of 9 kg minimum capacity in each storage area while materials are contained within.
- .4 On each container, for materials requiring a fire hazard classification, attach Underwriter's label verifying material is listed under their label service, and giving the hazard classification.

**1.08 SITE CONDITIONS**

- .1 Environmental Requirements
- .1 Apply painting materials only when air and surface temperatures exceed 5°C, except for:
- .1 7°C for latex paint at interior locations
- .2 10°C for latex paint at exterior locations
- .3 21°C for lacquers and enamels
- .2 Do not apply exterior finishes in direct sunlight that raises surface temperatures above that for proper application and drying, nor in rainy, foggy, or windy weather.

- .3 Do not apply finishes when relative humidity is over 85%, when condensation has formed or is likely to form, nor immediately following rain, frost or formation of dew.
- .4 Test moisture of surfaces by electronic Moisture Meter.
- .5 Do not apply finishes when dust is raised.
- .6 Do not apply finishes on porous surfaces as concrete, plaster, gypsum board, pipe insulation, masonry, containing over 12% moisture.
- .7 Masonry and Concrete Blocks must be installed at least 28 days prior to painting and must be visually dry on both sides before painting commences. This is not to be construed as including a "wetting down" process for Latex.
- .8 Concrete Floors shall be tested for moisture by a simple "cover patch test".
- .9 Painting and decorating work shall not proceed unless a minimum of 15 foot candles of lighting is provided on the surfaces to be painted. Adequate lighting facilities shall be provided by the General Contractor.
- .10 All areas where painting and decorating work is proceeding require adequate continuous ventilation and sufficient heating facilities to maintain temperatures above 7 deg. C. for 24 hours before and after paint application. Required heat and ventilation shall be provided for the Painting Subcontractor.

#### **1.09 PROTECTION**

- .1 Protect other surfaces from paint and damage and make good any damage caused by failure to provide suitable protection, but will not be responsible for any damage caused by others.
- .2 Furnish sufficient drop cloths, shields and protective equipment to prevent spray or dropping from fouling surfaces not being painted and in particular, surfaces within the storage and preparation area.
- .3 Waste, cloths and material which may constitute a fire hazard shall be placed in closed metal containers and removed daily from the site.
- .4 Remove all electrical plates, surface hardware, fittings and fastenings, prior to painting operations. These items shall be carefully stored, cleaned and replaced on completion of work in each area. No solvent shall be used to clean hardware that will remove the permanent lacquer finish on some of these items.

### **PART 2 - PRODUCTS**

#### **2.01 MATERIALS**

- .1 Paint, varnish, stain, enamel, lacquer, and fillers shall be of a type and brand specified and listed under "Paint Product Recommendations" as covered in the Association Manual, latest edition, for specified purposes.
- .2 Paint materials such as linseed oil, shellac, turpentine, etc., and any of the above materials not specifically mentioned herein be required for first class work with the finish specified shall be the highest quality product of an approved manufacturer. All coating material shall be compatible.
- .3 Only "top line" products produced by their manufacturers are acceptable.

## 2.02 MIXING

- .1 Paints to be supplied ready-mixed unless otherwise specified, except that any coating in paste or powder form, or to field-catalysed shall be field-mixed in accordance with the directions of its manufacturer. Pigments shall be fully ground and shall maintain a soft paste consistency in the vehicle during storage that can and shall be dispersed readily and uniformly by paddle to a complete homogeneous mixture.
- .2 Paint shall have good flowing and brushing properties and shall dry or cure free of sags, etc. to yield the desired finish specified.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- .1 Prior to commencement of work of this section, thoroughly examine all surfaces scheduled to be painted.
- .2 Test all surfaces for moisture content with an electronic moisture meter. Test surfaces of materials containing lime for acid-alkali balance.
- .3 Maintain at site at all times until applications are completed a moisture meter, hygrometer and thermometer to verify surface and environmental conditions.
- .4 Report in writing to the Contractor and the Architect any condition adversely affecting this work. No painting work shall proceed until all such defects have been corrected and surfaces are acceptable to the Painting Inspector.
- .5 Defective painting and finishing applications resulting from failure to properly test surfaces and/or from application to unsatisfactory surfaces shall be considered the responsibility of this Section.
- .6 Continuation of painting after first coat on drywall, plaster, structural steel and miscellaneous metal surfaces, shall imply acceptance of surfaces.

### 3.02 PREPARATION

- .1 General
  - .1 Vacuum clean interior areas immediately before finishing work commences.
  - .2 Remove from all surfaces grease, oil, dirt, dust, ridges, and other oil and materials that would adversely affect the adhesion or appearance of finish coatings.
  - .3 Remove rust from damaged surfaces primed by other Sections or previously painted and reprime.
  - .4 Neutralize highly alkaline surfaces with a neutralizing wash of 4% solution of zinc sulphate. Substitute 4% solution of tetrapotassium pyrophosphate for surfaces to receive latex paints. Brush off residue before painting.
  - .5 Scrub mildewed surfaces with solution of tri-sodium phosphate, and bleach with a solution of one part sodium hypochlorite (Javex) to three parts water. Rinse with clear water.

- .2 Surface Preparation
  - .1 Surface preparation to receive painting and finishing included under this Section of work shall be as follows or as specified in the Canadian Painting Specifications Manual and the Room Finish Schedule.
  - .2 General: Remove from all surfaces grease, oil, dirt, dust, ridges, and other oil and materials that would adversely affect the adhesion or appearance of finish coatings.
  - .3 Woodwork and Millwork: Clean and remove all foreign matter prior to prime coat application and sealing of knots, pitch streaks and sappy sections with sealer. Puttying of nail holes and minimal cracks after prime coat has dried and sanding between prime coat and following coats except final coat. Backpriming to interior and exterior woodwork.
  - .4 Concrete Floors: Shot blast and etch.
  - .5 Galvanized Steel and Iron: Washing (Etching).
  - .6 Plaster: Minimal cracks, holes and imperfections shall be filled with patching plaster and smoothed off to match adjoining surfaces by the Plastering Contractor after the prime coat has been applied. Washing and neutralizing high alkali surfaces where they occur. Moisture test surfaces before paint application.
  - .7 Masonry, Concrete, Stucco and Cement Render: Surfaces which are very smooth or have traces of form oil or parting compounds shall be treated with acid-detergent treatment and washed with water. Powder, chalking, oxidizing to be removed.
  - .8 Drywall: Surfaces shall be in a ready condition to paint. Any imperfection showing after application of the prime coat shall be corrected by the Drywall Contractor.

### 3.03 NEW MATERIAL

- .1 Aluminum (unfinished)
  - .1 Remove surface contamination by steam, high pressure water or xylene solvent washing. Apply etching type primer (or acid etching) then paint immediately, as per Manufacturers: Direction.
- .2 Asphalt, Creosote, Tar & Bituminous Surfaces
  - .1 Remove dirt, oil, grease, sand if necessary for adhesion key. Apply Latex based sealer or primer.
- .3 Canvas & Cotton Insulated Coverings:
  - .1 Remove dirt, grease and oil, test for moisture content of 12% or less.
- .4 Copper
  - .1 Painted: Remove surface contamination by steam, high pressure water or xylene solvent washing. Apply Vinyl etching primer then paint immediately, as per Manufacturers: Direction.
  - .2 Oxidized: Remove contamination, apply oxidizing solution of copper acetate and ammonium chloride in acetic acid, and rub on repeatedly for correct effect. Finally, rinse well with clear water and let dry.

- 
- .5 Drywall
    - .1 Remove contamination, prime surface to show defects if any (defects to be repaired by others). After defects remedied carry on with paint coatings.
  - .6 Galvanized Steel
    - .1 Remove surface contamination, wash metal with xylene solvent and apply coat of an approved etching type primer.
  - .7 Zinc Coated Steel
    - .1 Remove surface contamination and prepare surface to material manufacturer's instructions for priming. Refer to Chapter 3 of CPCA.
  - .8 Masonry Surfaces and Concrete
    - .1 Remove dirt, loose mortar, scale, powder and other foreign matter. Oil and grease to be removed by solution containing T.S.P., then rinse and let dry. This is not to be construed to include cleaning, chipping or grinding of protrusions or filling of "honeycomb" holes, etc.
    - .2 Concrete stains caused by weathering of corroding metals shall be removed with solution of sodium metasilicate after being thoroughly wetted with water. Let dry. This shall be corrected at no cost to the Painter.
    - .3 Existing interior exposed brickwork, all to be painted. Remove dirt, loose mortar, scale, powder and other foreign matter. Oil and grease to be removed by solution containing T.S.P., then rinse and let dry.
  - .9 Plaster
    - .1 Hairline cracks, small holes and imperfections shall be corrected by the Plastering Contractor. Wash and neutralize high alkali surfaces where they occur.
  - .10 Structural and Miscellaneous Steel
    - .1 Surfaces shall be in a proper condition to receive paint finish with grease, rust, scale, dirt and dust removed. Where steel and iron have a heavy coating of scale, it shall be removed by wire brushing, sandblasting, etc., as necessary by others. All steel surfaces must be primed and satisfactory before paint finishing.
  - .11 Wood Plywood & Millwork
    - .1 All wood surfaces shall be clean and dry with a moisture reading of less than 15%. Remove all foreign matter prior to prime coat: knots, pitch streaks and sappy sections shall be spot coated with sealer. Fill all nail holes and fine cracks after primer has dried and sanded between coats. Backprime to interior and exterior woodwork.

### 3.04 PREVIOUSLY PAINTED SURFACES

- .1 Interior
  - .1 Surfaces must be clean and dry and free of all grease, wax and dirt.
  - .2 Remove grease, wax and dirt by washing with a good quality household cleaner. Rinse with clean water and let dry thoroughly before painting.
  - .3 Remove all loose or peeling paint by scraping - feather edges with medium sandpaper.

- .4 Patch holes and crack with a good quality water-based patching compound, let dry and sand smooth. Remove dust and spot prime with Latex Sealer.
- .5 Sand glossy surfaces lightly with fine sandpaper to ensure proper adhesion.
- .6 Seal porous surfaces, such as flat latex, with Latex Sealer, especially if refinishing with velvet or eggshell enamels to prevent "flashing" or uneven gloss.
- .2 Exterior
  - .1 Surfaces must be clean and dry and free of all grease, wax, dirt and mildew.
  - .2 Mildew can be easily removed by washing with a chlorine bleach solution - about one litre of bleach to three litres of water. Rinse with clean water and let dry thoroughly before painting.
  - .3 Remove all loose or peeling paint by scraping.
  - .4 Patch holes and cracks with an exterior patching compound.
  - .5 Re-caulk all open joints or cracks to prevent moisture entering wood or masonry.
  - .6 Spot prime bare areas with the appropriate primer before painting.
  - .7 Remove excess caulk by washing and/or sanding. Chalky surfaces to be sealed with a coat of Exterior Alkyd Primer.
  - .8 Glossy surfaces should be dulled by light sanding with fine sandpaper to ensure proper adhesion.

### 3.05 APPLICATION

- .1 General
  - .1 Method of paint application shall be generally by the accepted trade method.
  - .2 Painting coats specified are intended to cover surfaces satisfactorily when applied in strict accordance to recommendations.
  - .3 Apply each coat at the proper consistency.
  - .4 Each coat of paint, shall be slightly darker than preceding coat unless otherwise approved.
  - .5 Sand lightly between coats to achieve an anchor for the required finish.
  - .6 Do not apply finishes on surfaces that are not sufficiently dry.
  - .7 Each coat of finish should be dry and hard before a following coat is applied unless the manufacturer's directions state otherwise.
  - .8 Tint filler to match wood when clear finishes are specified; work filler well into the grain and before it has set wipe the excess from the surface.
  - .9 Finish glazing rebates before glazing commences.
  - .10 Do not paint caulked joints.
  - .11 On exterior work do not paint during temperatures under 5 deg C. or immediately following rain, frost or dew; on interiors do not paint during temperatures under 5 deg C. or on surfaces where condensation has formed or is likely to form. The minimum temperatures allowed for Latex paints shall be 7 deg. C. for interior work and 10 deg. C. for exterior work.



- .2 General Colour Requirements
1. Refer to the Colour/Room Finish Schedule for type and extent of finishes.
  2. The following generally, will be painted colour, texture, and sheen to match adjacent surfaces; access doors, registers, radiators and covers, prime coated butts, prime coated door closers and exposed pipes.
  3. Exterior and interior steel frames and trim generally will be of a different colour than adjacent walls.
  4. Ceilings generally will be painted a different colour than walls. Doors generally will be painted a different colour than trim and walls. Door Frames are a different colour than doors and walls.
  5. Existing steel lockers body/trim will be painted a different colour than adjacent walls, lockers doors will be a different colour from the locker body/trim.
  6. This section shall figure on:
    - .1 4 different light colours
    - .2 4 different dark colours (deep and bright included) Black Included.

Refer to Finish Schedule at end of Division 09
- .3 Priming and Backpriming
- .1 Exterior woodwork which is to receive a paint finish shall be back-primed upon arrival at the job site with exterior primer paint, stain or varnish, depending on the finish.
  - .2 Interior woodwork which is to receive paint or enamel finish shall be backprimed upon arrival at the job site with enamel undercoating paint.
  - .3 Stain, or gloss varnish reduce as per manufacturer's directions.
  - .4 Top and bottom edges of wood and metal doors shall be primed with undercoating, stain or varnish, depending on the finish specified.
- .4 Painting
- .1 For block filler apply as follows: Apply by airless spray followed by immediate back-rolling to uniform appearance. For airless spray use a 28 to 32 mil. Tip.
  - .2 Apply paint by brush or rollers. Spray paint only when requested or approved, and in approved areas. Discontinue spraying if directed because of inadequate coverage, over spray, paint fog drift, or disturbance to construction operations.
  - .3 Use only brushes for enamels and varnishes, and for painting wood.
  - .4 Specified formulas are intended to completely cover surfaces. If it is considered that coverage is inadequate, do not commence application without direction. Otherwise, apply as many coats as necessary to ensure completely satisfactory cover.
  - .5 Use only unadulterated paint. Thin paint as specified by manufacturer.
  - .6 Touch up viable suction spots on dried primer and ensure that they are sealed before application of second coat. Repeat on second coat if still visible.

- .7 Do not paint metal access and electrical panels when they are closed. Paint when open and leave open until dry.
- .8 Where exposed to view, fill holes and open grain of exposed plywood edges with wood filler following prime coats. Smooth and sand before applying next coat.
- .5 Staining
  - .1 Pad filler well into pores of open-grained wood with a circular rubbing motion. Clean surplus off by rubbing across the grain before filler dries.
  - .2 Tint filler to match wood.
  - .3 Where indicated in these specifications or on Drawings, wood is to receive either a "wiped" stain or solid stain.
  - .4 Solid stain shall provide a uniform colour over the entire surface to receive the stain. Adjust stain colours as necessary to obtain the same colour over any variations between wood pieces.
  - .5 "Wiped" stain shall provide a highlighting of the wood grain in the surfaces to receive this stain, with not more than 20% colour in open areas and not more than 80% colour in grain.

### 3.06 FIELD QUALITY CONTROL

- .1 Alkali Content Tests: Use pink litmus paper for testing surfaces for alkalinity. Where extreme alkali conditions occur surfaces are to be neutralized by washing. Wash shall consist of a 4% solution of Zinc Sulphate.
- .2 Alkali content tests, and such other tests as shall be necessary, shall be performed by the Painter in collaboration with the painting inspector.
- .3 Painting Inspector to visit the site while painting and finishing applications are in progress. On each visit he shall verify that specified materials and methods are used, and that procedures agreed upon at the initial site meeting are followed.
- .4 Painting Inspector to submit reports of each site visit.

### 3.07 CLEANING

- .1 Promptly as the work proceeds and on completion of the work, removal paint where spilled, splashed or spattered' during the progress of the work keep the premises free from any unnecessary accumulation of tools, equipment, surplus materials and debris; at the conclusion of the work leave the premises neat and clean to the satisfaction of the Paint Inspector, Architect and/or Owner.

### 3.08 EXTRA STOCK

- .1 Deliver to Owner on completion of painting and finishing, and as directed, sealed containers of each finish painting material applied, and in each colour. Label each container as for original, including mixing formula. Provide 4 L of extra stock when less than 50 L are used for project, 8 L of extra stock when 50 to 200 L are used, and 12 L of extra stock when over 200 L are used.

---

### 3.09 PAINTING AND FINISHING SCHEDULE

- .1 General
  - .1 This Section shall include painting and/or finishing of all surfaces exposed to view that have been installed with no final finish provided by the installer, unless otherwise specified and except for mechanical and service spaces.
  - .2 Finish interior surfaces, including objects within each area unless otherwise excluded, as indicated on Finish Schedule.
  - .3 Wall surfaces partially finished with other finish materials shall have remainder of surfaces finished as for surrounding surfaces.
  - .4 An additional finish coat is required for dark colours and pastel colours.
  - .5 Finish equipment, panels, fitments, services, structure, attachments, accessories, prime coated hardware, or similar appurtenances on or near finished surfaces to match finish of the surface.
  - .6 Finish edges and tops of trim, projecting ledges, fitments, cupboards, and similar surfaces to match adjacent surfaces, whether or not they are above or beyond sight lines.
  - .7 Finish interiors of alcoves, recesses, closets, cupboards, fitments, and similar spaces to match adjacent surfaces unless otherwise indicated.
  - .8 Finish surfaces visible through grilles, grille cloth, perforated metals, screening, convactor covers, louvres, linear metal ceilings, and other openings, including inside of ductwork, with two coats of matte black paint. If it is the intention that finished surfaces be seen behind the elements listed above, finish the surfaces to match adjoining surfaces.
  - .9 Finish exposed wood and exposed ferrous metals, whether primed or galvanized or not, on surfaces that are indicated as unfinished.
  - .10 Paint exposed metal housings of weather stripping and door seals and door closers to match surface to which they are attached and which are painted or finished by this Section.
- .2 Include Finishing of the Following Surfaces by This Section
  - .1 Steel lintels where exposed to view.
  - .2 Interior ferrous metal hardware, fasteners and accessories, new and existing.
  - .3 Interior galvanized hardware, fasteners and accessories, new and existing.
  - .4 Exterior ferrous metal hardware, fasteners and accessories, new and existing.
  - .5 Exterior galvanized hardware, fasteners and accessories.
  - .6 Finish wood edges of new and existing doors and edges of new and existing metal doors exposed to view with same number coats of material and colour as adjoining surface finishes. Where not exposed, finish wood doors with two coats of varnish.
  - .7 Paint exposed plywood edges of new and existing doors to match stained finish.
  - .8 Paint new and existing metal door grilles to match door faces.
  - .9 New and existing sheet metal ducts in interior spaces where exposed to view.
  - .10 Sprinkler system except for heads where exposed to view.

- .11 Access doors, new and existing.
  - .12 Baseboard units, new and existing.
  - .13 Convector covers, new and existing.
  - .14 Prime painted louvres, grilles, and diffusers at interior.
  - .15 Prime painted louvres, grilles, and diffusers at exterior.
  - .16 Prime painted fire hose and extinguisher cabinets.
  - .17 Prime painted electrical panel doors and frames.
  - .18 Paint new and existing piping and conduit exposed to view in finished areas. Colours to match adjacent surfaces.
  - .19 Ensure that no colour coding or other identification of services that are applied by others are painted over by this Section.
  - .20 Fill pipes.
  - .21 Electrical service entry.
  - .22 Mechanical, electrical and other equipment and accessories on roof including any existing items.
- .3 Surfaces That Do Not Require Finishing
- .1 Painting or finishing of the following surfaces is not included in this Section:
    - .2 Plastics; metals with porcelain enamel, baked enamel or plated finishes; sound absorbent surfaces; vitreous, glazed ceramic or plastic facings; special coatings; factory finished surfaces as specified in other Sections; control panels, circuit breakers, switches, receptacles or similar electrical components; or name and specification plates on equipment; ducts, pipes and conduit concealed from view.

### 3.10 GLOSS

- .1 Gloss value shall be determined in accordance with ASTM D523 Tentative Method of Test for 60° specular gloss.
- .2 Gloss required for each surface is noted on Room Finish Schedule.

### 3.11 FINISH FORMULA SCHEDULE

- .1 General
  - .1 The following titles and code numbers refer to the Canadian Painting Contractors Architectural (CPCA) Painting Specification Manual, latest edition, unless otherwise Indicated for type of coating, grade, named products and their manufacturers.
  - .2 All classroom corridor, gymnasium, change room, storage room and washroom wall finishes to be Waterborne epoxy finish unless noted otherwise.
- .2 Exterior Woodwork (Fences, Plywood, Partitions)
  - .1 Ext. 1-A, Exterior Alkyd Finish, premium grade.
  - .2 Ext. 1-D, Exterior Solid Colour Stain Finish, premium grade.
  - .3 Ext. 1-F, Exterior Fire Retardant
- .3 Exterior Wood Trim (Doors, Door and Window Frames, Fascia)
  - .1 Ext. 2-A, Exterior Alkyd Finish, premium grade.

- 
- .2 Ext. 2-G, Exterior Pigmented Polyurethane Finish Type 2, premium grade.
  - .4 Exterior Concrete, Concrete Block, Masonry, Stucco, Stone
    - .1 Ext. 6-A, Latex Finish, Stucco, Bricks and Render, premium grade.
    - .2 Ext. 6-B, Latex Finish, Concrete Block, premium grade.
  - .5 Exterior Structural and Misc. Steel (Factory Primed)
    - .1 Ext. 11-A, Alkyd Finish, premium grade.
    - .2 Ext. 11-C, Aluminum Paint Finish, premium grade.
    - .3 Ext. 11-D, Two Component Epoxy Finish, premium grade.
  - .6 Exterior Galvanized Metal (Zinc Coated Steel).
    - .1 Ext. 12-A, Alkyd Finish, premium grade.
    - .2 Ext. 12-B, Aluminum Finish, premium grade.
    - .3 Ext. 12-C, Bituminous Finish (Unexposed - next to concrete), Custom grade.
  - .7 Exterior Aluminium (Flashings, misc. work, downpipes, etc.)
    - .1 Ext. 13-A, Alkyd Finish on Exposed Aluminum, premium grade.
    - .2 Ext. 13-C, Bituminous Finish on unexposed aluminum, custom grade.
  - .8 Exterior Copper
    - .1 Ext. 14-A, exposed Alkyd Finish, premium grade.
    - .2 Ext. 14-C, Bituminous Finish unexposed next to concrete or wood, premium grade.
  - .9 Exterior Steel - High Heat
    - .1 Ext. 15-B, Heat Resistant Enamel Finish, follow manufacturer's recommendations for application.
  - .10 Interior Wood (wood trim, benches, wood doors and frames, cabinets etc.)
    - .1 Int. 1-B, Latex Finish, premium grade.
    - .2 Int. 1-C, Semi Transparent Alkyd Stain Finish, premium grade.
    - .3 Int. 1-D, Semi Transparent Stain Polyurethane Varnish, premium grade.
    - .4 Int. 1-I, Clear Polyurethane, premium grade.
    - .5 Int. 1-J, Fire Retardant Solvent Base Pigmented Finish, follow manufacturers' instructions to apply.
    - .6 Int. 1-K, Fire Retardant Clear Finish, follow manufacturers' instructions to apply.
    - .7 Int. 1-L, Chemical Resistant Finish Shelving, Cupboards, Etc, premium grade.
  - .11 Interior Plaster, Drywall Etc.
    - .1 Int. 4-B, Latex Finish, premium grade.
    - .2 Int. 8-D, 1 coat: Glidden Professional, GP 1000 High Hide Interior Primer Sealer

- 
- .3 coats: Glidden Professional, 4426 Tru-Glaze-WB 4426 Waterborne Epoxy Semi-Gloss Coating
  - .4 Int. 4-G, Fire Retardant Coating Latex. Follow manufacturers' recommendations for application.
  
  - .12 Interior Canvas And Cotton Insulation Coverings (pipes, and ductwork, boilers)
    - .1 Int. 5-B, Aluminum Paint Finish, premium finish.
    - .2 Int. 5-C, Latex Finish, premium grade.
  
  - .13 Interior New Acoustic Plaster, Tile and Textured Ceilings
    - .1 Int. 6-C, Custom grade.
  
  - .14 Interior Concrete, Masonry, Stucco.
    - .1 Int. 7-A, Latex Finish, premium grade.
    - .2 Int. 7-D, Water Based Tile-Like Finish on Smooth Concrete, premium grade.
  
  - .15 Interior Concrete Block, Concrete Brick and Clay Masonry
    - .1 Int. 8-A, Latex Finish, premium grade.
    - .2 Int. 8-D, 2 coats: Glidden Professional, 4426 Tru-Glaze-WB 4426 Waterborne Epoxy Semi-Gloss Coating
  
  - .16 Interior Structural And Misc. Steel (Factory-Primed)
    - .1 Int. 12-A, Alkyd Finish, premium grade.
    - .2 Int. 12-D, Two Component Epoxy Finish, premium grade.
  
  - .17 Interior Galvanized Metal (Zinc Coated Steel)
    - .1 Int. 13-A, Alkyd Finish, premium grade.
    - .2 Int. 13-D, Latex Finish, premium grade.
  
  - .18 Interior High Heat Steel (Boilers, Breeching, pipelines. etc.)
    - .1 Int. 14-B, Heat Resistant Enamel Finish, follow manufacturers' instructions for application.
    - .2 Int. 14-E, Heat Resistant Enamel Finish, for temp. between 315 to 425 deg. C. follow manufacturers' instructions for application.
  
  - .19 Interior Aluminum
    - .1 Int. 15-A, Alkyd Finish, premium grade.

**END OF SECTION**

# FINISH SCHEDULE

Our Lady of Fatima

Major Renovations and Addition

Wilson Diaz Architects Incorporated

17/01/2020

TAG	MANUFACTURER	MATERIAL CODE	COLOUR	REMARKS
1. PCT 1 - Porcelain Tile	Purestone - Centura		Bianco - Natural	Field Colour 300 X 600
2. PCT 2 - Porcelain Tile	Purestone - Centura		Piombo - Natural	Highlight 300 X 600
3. PCT 3 - Porcelain Tile	Purestone - Centura		Bianco - Polished	Field Colour 300 X 600
4. PCT 4 - Porcelain Tile	Purestone - Centura		Piombo - Polished	Highlight Mosaic
5. VCT 1 - Tarkett	Tarkett - Formally Azrock	To be selected.	Field Colour - Cloudy Day Plus up to four accent clours in patterns as indicated on drawings	310 X 310
6. QT - Versa Quartz - Alternate Prices	Procedo Flooring	To be selected.	Field Colour - Palm Spring - OPAL Plus up to four accent clours in patterns as indicated on drawings	QT1 310 X 310 - Alternate Price # 1 QT2 610 X 610 - Alternate Price #2
7. TG - Texas Granite	American Bullrite	3.0 mil.	Field Colour - Plus up to four accent clours in patterns as indicated on drawings	TG1 900 x 900
8. Res 1- Sheet Sports Flooring	Tarkett	Omnisport 7.1	To Be Selected	Sheet Flooring c/w Rubber base sports floor markings
9. Res 2- Sheet Sports Flooring - - Alternate Price #3	Interflor	DURAmultisport	To Be Selected	Sheet Flooring c/w Rubber base sports floor markings
10. RB - Rubber Base	ROPPE	Pinnacle	123-Charcoal	100mm high
11. PT-1	Sherwin Williams	Sherwin Williams Pro Industrial - B73 360 Series	Snowfall White - Semi-Gloss	Waterbased Epoxy - All corridors.
12. PT-2	Sherwin Williams	50GY 83/010	White Wing A0128 - Eggshell Finish	Field colour, for all room walls as noted on drawings.
13. PT-3	Sherwin Williams	00NN 13/000	Obsidian Glass A2014 - Satin Finish	Enamel Eggshell. All Hollow Metal Doors and Frames unless noted otherwise.
14. PT-4	Sherwin Williams	2021 - 30	Yellow Sunshine - Satin Finish	Enamel Eggshell. Hollow Metal Doors and Frames as noted.
15. PT-5	Sherwin Williams	2044 - 10	Green - Satin Finish	Enamel Eggshell. Hollow Metal Doors and Frames as noted.
16. PT-6	Sherwin Williams	2064 - 30	Ol' Blue Eyes - Satin Finish	Enamel Eggshell. Hollow Metal Doors and Frames as noted.
17. PT-7	Sherwin Williams	2125 - 40	Shadow Gray	For all bulkheads and GWB ceilings as noted on drawings.
18. PT-8	Sherwin Williams	2125 - 50	Sweet Innocence	For all bulkheads and GWB ceilings as noted on drawings.
19. ACT	Armstrong, CGC or approved equal.	Cortega - Non-Directional Fissured - 823	White	Fissured 610 X1220X19 Square Edge
20. ACT 2	Armstrong, CGC or approved equal.	Radar - Fine Fissured - 1728	White	Fissured 610 X610X19 Square Edge
21. Roller Blinds	Sum Project	9101-06	Grey	

## **PART 1 - GENERAL**

### **1.1 DESCRIPTION**

#### **.1 General Requirements**

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

### **1.2. RELATED SECTIONS**

- .1 Section 04 22 00 – Concrete Unit Masonry
- .2 Section 09 21 16 – Gypsum Board Assemblies

### **1.3. QUALITY ASSURANCE**

#### **.1 Subcontractor Qualifications**

Provide products specified in this Section only by a Subcontractor who has adequate plant, equipment, and skilled tradesmen to perform it expeditiously, and is known to have been responsible for satisfactory installations similar to that specified during a period of at least the immediate five years.

### **1.4. REFERENCES**

#### **.1 Reference Standards**

Reference standards quoted in Contract Documents refer to:  
CAN/CSA-0188.1-M78, Interior, Mat-Formed Wood Particleboard.  
Porcelain Enamel Institute Standard P.E.I. S104.

### **1.5. SUBMITTALS**

#### **.1 Shop Drawings**

Submit Shop Drawings.

#### **.2 Samples**

Submit samples of tack board, Marker board and trim.

### **1.6. DELIVERY STORAGE AND HANDLING**

- .1 Deliver products to site only immediately before installation.
- .2 Package materials to protect finish surfaces during handling and storage.



## 1.7. WARRANTY

### .1 Extended Warranty

Provide a warranty for the Work supplied by this Section covering the period of four (4) years beyond the expiration of the warranty period specified in the General Conditions to the Contract.

## PART 2 - PRODUCTS

### .1 Tackboards and Markerboards

#### .1 Tackboards

- .1 Tackboards shall be 12.7 mm thick, factory prelaminated, consisting of 6 mm thick A.S.P. natural cork, fine grain cork and 6 mm thick particleboard substrate, laminated together.
- .2 Trim: Aluminum to match finish and size.

#### .2 Markerboard

- .1 Face Panel: 22 gauge enamelling steel base with porcelain enamel writing surface, 0.727 mm thick after firing in accordance with P.E.I. S104.
- .2 Core: 11 mm thick impregnated sound absorbing fibreboard laminated to face panel and backing sheet.
- .3 Back-up Sheets: 28 gauge zinc coated stretcher level steel, in one section.
- .4 Thickness: 12.7 mm.
- .5 Size: 2440 mm X 1220 mm.
- .6 Colour: White.
- .7 Acceptable Manufacturer: Rite-on, Wipe-Off by Architectural School Products or Clark Porcelain.

#### .3 Trim

- .1 Aluminum extrusions, 6063T5 alloy with clear etched and anodized 0.051 mm satin finish.
- .2 Perimeter: 19 mm exposed face weighing 270g/m.
- .3 Divider Bar: for adjacent panels of chalk/tack or tack/tack, 12.7 mm exposed face weighing 300 g/M.
- .4 Maprail: 52 mm exposed face weighing 500 g/M, with integral cork insert to match tackboards, end stops and 2 combination roller map hooks per 2 M length of rail, to run full length of any markerboard/tackboard combination.
- .5 Trays: triangular box section with fitted end caps, 100 mm projection from face of wall weighing 1.3 kg/M

### .2 Fabrication

.1 **Frames and Trim**

- .1 Form aluminum extrusions to receive specified boards and include end stops or cast closures as applicable at exposed terminations of head and tray rails.
- .2 Include perimeter trim divider bars, maprails, and chalkrails as indicated on Drawings. Trays shall run full width of Markerboard.
- .3 Fabricate frames and trim for concealed fastening. Frames shall be self-supporting.

.2 **Chalkboards**

- .1 Fabricate chalkboards of sizes shown in a single panel.
- .2 Laminate facing and backing sheets to core with waterproof contact cement under pressure to ensure flat, level board that will not delaminate.

.3 **Tackboards**

Laminate facing and backing sheets together with waterproof contact cement under pressure to ensure flat, level boards that will not delaminate.

.4 **Markerboards**

- .1 Fabricate boards of sizes shown in a single panel.
- .2 Laminate facing and backing sheets to core with waterproof contact cement under pressure to ensure flat, level, board that will not delaminate.

**PART 3 - EXECUTION**

.1 **Installation**

- .1 Install products specified in this Section to meet requirements of manufacturer's specifications, and plumb, level and in true planes.
- .2 Install markerboard and tackboard panels to walls with concealed tamperproof fasteners. Where more than one unit is indicated on Drawings as adjacent to each other, install with moderate contact between units. Set board faces at a distance from wall faces so that trim fits snugly against board faces.
- .3 Fasten trim to walls with screw fastenings at 400 mm o.c. horizontally and 610 mm o.c. vertically. Conceal fastenings and adapt to mounting surface materials. Use metal plugs at masonry walls.

**.2     Adjustment and Cleaning**

- .1     Refinish damaged or defective products specified in this Section so that no variation in surface appearance is discernible. Refinish products at site only if approved.
- .2     Remove from products soil or dirt deposits resulting from fabrication and installation.
- .3     Adjust installations to operate smoothly, and without force and binding.
- .4     Final cleaning is specified in Section 01710.

**End of Section**

## PART 1 - GENERAL

### 1.1 DESCRIPTION

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

### 1.2. RELATED SECTIONS

- .1 Section 04220 – Concrete Masonry Units
- .2 Section 09250 – Gypsum Board

### 1.3. SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01330 Submittal Procedures.
- .2 Clearly indicate fabrication and erection details including materials, finishes, accessories and anchorage.

## Part 2 PRODUCTS

### 2.1. MATERIALS

- .1 Exterior Aluminum Letters:
  - .1 Supply and install one sign with wording, “**ST. XXXXXXXXX CATHOLIC ELEMENTARY SCHOOL**”, 300 mm high, Optima Semi Bold, upper case, cast aluminum letters, clear anodized, complete with concealed pin mountings for masonry wall installation.
- .2 Interior Aluminum Letters:
  - .1 Supply and install on sign with wording, “**LEARNING COMMONS**”, 300 mm high, Optima Semi Bold, upper case, cast aluminum letters, clear anodized, complete with concealed pin mountings for masonry wall installation.
  - .2 Supply and install on sign with wording, “**OFFICE**”, 300 mm high, Optima Semi Bold, upper case, cast aluminum letters, clear anodized, complete with concealed pin mountings for masonry wall installation.

### **PART 3 EXECUTION**

#### **3.1. INSTALLATION**

- .1 Provide manufacturer's information and templates required for installation of specialties specified in this Section, and assist or supervise, or both, the setting of anchorage devices, and construction of other installations incorporated with specialty products in order that they function as intended.
- .2 Install specialty products to meet manufacturers' recommended specifications, true, tightly fitted, and level or flush to adjacent surfaces, as suitable for installation.
- .3 Include all fittings and hardware to complete installation.

#### **3.2. ADJUSTMENT AND CLEANING**

- .1 Verify that installed specialty 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. Refinish specialty products at site only if approved.

#### **3.3. LOCATIONS**

- .1 Exterior Aluminum Letters: Install on metallic pins as recommended by manufacturer in locations shown on Drawings, or as directed on site. Refer to Exterior Elevations.
- .2 Interior Aluminum Letters: Install on metallic pins as recommended by manufacturer in locations shown on Drawings, or as directed on site. Refer to Interior Elevations.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 DESCRIPTION**

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

### **1.2. RELATED SECTIONS**

- .1 Section 09 51 13 – Acoustic Panel Ceilings

### **1.3. SECTION INCLUDES**

- .1 Metal toilet compartments (MTL-TP), floor-mounted, overhead braced.
- .2 Metal urinal screens.
- .3 Associated hardware.

### **1.4. ADMINISTRATIVE REQUIREMENTS**

- .1 Coordination:
  - .1 Coordinate with other Work having a direct bearing on work of this Section.
  - .2 Coordinate the Work with placement of support framing and anchors in walls and ceilings.

### **1.5. SUBMITTALS FOR REVIEW**

- .1 Product Data: Provide data on types, sizes and accessories.
- .2 Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall, floor and ceiling supports, door swings.
- .3 Sustainable Design: Submit information supporting LEED compliance outline in Section 01 67 00.

### **1.6. SUBMITTALS FOR INFORMATION**

- .1 Installation Data: Manufacture's special installation requirements, including special procedures, and perimeter conditions requiring special attention.

### **1.7. REGULATORY REQUIREMENTS**

- .1 Conform to the Ontario Building Code OBC Section 3.8 and CAN/CSA-B651 for accessibility requirements for the handicapped as well as the following:
  - .1 The Accessibility for Ontarians with Disabilities Act (AODA)

## 1.8. WARRANTY

- .1 Manufacturer's Warranty: Provide manufacturer's warranty in which manufacturer agrees to repair or replace components that fail in materials or workmanship within fifteen-year period.
- .2 Failures include:
  - .1 Delamination of components.
  - .2 Warping of components.
  - .3 Failure of operating hardware.
  - .4 Deterioration of finishes.

## Part 2 Products

### 2.1. MATERIALS – GENERAL

- .1 Sustainable Design: General LEED compliant material requirements:
  - .1 Low Emitting Materials: Provide adhesives, sealants, paints, and coatings to be used on the interior of the building (inside of the weatherproofing system) in conformance with VOC content requirements listed in Section 01 67 00.

### 2.2. MANUFACTURERS

- .1 System and Manufacturer: Subject to conformance with requirements provide 'Hybrid Stainless Steel' floor mounted overhead braced partitions manufactured by Hadrian Inc.
- .2 Acceptable Alternate Manufacturers: Subject to conformance with requirements provide toilet compartments manufactured by the following:
  - .1 Knickerbocker Partition Corporation, or
  - .2 Shanahan's Manufacturing Limited.

### 2.3. MATERIALS

- .1 Stainless Steel Sheet:
  - .1 ASTM A 240/1 240M or ASTM A 666, Type 304, stretcher-levelled standard of flatness.
  - .2 Minimum Thickness:
    - .1 Member: Type 304 Stainless steel.
      - .1 Doors 0.8 mm
      - .2 Panels 0.8 mm
      - .3 Pilaster 1.2 mm

- 
- .2 Core: Sound deadening, moisture resistant, impregnated cardboard honeycomb. Adhere each cell to face sheets with moisture impervious adhesive.
  - .3 Bituminous Paint: CAN/CGSB-1.108-M89, Type 2.
  - .4 Butyl Tape: Extruded, high grade macro-polyisobutylene tape of width and shore hardness to suit conditions.
  - .5 Building Paper: CAN/CGSB-51.32-M77.
  - .6 Hardware and Fittings:
    - .1 Compartment panels and pilasters shall be secured with brackets made of brush finish extruded aluminum alloy.
    - .2 Doors shall be equipped with gravity type hinges, full concealed within the thickness of the door during operation.
    - .3 Hinges shall be adjustable to permit door to come to rest at specified angle when not latched.
    - .4 Doors shall be mounted on upper and lower pilaster hinge brackets of chrome-plated, zinc die castings.
    - .5 Each door to be fitted with chrome-plated, breakaway coat hook and bumper, and a concealed latch, with face mortised flush with edge strip and all working parts fully concealed within the thickness of the door.
    - .6 Provide “C” type pull at doors to stalls for handicapped.
    - .7 Provide reinforcement for washroom accessories as required to preserve integrity of partition panels and as required to ensure secure attachment of accessories.
    - .8 The top of the pilaster is to be reinforced with minimum 11-gauge carrying channel and prepared for ceiling connection. Stainless steel 4” (102 mm) high shoes to be manufactured of type 304 #4 finish stainless steel to ASTM #A240 minimum 20 with continuous self-locking edges (fasteners are not required).
  - .7 Metal Filler:
    - .1 Polyester-based type metal filler.

#### 2.4. FABRICATION

- .1 Shop fabricate toilet partitions. Take site measurements for areas where partitions are to be located and fabricate toilet partitions to suit site dimensions.
- .2 Fabricate doors, panels, and pilasters from sheet steel laminated to both sides of core material, under pressure, using waterproof adhesive. Finished doors and panels shall be 25 mm thick and pilasters shall be 32 mm thick.
- .3 Check sizes and locations for washroom accessories and if necessary, reinforce panels.



- .4 Form all edges of doors, panels and pilasters and secure together with continuous flat locking strip with mitred and welded corners.
- .5 Fill depressions and cavities with metal filler, sand smooth, degrease and clean thoroughly.
- .6 Prepare panels to accept tissue dispensers and grab bars where indicated on drawings.
- .7 Design supports to withstand, within acceptable deflection limitations, their own weight, the weight of the toilet compartments, loads imposed by the motion of compartment doors and all live loads, which might be applied to the toilet compartments in the course of their normal function. Design supports as required to accommodate structural deflection. Build in reinforcing to support the grab bars and withstand a downward pull of 500 lbs. at point on the grab bar.

## **2.5. FINISHES**

- .1 Type 304 stainless steel with #4 brushed finish exterior and embossed stainless steel interior.
- .2 Colours: To architects selection from all supplier colours.

## **Part 3 Execution**

### **3.1. EXAMINATION**

- .1 Examine substrates to receive the work of this section and ensure that work of other sections is complete and that there are no conditions which will adversely affect the work of this section.
- .2 Notify the Construction Manager immediately of unsatisfactory conditions. Do not proceed with the work of this section until unsatisfactory conditions have been corrected.
- .3 Commencement of the work of this section implies acceptance of surfaces and conditions.

### **3.2. INSTALLATION**

- .1 Install metal toilet partitions according to manufacturer's installation recommendations.
- .2 Install partitions plumb, level and securely fastened in the locations shown on the drawings.
- .3 Perform drilling of steel, masonry and concrete necessary to install the work of this Section.

- .4 Coordinate installation with the work of trades providing wall and floor finishes, washroom accessories and other adjacent partitions and constructions.
- .5 Isolate contact surfaces to prevent electrolysis due to metal contact with masonry, concrete or dissimilar metal surfaces. Use bituminous paint, building paper, butyl tape or other approved means.
- .6 Install hardware supplied under this Section and ensure that it is visually aligned.
- .7 Securely install extruded aluminum headrail to wall and pilasters with fittings to make a strong and rigid insulation.

### **3.3. FIELD QUALITY CONTROL**

- .1 Install partitions allowing the following clearances and tolerances:
  - .1 Between panel edges and wall: 25 mm + 3 mm
  - .2 Between partition panel edge and pilaster panel: 13 mm + 3 mm
  - .3 Between pilaster panel edge and door edge: 5 mm + 2 mm
  - .4 Ensure that partitions are visually aligned from all view points.

### **3.4. ADJUSTING**

- .1 Upon completion of the work or when directed, remove all traces of protective coating or paper, and polish all surfaces.
- .2 Test hinges, locks and latches and where necessary, adjust and lubricate. Set hinges so that inswinging doors stand open 30° when compartment is not in use. Set hinge cam on outswinging doors to hold unlatched doors in closed position. Ensure that compartments are in working order.

### **3.5. CLEANING**

- .1 Clean and make good surfaces soiled or otherwise damaged in connection with the work of this Section, replacing finishes or materials that cannot be satisfactorily cleaned.
- .2 Upon completion of the work, remove all debris, equipment and excess material resulting from the work of this Section from the Site.

**END OF SECTION**

---

## **PART 1 - GENERAL**

### **1.1 DESCRIPTION**

#### **.1 General Requirements**

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

### **1.2. RELATED SECTIONS**

- .1 Section 04 22 00 – Concrete Unit Masonry
- .2 Section 09 21 16 – Gypsum Board Assemblies
- .3 Section 10 21 14 – Metal Toilet Compartments

### **1.3. REFERENCES**

#### **.1 American Society for Testing and Materials (ASTM):**

- .1 ASTM A 167-99, Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
- .2 ASTM B 456-95, Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium
- .3 ASTM A 653/A653M-99, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- .4 ASTM A 924/A924M-99, Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process

#### **.2 Canadian General Standards Board (CGSB):**

- .1 CAN/CGSB-1.81-M90, Air Drying and Baking Alkyd Primer for Vehicles and Equipment
- .2 CAN/CGSB-1.88-92, Gloss Alkyd Enamel, Air Drying and Baking
- .3 CAN/CGSB-12.5-M86, Mirrors, Silvered
- .4 CGSB 31-GP-107Ma-90, Non-Inhibited Phosphoric Acid Base Metal Conditioner and Rust Remover

#### **.3 Canadian Standards Association (CSA):**

- .1 CAN/CSA-B651-95, Barrier-Free Design
- .2 CAN/CSA-G164-M92, Hot-Dip Galvanizing of Irregularly Shaped Articles

### **1.4. SHOP DRAWINGS**

- .1 Submit shop drawings in accordance with Section 01330 Submittal Requirements.
- .2
- .3 Indicate size and description of components, base material, surface finish inside and out, hardware and locks, attachment devices, description of rough-in-frame, building-in details of anchors for grab bars.

---

**1.5. SAMPLES**

- .1 Submit samples in accordance with Section 01330 Submittal Requirements.
- .2 Samples to be returned for inclusion into work.

**1.6. CLOSEOUT SUBMITTALS**

- .1 Provide maintenance data for toilet and bath accessories for incorporation into manual specified in Section 01701 – Closeout Submittals.

**1.7. EXTRA MATERIALS**

- .1 Provide special tools required for accessing, assembly/disassembly or removal for toilet accessories in accordance with requirements specified in Section 01700 – Contract Closeout.
- .2 Deliver special tools to Owner.

**1.8. ACCEPTABLE PRODUCTS**

- .1 Products listed are based on Bobrick model numbers.
- .2 Products manufactured by Saferail and Watrous/ASI meeting or exceeding specified performance are acceptable.

**PART 2 PRODUCTS**

**2.1. MATERIALS**

- .1 Sheet Steel: To ASTM A 653/A653M with G90 designation zinc coating.
- .2 Stainless Steel Sheet Metal: To ASTM A 167, Type 302, with No. 4 finish.
- .3 Stainless Steel Tubing: Type 304, commercial grade, seamless welded, 1.2 mm wall thickness.
- .4 Fasteners: Concealed screws and bolts hot-dip galvanized, exposed fasteners to match face of unit. Expansion shields fibre, lead or rubber as recommended by accessory manufacturer for component and its intended use.

**2.2. COMPONENTS**

- .1 Toilet Tissue Dispenser: Provided by Owner, installed by Contractor
- .2 Soap Dispenser: Provided by Owner, installed by Contractor
- .3 Paper Towel Dispenser: Provided by Owner, installed by Contractor
- .4 Feminine Napkin Disposal Bin: Type 304 stainless steel surface mounted unit, all-welded construction, continuous hinged door, self-closing
  - .1 Acceptable Material: Bobrick – Model # B-254
- .5 Grab Bars: 38 mm dia. x 1.6 mm wall tubing of stainless steel, 76 mm diameter wall flanges, concealed screw attachment, flanges welded to tubular bar, provided with steel back plates and all accessories. Knurl bar at area of hand grips. Grab bar material and anchorage to withstand downward pull of 2.2 kN.
  - .1 Acceptable Material: Type GB1: Bobrick Model No. B-5806.99x24; Type GB2: Bobrick Model No. 816722.99; Type GB3: Bobrick Model No. B-5806.99x36
- .6 Collapsible Hook: High strength polycarbonate
  - .1 Acceptable Material: Bobrick Model No. B-983

- 
- .7 Mirror (MIR1): Wall mounted unit, fixed framed mirror 6 mm to CAN/CGSB-12.5, stainless steel frame
    - .1 Acceptable Material: Bobrick Model No. B-165 2436
  - .8 Tilt Mirror (MIR2): Wall mounted unit, fixed framed mirror 6 mm to CAN/CGSB-12.5, stainless steel frame
    - .1 Acceptable Material: Bobrick Model No. B-293 2436
  - .9 Full Length Mirror (MIR3): Wall mounted unit, fixed frame mirror 6 mm to CAN/CGSB-12.5, stainless steel frame
    - .1 Acceptable Material: Bobrick Model No. B-165 3672
  - .10 Shelf: Wall mounted unit, stainless steel
    - .1 Acceptable Material: Bobrick Model No. B295x16

### **2.3. FABRICATION**

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

### **2.4. FINISHES**

- .1 Chrome and Nickel Plating: To ASTM B 456, satin finish
- .2 Manufacturer's or brand names on face of units not acceptable.

## **Part 3 Execution**

### **3.1. INSTALLATION**

- .1 Install and secure accessories rigidly in place as follows:
  - .1 Stud Walls: Install steel back-plate to stud prior to plaster or drywall finish. Provide plate with threaded studs or plugs.

- .2 Hollow Masonry Units or Existing Plaster/Drywall: Use toggle bolts drilled into cell/wall cavity.
- .2 Install grab bars on build-in anchors provided by bar manufacturer. Install rod supports provided by manufacturer for swing up grab bars in part steel stud/gypsum board partition walls.
- .3 Use tamper-proof screws/bolts for fasteners.
- .4 Fill units with necessary supplies shortly before final acceptance of building.
- .5 Install mirrors in accordance with Section 08800 Glazing.

### **3.2. SCHEDULE**

- .1 Locate accessories where indicated on drawings and as follows. Exact locations determined by Consultant.
- .2 Toilet Tissue Dispenser: One at each toilet
- .3 Soap Dispenser: One at each sink/wash basin and hand wash/service sink
- .4 Paper Towel Dispenser: One at each sink/wash basin and hand wash/service sink
- .5 Feminine Napkin Disposal Bin: One at each girl's/women's toilet.
- .6 Grab Bars: Provide grab bars as noted on drawings. Refer to Drawings for locations for each type of grab bar.
- .7 Collapsible Hook: One at each barrier-free toilet compartment/washroom, mounting height 1200 mm A.F.F. Refer to Drawings for locations.
- .8 Mirror (MIR1): Provide in each washroom. Refer to Drawings for locations and quantity.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 DESCRIPTION**

.1 General Requirements

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

### **1.2. RELATED SECTIONS**

- .1 Section 04 22 00 – Concrete Unit Masonry  
.2 Section 09 21 16 – Gypsum Board Assemblies

### **1.3. REFERENCES**

- .1 CAN/CGSB-1.88-92 – Gloss Alkyd Enamel Air Drying and Baking  
.2 ASTM A653/A653-M-04a – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process

### **1.4. SUBMITTALS**

.1 Shop Drawings:

- .1 Submit shop drawings in accordance with Section 01330 for review by Consultant before fabrication. Indicate clearly fabrication and erection details including materials, finishes, accessories and anchorage. Review on site exact location of concealed columns, piers, plumbing pipes, electrical conduits and record same on shop drawings.

.2 Samples:

- .1 Submit duplicate 100 x 100 mm area sample of each colour and finish on actual base material in accordance with Section 01330.

.3 Extra Materials:

- .1 Provide Owner at end of project, one litre of sealed air dry formulation of each colour of shop applied paint, for Owner's maintenance (touch-up) purposes.

---

## **PART 2 -PRODUCTS**

### **2.1. ACCEPTABLE PRODUCTS**

- .1 To establish standard for Bid purposes, the Specifications are based on DECOR TRI-LOK TITAN II steel lockers by General Storage Systems.
- .2 Approved Alternates: Hadrian, Buddsteel; by matching that specified with their product
- .3 Provide full height lockers as indicated on drawings in corridor areas and stacked half height lockers in the staff room.

### **2.2. MATERIALS**

- .1 Locker Interior (Body) Including Tops, Shelves, Bottoms, and Trim Fillers:
  - .1 Minimum 1.5 mm thick (16 ga.) cold-rolled, levelled, galvanized steel. Backs shall be fabricated with right angle flanges on the vertical side. Tops, bottoms and shelves shall be formed flanged on all sides with a formed under return at the front of the shelves. Colour to be selected by Consultant.
- .2 Frames:
  - .1 Minimum 1.5 mm thick (16 ga.) cold-rolled, levelled galvanized steel. Frames shall be welded together from specially formed channel sections. Provide two rubber door grommets on the lock side of the frame. Ventilation slots shall be incorporated into the top and bottom frame members.
- .3 Doors:
  - .1 Welded, double wall construction; outer door panel 1.90 mm (14 ga.), inner door panel 0.91 mm (22 ga.); outer door panel formed with channels on both sides and the top and bottom, Inner panels shall cover the back of the pocket, and be formed with channels both sides interlocked with the outer panel, and mig welded together at the top, bottom and both sides on the back surface edges of the door; total thickness: 28 mm. The door shall close on the 1.5 mm (16 ga.) frame member with a 16 mm closure strike the full height of the door and shall fit flush with the outside frame.
- .4 Latching:
  - .1 Single point latching shall be through a single piece deep-drawn stainless-steel recessed pocket. The single piece 12 ga. channel formed hasp shall be welded to both legs of the channel frame member.



- 
- .5 Door Handles:
    - .1 Recessed stainless steel, nylon or propylene flush handle complete with Type 316, 18-8, No. 4 finish stainless steel lock guard and inset aluminum number plates. Number lockers as per approved system. Number plates shall bear number only.
  - .6 Trims, Slope Tops, End Panels, and Bases:
    - .1 All trims, end panels and bases shall be manufactured from 1.5 mm (16 ga.) cold-rolled steel.
  - .7 Sheet Steel Finish:
    - .1 All cold rolled steel surfaces shall be primed with an iron phosphate corrosion inhibitor and finished with an abrasion and graffiti resistant polymer powder coating cured to ensure a tough and durable finish. All surfaces shall meet a salt spray resistance of 300 hours with a maximum 3 mm creepage from scribe according to ASTM B117. Colours shall be selected by Consultant from standard colour range as specified on Schedule of Finishes. Paint doors, interior and trim in one colour.

### 2.3. FABRICATION

- .1 General:
  - .1 Lockers shall be single tier 305 mm W x 380 mm D x 1820 mm total height; exclusive of base, with sloped tops. Refer to Drawings for locations and quantities.
  - .2 Fabricate this Work true to dimension, square, plumb, and level. Accurately fit members with hairline joints. Secure intersecting members with adequate fastening. Make exposed welds continuous. File and grind smooth and flush.
  - .3 Fabricate finished Work free from distortion and defects detrimental to appearance and/or performance.
- .2 Component Minimum Requirements:
  - .1 Fabricate bodies and doors from galvanized pre-painted sheet steel in colour selected by the Consultant. Sides with stiffening ribs and backs flanged, formed and factory punched to provide necessary assembly holes. Tops, bottoms, and shelves shall be flanged on all four sides with a channel formation at the front of the shelves.
  - .2 Weld frames together from specially formed channel sections. Grind edges smooth and anchor corners by welding. Provide two rubber door grommets on the lock side of the frame. Incorporate ventilation slots at top and bottom frames.

- .3 Fabricate doors of double pan assembly consisting of outer panel and a full door size inner panel welded together to form rigid, strong and whip-free doors. The door shall close on a frame member with closure strike the full height of the door and flush with the outside of the frame. Hang doors on 16 ga. continuous one-piece integral right-hand hinge and frame member welded to frame. Every other knuckle of the hinge shall be staked to the steel hinge pin so the pin cannot be removed.
- .4 Mechanically fasten number plates to lockers.
- .5 For single tier lockers, work includes a shelf for each locker located approximately 350 mm below the top. Provide 3 zinc-plated round tipped metal coat hooks, fastened to locker body.

### **PART 3 - EXECUTION**

#### **3.1. INSTALLATION**

- .1 Verify all site dimensions prior to commencing installation.
- .2 Install lockers to layout where shown and secure in accordance with details.
- .3 Unless shown otherwise, provide filler panels at ends of locker bays where lockers meet different materials, and complete covering panels at exposed locker ends.
- .4 Use trim at junction of lockers with adjacent surfaces. Anchor trim at 200 mm o.c.
- .5 Test all doors and adjust as required for ease of operation.

**END OF SECTION**

---

## **PART 1 - GENERAL**

### **1.1 DESCRIPTION**

.1 General Requirements

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

### **1.2. RELATED SECTIONS**

- .1 Section 04 22 00 – Concrete Unit Masonry
- .2 Section 05 12 25 – Structural Steel
- .3 Section 09 21 16 – Gypsum Board Assemblies
- .4 Section 09 65 20 – Resilient Sports Flooring
- .5 Division 26 - Electrical

### **1.3. REFERENCED STANDARDS**

- .1 Ontario Building Code, 2017
- .2 CSA S16-01 (R2007), Limit States Design of Steel Structures
- .3 CAN/CSA S136-01, Cold Formed Structural Steel Members
- .4 CSA 086.1-94, Engineered Design in Wood
- .5 CSA S157-17, Strength Design in Aluminum
- .6 CSA W59-13, Welded Steel Construction (Metal Arc Welding)
- .7 CSA W47.1-09 (R2014), Certification of Companies for Fusion Welding of Steel

### **1.4. REQUIREMENTS OF REGULATORY AGENCIES**

- .1 Electrical equipment shall comply with the requirements of the Canadian Standards Association and/or local code inspection requirements and each item of such equipment shall be accompanied by certificate or label of approval.
- .2 Equipment design shall comply with provincial and local requirements.

### **1.5. ELECTRICAL CONNECTIONS**

- .1 For electrical power, the following will apply:
  - .1 Electrical Contractor will supply and install conduit and wiring to the master control power source, a 100 mm deep black box at master control, conduit and wire from master control to Ground Floor switch and back box at switch.
  - .2 The installer for the retractable stage shall supply and install the master control and all other wiring and electrical conduit and devices required from the junction box using a licensed electrician.
  - .3 All electrical equipment, devices, wiring and accessories shall comply with Division 26 requirements.

- .4 Wiring from the junction box shall include all switch and control wiring and devices, connections and interconnection to provide fully operating device or devices.

#### **1.6. WELDING**

- .1 Welding of structural components shall be done only by fabricators certified by CSA Welding Qualification Codes, CSA W47 or W55.3 as applicable, for welding steel, and who shall perform welding to meet specified requirements of CSA W55.2 or W59.1, as may apply.
- .2 Make welded joints tight, flush, and in true planes with base metals. Make welds continuous at joints. Grind welds in exposed locations smooth in a manner that will not leave blemishes on exposed surfaces. Join members generally by inert metal arc welding where practicable, using materials recommended by manufacturers of metals being welded. Remove flux completely following welding, and grind and polish joints smooth and clean.

#### **1.7. SUBMITTALS**

- .1 Shop Drawings: Submit shop drawings for Consultant's review, in accordance with Section 01330.
- .2 Maintenance Data and Operating Instructions: Provide maintenance and operating instructions for incorporation into maintenance manual in accordance with Section 01300.
- .3 Extended Warranty:
  - .1 Submit a warranty in accordance with Section 01710, covering the replacement of defective work for a period for four years from the expiration of the standard one-year warranty included in the Contract under the General Conditions.
  - .2 Total warranty period shall be five (5) years.

### **PART 2 - PRODUCTS**

#### **2.1. MATERIALS**

- .1 Work of this Section is based on Madsen RS-2 Recessed Retractable Stage, by Sheridan Gymnasium Equipment Limited.
- .2 Approved Alternates:
  - Posi-Stage RS-2 Retractable Stage, as manufactured by Gymnasium & Health Equipment Limited.
- .3 Operation: Electric winch assembly

- 
- .4 Size: Inside posts +/-6096 mm wide x +/-3700 mm deep; height above finished floor: +/- 10mm.
  - .5 Pocket Size: +/-7100 mm wide x +/-4600 mm high x +/- 410 mm deep.
  - .6 Accessories: 1 set of moveable stairs with handrail on both sides.
  - .7 Install only new materials of best quality and free from rust, waves and buckles, that are clean, straight with sharply defined profiles conforming to requirements of the following standards and specifications:
    - .1 Steel Sections and Plates: To CAN/CSA-G40.20/G40.21, Grade 300W; CSA S16-01 (R2007).
    - .2 Hollow Structural Sections: To CSA S16-01 (R2007), ASTM A500.
    - .3 Plywood Sub-Floor: CSA O86-14 and Douglas Fir Plywood to CSA O121-08 (R2013).
    - .4 Plywood Paneling: Minimum 12.5 mm thick, to CSA O115-M1982 (R2001); face veneer: AWMAC Select White Maple.
    - .5 Solid Wood: AWMAC Premium Grade White Maple
    - .6 Aluminum Extrusions: Grade 6061-T6 alloy
    - .7 Fasteners: All SAE Grade #5
    - .8 Shop Coat Primer: To CAN/CGSB-1.40
    - .9 Galvanized Primer: Zinc-rich, ready mix to CAN/CGSB-1-181

## **2.2. DESIGN LOADING**

- .1 Structure to be designed to the following loads, in addition to the self-weight of the assembly:
  - .1 Vertical live load of 4.8 kPa over the platform area with a vertical live load of 1.75 kN/m for each linear metre, or a concentrated load of 2.2 kN.

## **2.3. FABRICATION**

- .1 Fabricate retractable stage in accordance with reviewed and accepted shop drawings.
- .2 Vertical steel columns shall be structural steel tubing.
- .3 Provide 125 mm x 38 mm non-marking urethane wheels and non-marking adjustable rubber bumpers.
- .4 Provide Auto-Loc safety device. The fully automatic device will bring the stage to an immediate stop. The braking mechanism is activated by inertia (quick jerk) and/or centrifugal force (a faster than normal speed).
- .5 Provision shall be made for stage to automatically and positively lock in the extended position without the use of floor locks.

- .6 Each rolling frame will be permanently coupled to its adjacent frame which ensures positive engagement and alignment of vertical frames.
- .7 Provide minimum 19 mm thick G1S plywood sub floor, fastened to sub frame with counter sunk screws, with hardwood nosing on exposed edges.
- .8 Provide solid premium grade, white maple skirt board along front of stage.
- .9 Provide select grade plywood, varnished, for vertical shroud around stage, complete with support framing and hardwood corner trim. Provide removeable panel at centre, top for access to motor.
- .10 Provide electric winch assembly – 208V, single phase, 1 hp, instant reverse motor, magnetic starts, overload protection, flush-mounted key switch and three safety limit switches.

#### **2.4. FINISH**

- .1 All steel structure to be abraded, cleaned and finished in quality enamel paint.
- .2 All wood fascia risers around the floor deck to be finished with clear polyurethane.

### **PART 3 - EXECUTION**

#### **3.1. GENERAL**

- .1 Manufacturer's representative or retractable stage installer shall demonstrate the proper method of operation of the stage to the Owner upon completion of work.
- .2 Retractable stage subcontractor shall verify that all areas are free of impediments interfering with the installation and that substrates are acceptable to receive the stage in accordance with the manufacturer's recommendations.

#### **3.2. INSTALLATION**

- .1 Retractable stage shall be installed in accordance with the manufacturer's instructions and final shop drawings.
- .2 Adjustment and Cleaning: Upon completions of installation, retractable stage subcontractor shall adjust assembly to operate in compliance with manufacturer's recommendations. Retractable stage subcontractor shall clean installed stage on exposed or semi-exposed surfaces.

**END OF SECTION**

## **PART 1 - GENERAL**

### **1.1 DESCRIPTION**

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

### **1.2. RELATED SECTIONS**

- .1 Section 04 22 00 – Concrete Unit Masonry
- .2 Section 05 12 25 – Structural Steel
- .3 Section 09 65 20 – Resilient Sports Flooring
- .4 Division 26 - Electrical

### **1.3. APPROVED MANUFACTURERS**

- .1 To establish a standard for tendering purposes, the Specifications are based upon Gymnasium and Health Equipment Limited, Markham, 905-471-1555.
- .2 The following athletic equipment manufacturers are approved subject to complete compliance with this Specification.
  - .1 Sheridan Gymnasium Equipment, Orillia, 705-689-1787

### **1.4. SHOP DRAWINGS**

- .1 Submit shop drawings in accordance with Section 01330 Submittal Procedures.
- .2 Clearly indicate fabrication and erection details including materials, finishes, accessories and anchorage.

### **1.5. SAMPLES**

- .1 Submit sample of floor sockets in accordance with Section 01330 Submittal Procedures.

## **PART - PRODUCTS**

### **2.1. MATERIALS**

- .1 Floor Devices:
  - .1 Volleyball/Badminton Post Sockets: Supplied by Owner, installed by Contractor. Refer to Drawings for locations and quantities.

- .2 Basketball Equipment: (See Drawings for quantities)
  - .1 Main Court, Back Stop Assemblies: Two (2) required
    - .1 Goals: BB-34-B snap back goals
    - .2 Fall Arrest System: BB-48 Auto-Loc back stop safety belts
    - .3 Back Boards: BB-29-RG1 rectangular glass backboards (1066 mm x 1828 mm) complete with 47 NCE (2 STD COLOURS) pro mode cushion edging.
    - .4 Frames: BB-15, forward swing, ceiling mounted, WHITE
    - .5 Rim Height: Adjustable 2438 to 3048 mm (8' to 10'); BB3 adapter framing
    - .6 Electrical Winches: TORK WINCH 3000 complete with 1 HP 115 volt, single phase, 11.8 running amps, including heavy duty key switches, double gang stainless steel plates
  - .2 Side Courts: Back Stop Assemblies: Four (4) required
    - .1 Goals: BB-10/BB-31
    - .2 Back Boards: BB-23B aluminum, fan shape
    - .3 Frames: BB-10, +/- 1200 mm (48") offset, side swing, two each way, WHITE
    - .4 Rim Height: Adjustable 2438 to 3048 mm (8' to 10'), BB3 adapter framing
    - .5 Operation: Manual, detachable, locking crank operators, 2 cranks required

### **PART 3 - EXECUTION**

#### **3.1. INSTALLATION**

- .1 Floor Sockets:
  - .1 Core drill floor sockets provided by Owner, after games lines have been laid out: quantity/location as indicated on drawings for Volleyball and Badminton.
  - .2 Floor devices to be plumb, with top face of surface plate flush with finished floor.
- .2 Basketball Backstops Assemblies:
  - .1 Install basketball backstops in the locations shown on Drawings.
  - .2 Secure backstops in manner approved by manufacturer and Consultant. Work includes all fastenings and hardware.



- .3 Ceiling suspended equipment to be secured to primary structural members only. Submit details to Structural Consultant for review.
  - .4 Completed installation shall be rigid, rattle-free, and include all fastenings and hardware.
  - .5 Install exterior fixtures plumb and level. Shim as required on sloped surfaces.
  - .6 Where concrete bases are required, locate such bases 100 mm below finished pavement prior to placing finished pavement.
- .3 Soccer Equipment:
- .1 Install soccer goals in the locations shown on Drawings.
  - .2 Secure goals in manner approved by manufacturer and Consultant.
  - .3 Install goals plumb and level.
  - .4 Locate concrete bases 100 mm below finished grade, prior to placing topsoil and sod.

**END OF SECTION**

## **PART 1      GENERAL**

### **1.01      GENERAL REQUIREMENTS**

- .1      The General Conditions of CCDC 2-2008, Stipulated Price Contract as supplemented, and the General Requirements of Division 1, form part of this Section, and must be read in conjunction with the requirements of this Section, and all related Sections.
- .2      The Work of this Section, and Related Work specified in other Sections shall comply with all requirements of Division 1 – General Requirements.

### **1.02      SECTION INCLUDES**

- .1      Provision of all labour, materials, equipment and incidental services necessary to Provide all soil areas at ground level.
- .2      Re-use existing stockpiled topsoil and fill material located on site to the greatest extent possible provided it meets specified requirements. For use in seeded and/or planting areas.

### **1.03      RELATED SECTIONS**

- .1      Section 31 23 00    Excavation and Backfill
- .2      Section 32 92 19    Seeding

### **1.04      REFERENCE STANDARDS**

- .1      Canadian Council of Ministers of the Environment (CCME):
  - .1      CCME PN 1340-05: Guidelines for Compost Quality.

## **PART 2 - PRODUCTS**

### **2.01      MATERIALS**

- .1      Existing Soil for Re-Use or Imported Topsoil: screened, mixture of mineral particulates, micro-organisms and organic matter which provides suitable medium for supporting intended plant growth.
  - .1      Soil texture based on The Canadian System of Soil Classification, to consist of 40-60% sand, 20-40% silt, and contain 2-10% organic matter by weight.
  - .2      Fertility: major soil nutrients present in following ratios:
    - .1      Phosphorus (P): 10 to 20 micrograms of phosphate per gram of topsoil.
    - .2      Nitrogen (N): 20 to 40 micrograms of available N per gram of topsoil.
    - .3      Potassium (K): 80 to 120 micrograms of potash per gram of topsoil.
  - .3      Contain no toxic elements or growth inhibiting materials.

- .4 Free from debris and stones over 38mm (1 1/2") diameter; coarse vegetative material, 10mm (3/8") diameter and 102mm (4") length, occupying more than 2% of soil volume.
- .5 Consistency: friable when moist.
- .2 Planting Soil Mix for planting of trees, shrubs and perennials for areas outlined in drawings: mix 9 parts imported topsoil (per 2.1.1 above) with 2 parts compost. Incorporate bonemeal into planting soil at rate of 3 kg/m<sup>3</sup> (5lb/yd<sup>3</sup>) of planting soil mixture.
  - .1 Shall have minimum 5% organic matter by weight.
- .3 Compost: A mixture of soil and decomposing organic matter used as a fertilizer, mulch, or soil conditioner. Compost is processed organic matter containing 40% or more organic matter as determined by the Walkley-Black or LOI test. Product must be sufficiently decomposed (i.e. stable) so that any further decomposition does not adversely affect plant growth (C:N ratio below 25), and contain no toxic or growth inhibiting contaminants. Composed bio-solids must meet the requirements of CCME PN 1340, Category A.
- .4 Peat Moss:
  - .1 Derived from partially decomposed fibrous or cellular stems and leaves of species of Shagnum Mosses.
  - .2 Elastic and homogenous, brown in colour.
  - .3 Free of wood and deleterious material which could inhibit growth.
  - .4 Shredded minimum particle size: 5 mm (1/4").
- .5 Fertilizer:
  - .1 Complete commercial synthetic fertilizer with minimum 65% insoluble nitrogen.
  - .2 Formulation ratio: minimum 1:4:4 or as required per soils test.
- .6 Limestone:
  - .1 Ground agricultural limestone containing minimum calcium carbonate equivalent of 85%.
  - .2 Gradation requirements: percentage passing by weight, 90% passing 1.0mm sieve, 50% passing 0.125mm sieve.

## 2.02 SOURCE QUALITY CONTROL

- .1 Submit Samples of imported topsoil for testing by Owner's Testing and Inspection Agency.
- .2 Testing and Inspection shall be paid from a Cash Allowance in accordance with Section 01 21 00 and conducted in accordance with requirements specified in Section 01 45 23.

- .3 Testing will determine suitability for tree, shrub and turfgrass growth, basic fertilizer requirements, percentage of organic matter, evidence of toxic or other deleterious substances that would affect plant growth. Test results will be submitted to Consultant for final acceptance.

### **PART 3- EXECUTION**

#### **3.01 EXAMINATION**

- .1 Prior to commencing the Work of this Section, carefully inspect installed Work of other trades and verify that such Work is complete to the point where Work of this Section may properly commence. Provide Notice in Writing to the Consultant and Contractor of conditions detrimental to the proper and timely completion of the Work of this Section.
- .2 Do not begin installation until all unsatisfactory conditions are resolved. Beginning Work of this Section constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

#### **3.02 PREPARATION OF SUBGRADE**

- .1 The portions of the site affected by the Work of the Contract will be pre-graded to the approval of the Consultant.
- .2 Verify that grades are correct. If discrepancies occur, notify Consultant and do not commence Work until further instructed.
- .3 Grade soil, eliminating uneven areas and low spots, ensuring positive drainage.
- .4 Remove and dispose of off-site the following:
  - .1 Debris, roots, branches, stones in excess of 51mm (2") diameter and other deleterious materials.
  - .2 Soil contaminated with calcium chloride, toxic materials and petroleum products.
  - .3 Debris that protrudes more than 76mm (3") above surface.
- .1 Coarse cultivate entire area that is to receive topsoil to depth of 102mm (4"). Cross cultivate those areas where equipment has compacted soil.

#### **3.03 PLACING AND SPREADING OF TOPSOIL AND SOIL MIXES**

- .1 Place approved topsoil after Consultant has accepted subgrade.
- .2 Spread topsoil in uniform layers not exceeding 152mm (6"), over unfrozen subgrade free of standing water.
- .3 Spread Topsoil to minimum 152mm (6") depth for seeded and sodded areas after settlement and compaction.
- .4 Spread Planting Soil Mix to minimum 406mm (16") depth after settlement and compaction for all planting areas as shown on Drawings.

- .5 Manually spread topsoil around trees and obstacles.

### **3.04 APPLICATION OF FERTILIZER**

- .1 Mix fertilizer thoroughly to full depth of topsoil.
- .2 Do not apply fertilizer to planting soil mix.

### **3.05 FINISH GRADING**

- .1 Grade to eliminate rough spots and low areas and ensure positive drainage. Prepare loose friable bed by means of cultivation and subsequent raking.
- .2 Ensure finished grades conform to approved grading plans.
- .3 Consolidate topsoil to leave surfaces smooth, uniform and firm against deep foot printing.

### **3.06 ACCEPTANCE**

- .1 The Consultant will review topsoil in place and determine acceptance of material, depth of topsoil and finish grading.

### **3.07 SURPLUS MATERIAL**

- .1 Legally dispose of materials not required for the Work off-site.

**END OF SECTION**

**PART 1: GENERAL**

**.1 GENERAL REQUIREMENTS**

- .1 Conform to requirements specified under Division 1.

**.2 SCOPE OF THE WORK**

.1 Work Included

Provide all plant, labour, equipment and materials to carry out the work of this section. The work includes, but is not limited to, the following:

- Grubbing, stripping and stockpiling of topsoil
- Excavation and disposal
- Backfill and compaction
- Rough grading to make ready for application of topsoil for seed or sod
- Removal and disposal of existing foundations
- Dewatering

.2 Related Work Specified Elsewhere

1. Cast-in-Place Concrete - Division 3
2. Excavations and Backfill for Mechanical & Electrical Services - Division 15 & 16.
3. Asphalt, curbs - Division 2
4. Site Services - Division 2
5. Finish Grading and Landscaping - Division 2

**.3 APPLICABLE STANDARDS**

- .1 Ontario Building Code
- .2 The Construction Safety Act, local by-laws and all other regulations of the Ontario Ministry of Labour relating to the work of this Section.
- .3 OPSS Forms 1010, and 1010, Material Specification for Aggregates-General and Granular A,B,M, and Select respectively.

**.4 SUB-SURFACE CONDITIONS**

- .1 Sub-surface investigations were carried out by Peto MacCallum Ltd. (Kitchener Office) dated Feb,2020 (Reference No. 19LF005).
- .2 The information given in this report was obtained for the use of the Owner in the execution of the design. It is presented in good faith to assist the Contractor. No guarantee is made or implied as to its detailed accuracy for every site location. It is incumbent upon the Contractor to make any additional tests to obtain any additional information deemed necessary for the proper execution of the work, at no additional cost to the Owner.

**.5 DRAWINGS**

- .1 Examine the drawings forming a part of this Contract and conform to the requirements of all such drawings.

**.6 CO-ORDINATION AND CO-OPERATION**

- .1 Co-ordinate the work of this Section with the work of all other Sections in accordance with the General Conditions.
- .2 Co-ordination and co-operation is particularly important with Landscaping, Asphalt Paving, Cast-in-Place Concrete, and excavation for Mechanical Electrical trades.

**.7 EXAMINATION**

- .1 Examine the site for the purpose of determining the conditions prevailing there, which may affect the work of this Section, including available access to the site, existing contours, existing services, etc.
- .2 Determine the nature and locations of all existing services below and above ground, which may affect the work of this Section.

**.8 SPECIAL CONDITIONS**

- .1 The Contractors attention is drawn to existing grade elevations in the vicinity of the new additions. After removal of topsoil, soft spots, and otherwise unsuitable material the Contractor must manage existing site excavated materials, and imported materials, to bring grades up to finished elevations shown Architectural and/or Site Service drawings.

**.9 PRICES**

.1 Unit Prices

- .1 Provide unit prices for items listed in tender form
- .2 Include all costs as outlined in Division 1
- .3 Additional payment will not be made for accidental over-excavation by the Contractor.

**PART 2: PRODUCTS**

**.1 MATERIALS**

- .1 Granular Fills - Class 'A' and Class 'B':
- .2 Imported in accordance with current OPSS Form 1010, with the added requirement that material to be deposited within the building must be clean with no asphalt or other contaminants on or mixed with the soil.
- .3 Granular Fill - Class PR:
- .4 Imported, well-graded, compactable stony pit-run granular material with a maximum 8% silt fraction as approved by the soils consultant.
- .5 Crushed Stone: Clean, screened crushed stone, well graded in size between 10mm and 25mm, with sufficient angular particles rather than round, to ensure proper compaction.
- .6 Approved Site Excavated Materials: Site excavated lower level till material for use as general construction backfill on the exterior of the building. (Note that the moisture content and compactability of this material may have to be adjusted by drying out the material and /or mixing with other material prior to its use as backfill.)

- .7 Granular materials shall be free draining and not susceptible to frost action as determined by current M.T.C. Standards. All granular materials to be used within the building shall also be free of asphalt or other contaminates on or mixed with the soil
- .8 Submit representative samples of each class of proposed material to the Geotechnical Inspection Company for testing and approval for use on this project. Mark samples as to source of supply, including pit locations.
- .9 Supply only those materials approved for use on this project by the Inspection Company.
- .10 Lean Concrete Fill
- .11 15 MPa with 125mm slump
- .12 Weeping Tile: – 100mm diameter perforated Big-O, or approved equal.
- .13 Geotextile Fabric: - Terrafix 270R or equal.

**.2 FABRICATION**

- .1 Mixing, transportation, placing, curing, and protection of concrete in accordance with Division 3

**.3 SOURCE QUALITY CONTROL**

- .1 All materials shall be subject to test and inspection by a Testing and Inspection Company appointed by the Owner.
- .2 Cost of testing will be paid by the Owner.
- .3 Provide access to pits or quarries for the personnel of the Inspection Company.
- .4 Provide representative samples of materials as may be required by the Inspection Company at no additional cost to the Owner.

**PART 3: EXECUTION**

**.1 GRUBBING AND CLEARING**

- .1 Grub and clear the site of trees, shrubs, existing foundations to be removed, debris and obstructions, unless clearly noted elsewhere to be retained.
- .2 Remove and dispose of all material listed in items A. away from the site.

**.2 STRIPPING AND STORAGE OF TOPSOIL**

- .1 Carefully strip the topsoil from areas affected by new construction.
- .2 Stockpile the topsoil on the site at a location or locations approved by the Architect and General Contractor for later use on this project. At the completion of construction, excess material is to be removed from site at the Contractor's expense. Note that because of the 'tight' nature of the site, temporary removal off site of top soil material may be required if storage areas designated by the Architect are used by the General Contractor for other purposes.
- .3 Maintain topsoil stockpiles separate from any other stockpiles and protect from contamination.
- .4 Prevent silt runoff from stockpiles and site with the use of silt fences and/or straw bale barricades.



**.3      EXCAVATION**

- .1 Shallow footings are designed for a maximum safe allowable bearing pressure (Serviceability Limit State SLS) of 40kPa and a factored bearing pressure (Ultimate Limit State ULS) of 60 kPa on the native stiff to very stiff clayey silt. Helical Piles are to be designed for an SLS bearing pressure of 200kN/helical pile down to a minimum depth of 12meters.
- .2 Notify the Engineer of any unusual soil conditions encountered during excavation so that corrective action may be taken, if necessary.
- .3 Where excavations for footings are accidentally over-excavated, fill the over-excavated portion with lean concrete fill to the founding elevation shown on the plans, at no additional cost to the Owner.
- .4 Provide excavations for footings of sufficient width for the construction and inspection of formwork and the satisfactory and safe execution of the work. In general, provide not less than 450 clear of all construction.
- .5 Trim the bottom of all excavations true to line and grade, and remove all loose, wet, soft or unsatisfactory material.
- .6 Install footings at lower elevations prior to installing adjacent footings at higher elevations to ensure that bearing capacity of upper levels is not adversely disturbed.
- .7 Notify the Testing Company when each phase of the excavation is completed so that bearing surfaces may be inspected.
- .8 All excavations into native subsoil are to be carried out using a smooth-blade bucket to preclude disturbance of the subgrade by normal bucket teeth.
- .9 Protect all soils supporting footings and slab on grade against penetration of frost and rain before, during and after placement of concrete.
- .10 Unless noted otherwise on plan the drawings indicate footings bearing down onto the approved undisturbed sand layer at elevation bubbles indicated on the foundation Plan.
- .11 Below slab-on-grade areas excavate down a minimum of 300 below slab-on-grade or as required to remove topsoil or otherwise unsuitable material and proof roll subgrade with a heavy roller. Sub-excavate any soft or wet spots as identified by the Geotechnical Engineer and replace with granular 'B' material or approved 'PR' material compacted to 98% standard proctor maximum dry density.
- .12 After construction of forms minimize disturbance of subgrade within footing forms. If soils within footings become disturbed remove all loose material with hand shovels down to sound soil. In areas where extra foot traffic is anticipated such as in areas where steel reinforcing mats are placed the contractor shall place a 50mm skim coat of lean mix immediately after subgrade approval by the Geotechnical Engineer. Excavation should be sequenced to ensure no subgrades upon which footings are to be placed are left over night.

**.4      PUMPING AND DEWATERING**

- .1 Keep all excavations, pits and trenches free from accumulations of water from all sources, including ground water, perched groundwater, rain and surface water, at all times by pumping or other methods satisfactory to the Geotechnical Engineer. Refer to Soils Report for surface water and ground water control methods.
- .2 Conduct dewatering operations, when required, in such a manner as to avoid damage to work under construction or existing adjacent structures and so as not to weaken the strength of bearing soils or to endanger the stability of banks or slopes.

**.5 BACKFILL AND COMPACTION**

- .1 After the construction of footings, walls or piers, and the approval of the work by the Consultant, backfill and compact interior side of foundation walls with granular 'B' material to the elevations shown on the drawings.
- .2 Backfill and compact in equal lifts on each side of walls below grade. Maximum grade difference on opposite sides of non-retaining or basement walls is not to exceed 450. Do not backfill basement walls that are to be laterally supported at the top of the wall until such lateral support, in the form of the first floor framing, is cast and cured.
- .3 Deposit and spread granular materials in uniform layers not exceeding 300 (loose measurement) in depth.
- .4 Compact all granular materials to not less than 98% of Standard Proctor Density, except as noted on drawings or specifications. Maintain optimum water content for proper compaction by the addition of water as required.
- .5 Compact using approved vibratory plate tampers or vibratory rollers, except when working close to silt or other materials which may be adversely affected by vibration; in which case, use approved non-vibratory rollers to avoid disturbance of the sub-grade.
- .6 Immediately below sidewalks, place a 150 layer of Granular 'A' compacted to 98% of Standard Proctor Density.
- .7 Backfill below landscaped areas on the exterior side of the wall can consist of approved site excavated materials compacted in 300 lifts to 96% standard proctor maximum dry density. Slope grade away from the building as shown on Architectural site plan and building sections.
- .8 Backfill exterior side of all foundation walls below sidewalks and paved areas can consist of approved site excavated materials, or imported granular 'B', compacted in 300 deep lifts to 98% standard proctor maximum dry density. Backfill to extend up to the underside of a 150 granular 'A' layer below the sidewalk.
- .9 Backfill on the interior side of all foundation walls up to the underside of the 200 stone layer to consist of approved pit-run, or granular 'B' material placed and compacted in 300 deep loose lifts to 98% standard proctor maximum dry density.
- .10 Backfill below asphalt or concrete paved areas directly adjacent to basement walls to consist can consist of approved site excavated materials, approved pitrun, or granular 'B' materials up to the underside of the paving subgrade layer compacted in 300 deep loose lifts to 98% standard proctor density. Fills directly adjacent to wall to be free of large boulders that may damage waterproofing.
- .11 Use hand operated compaction equipment within the lesser of 3m or the height of the wall, for pit walls and retaining walls.
- .12 Protect all fill materials supporting slab on grade against penetration of frost and rain before, during and after placement of concrete.
- .13 Place weeping tile behind all basement, and retaining walls as indicated in on drawings or typical detail. Completely wrap geotextile fabric around stone cover and lap a minimum of 400mm.

**.6 SUB-FLOOR GRANULAR FILL**

- .1 Proof roll all subgrades below floor areas with a heavy roller and subexcavate any soft or wet spots.
- .2 Provide a minimum of 200mm of 19mm crushed stone material under the slab-on-grade compacted to 100% standard proctor dry maximum density.

- .3 Fill below 200 crushed stone layer to consist of approved pit run or granular 'B' material down to approved subgrade for footings bearing on undisturbed soil. Compact Granular materials in 300 maximum loose lifts to 98% standard proctor dry density.
- .4 Take care not to damage any under-floor mechanical and electrical systems.
- .5 Remove clay, silt, dirt, and construction debris from the granular layers.
- .6 Ensure all electrical and mechanical piping runs in granular layers below the underside of the floor slab.

**.7 GRADING**

- .1 Rough grade outside the foundation walls (where applicable) to the lines and grades shown on the final site plan.
- .2 Rough grade to within 150 below the underside of exterior sidewalks and place layer of Granular 'A'

**.8 FIELD QUALITY CONTROL**

- .1 All materials and workmanship shall be subject to test and inspection by a Testing and Inspection Company appointed by the Consultant.
- .2 The cost of testing, except as noted in paragraph 3.8.3 will be paid through a cash allowance.
- .3 Material or workmanship which fails to achieve the specified standards shall be re-compacted or replaced as directed by the Consultant and additional tests made. The cost of such additional testing and the cost of remedial action shall be at no additional cost to the Owner.
- .4 The foundation subgrade will be inspected by the Inspection Company immediately following final preparation of the excavation by the Contractor. The Inspection Company may direct that the depth of excavation be increased to reach a competent bearing stratum if existing soil conditions at the specified elevation are not satisfactory.

**.9 CLEAN-UP**

- .1 At the completion of the work in this Section, remove from the site any excess materials, debris and equipment.

**END OF SECTION**

---

**PART 1 - GENERAL**

**1.1. Description**

**1.1.1. General Requirements**

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

**1.1.2. Work Performed by this Section**

The work covered by this section includes the furnishing of all labour, materials, and equipment for the construction of the helical piles/anchors as specified within the Contract Documents.

**1.1.3. Work Performed by Other Sections Related to This Section**

Section 03 30 00: Cast-in-Place Concrete

**1.2. Approved Helical Pile/Anchor Contractor**

**1.2.1. Approved helical pier Contractors**

1.2.1.1 EBS Geostructural  
Address: 320 Woolwich Street South Breslau ON.  
Phone: 1-519-648-3613

1.2.1.2 Ground Force Foundations Inc.  
Address: 355 Waydom Drive Ayr ON  
Phone: 1-519-897-0639

1.2.1.3 An approved Contractor providing the following qualifications:

1.2.1.3.1 Documentation of at least five (5) years of production experience manufacturing helical piles,

1.2.1.3.2 Documentation that the manufacturer's helical piles have been used successfully in at least five engineered construction projects within the last three years within Ontario in a similar soil condition as summarized within the geotechnical report,

1.2.1.3.3 Documentation that the helical pile/anchor manufacturer has a current Evaluation Report completed by Canadian Construction Materials Center (CCMC),

1.2.1.3.4 Certificate that the helical pile/anchor components shall be manufactured by a facility that provides quality control inspections of all manufactured elements.

1.2.1.3.5 Documentation that the helical pile/anchor components shall be hot-dipped galvanized in accordance with ASTM A153

1.2.1.3.6 Design drawings sealed by a professional engineer of Ontario stating the proposed helical pile and associated geotechnical resistance factor. It is recommended that the geotechnical resistance factor be taken from the most recent version of the Canadian Foundation Engineering manual.

1.2.1.3.7 Documentation that all materials meet the requirements specified elsewhere within the contract documents.

1.2.1.3.8 Helical Pile manufacturer is to be a Canadian Welding Bureau (CWB) Certified Division 2 Company.

**1.3. Qualifications of Helical Pier Design Professional**

- 1.3.1. Provide the following information regarding the Design Professional prior to making submissions listed in Submittal subsection of this specification:
  - 1.3.1.1. The curriculum vitae of the designated Pile Design Professional indicating:
    - 1.3.1.1.1. at least ten (10) years experience in this type of work as well as graduate education in structural and/or geotechnical engineering.
    - 1.3.1.1.2. Evidence of Pile Design Professional having designed Helical Piles and Helical Anchors on at least ten (10) projects, including project name,
    - 1.3.1.1.3. number and type of Helical Piles or Helical Anchors, project location, and client contact information.
  - 1.3.1.2. Professional errors and omissions liability insurance certificate indicating a minimum insurance occurrence value of \$2,000,000.00
  - 1.3.1.3. Evidence of current license to practice engineering in the project province

**1.4. Referenced Standards**

- 1.4.1. Referenced Codes and Standards  
This specification is based on nationally recognized codes and standards including the references listed below. In case of a conflict between the reference and this specification, this specification shall govern.
  - 1.4.1.1. C.S.A. Standard W.47.1-03, "Certification of Companies for Fusion Welding of Steel".
  - 1.4.1.2. C.S.A. Standard W59-03, "Welded Steel Construction" (Metal Arc Welding).
  - 1.4.1.3. C.S.A. Standard W.55.3-1965 (R2003), "Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings".
  - 1.4.1.4. C.S.A. Standard G40.21-350W
  - 1.4.1.5. ASTM D1143/D1143M-07 Standard Test Method for Piles under Static Axial Compressive Load.
  - 1.4.1.6. ASTM D3689 Standard Test Method for Individual Piles Under Static Axial Tensile Load
  - 1.4.1.7. Ontario Occupational Health and Safety Act and Regulations.

**1.5. Submittals**

- 1.5.1. In accordance with the General Conditions of the Contract and Division 1 Submittal Procedures Section.
- 1.5.2. One (1) set of site-specific shop drawings sealed by a registered Professional Engineer in the province of Ontario. Shop drawings shall include:
  - 1.5.2.1. Helical Pile/Anchor number, location, and pattern by assigned identification number
  - 1.5.2.2. Helical Pile/Anchor design load
  - 1.5.2.3. Assumed geotechnical resistance factor
  - 1.5.2.4. Type and Size of Helical Pile/Anchor shaft

- 1.5.2.5 Helical configuration (number and diameter of helical plates)
  - 1.5.2.6 Minimum effective torque requirement
  - 1.5.2.7 Grout column diameter and length
  - 1.5.2.8 Connection details
  - 1.5.2.9 Location of battered helical piles.
- 1.5.3. Settlement of foundation system shall not exceed 20 mm of total movement when loaded to ULS capacity, and no more than 30 mm total movement when loaded to ultimate resistance capacity.
- 1.5.4. Calibration reports for installation equipment utilized on the project. The calibration tests shall have been completed within one year of the date submitted.
- 1.5.5. The Contractor shall submit plans for pre-production test(s) for the helical piles/anchors to the Owner for review and acceptance prior to beginning load tests, as specified elsewhere within this specification. The purpose of the test is to determine the load versus displacement response of the helical pile/anchor in general conformance with ASTM D1143 Quick Test Method and provide an estimation of ultimate capacity.
- 1.5.6. After completion of the test(s) piles/anchors the Contractor shall submit the results to the Owner for approval to begin production helical pile/anchor installation.
- 1.5.7. After completion of the installation of the helical piles/anchors, the Contractor shall provide the Owner with a report of all helical piles/anchors installed on the project certifying the ultimate load capacity of the piles/anchors installed and the immediate and long-term settlements of helical pier foundations, sealed by a Professional Engineer registered in the province of Ontario.

## **PART 2 - PRODUCTS**

### **2.1 Helical Piles**

Helical piers to be similar to helical pier test specimen. If alternate helical piers are to be used these piers are to be normalized to tested system. If additional testing is required or Helical Pier Company to provide settlement and ultimate load carrying certification of their system this cost is to be included in price submitted for this tender.

### **2.2 Corrosion Protection**

All helical pile shafts and helices shall be hot-dipped galvanized in accordance with ASTM A153 after fabrication.

### **2.3 Grouting Material**

2.3.1 Cement for Helical Pulldown Micropile grout shall be Type G Portland cement conforming to CSA A3000 Cementitious Material Compendium, or approved equivalent.

2.3.2 Water for mixing grout shall be potable, clean and free from impurities, which may be detrimental to grout or steel. Potable water shall be available in quantities sufficient to mix grout and for equipment clean-up.

2.3.3 Sand fillers shall not be used to replace the grout mix. All helical piers to be grouted solid. Small diameter grout columns shall not include aggregate.

## **PART 3 – EXECUTION**

### **3.1. Examination and Acceptance of Site Conditions**

General Contractor shall inspect, accept and certify in writing to the helical pile/anchor subcontractor that site conditions meet specifications for the following items prior to installation of the helical piles/anchors;

- 3.1.1. Verify sub-grade preparation and elevations conform to the specified requirement.
- 3.1.2. Verify location, alignment, and elevations of helical piles/anchors.
- 3.1.3. Verify location, alignment, and elevations of any services within work area.
- 3.1.4. The General Contractor shall verify that all helical piles/anchors may be installed in accordance with all pertinent codes and regulations regarding such items as underground obstructions, right-of-way limitations, utilities, etc.
- 3.1.5. In the event of a discrepancy, the General Contractor shall notify the Owner. The General Contractor shall not proceed with helical pile/anchor installation in areas of discrepancies until said discrepancies have been resolved. All costs associated with unresolved discrepancies shall be the responsibility of the Owner.
- 3.1.6. Do not proceed with installation of helical piles/anchors until sub-grade soil conditions are corrected by the General Contractor.

**3.2. Installation**

- 3.2.1. A torque indicator shall be used during helical pile/anchor installation. The torque indicator can be an integral part of the installation equipment or externally mounted in-line with the installation tooling. Torque indicators shall meet requirements set forth by helical pile/anchor manufacturer.
- 3.2.2. If the helical pile/anchor is refused or deflected by a subsurface obstruction, the installation shall be terminated, and the pile removed. The obstruction shall be removed, if feasible, and the helical pile/anchor re-installed. If the obstruction cannot be removed, the helical pile/anchor shall be installed at an adjacent location, subject to review and acceptance of the owner.
- 3.2.3. If the torsional strength rating of the central steel shaft and/or installation equipment has been reached prior to proper positioning of the last plain extension section relative to the final elevation, the contractor may remove the last plain extension and replace it with a shorter length extension. If it is not feasible to remove the last plain extension, the Contractor may cut said extension shaft to the correct elevation. The Contractor shall not reverse (back-out) the helical pile/anchor to facilitate extension removal.
- 3.2.4. The Contractor shall record the torque values for each individual helical pile/anchor at 300mm (1 foot) increments during installation. These records shall be available to the Owner at their request.

**3.3. Field Quality Control**

- 3.3.1. Centerline of helical pile/anchor shall not be more than 75 mm (3 inches) from indicated plan location.
- 3.3.2. Helical pile/anchor plumbness shall be within 2° of design alignment
- 3.3.3. Top elevation of helical pile/anchor shall be within ±50mm (2 inches) of the design vertical elevation.

**3.4. Measurement and Payment**

- 3.4.1. Measurement for payment shall be as follows:

QUANTITY	DESCRIPTION	UNIT
1	Mobilization	Lump Sum
As per design	Helical Piles extended to design depth, per pile	Lump Sum
As required	Per each additional 1.5 m (5 foot) extension or portion thereof	Each

- 3.4.2. Payment at the Contract price for the above tender items shall be full compensation for all labour, Equipment, and Material to do the work.



**3.5.        Clean-up**

- 3.5.1.        At the completion of the work in this Section, remove from the site any excess materials, debris and equipment .

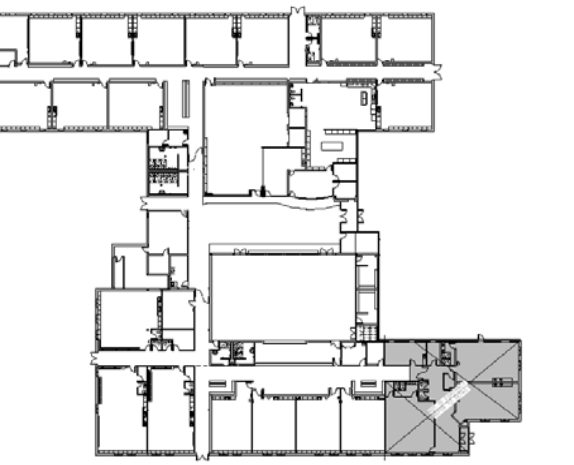
**END OF SECTION**

# OUR LADY OF FATIMA SCHOOL RENEWAL

## 545 BALDOON ROAD, CHATHAM ON N7L 5A9



280 QUEENS AVENUE, SUITE 1Q  
LONDON, ONTARIO N6B 1X3  
T: (519) 439-0611  
F: (519) 438-5962  
w.d@wilsondiaz.ca  
www.wilsondiaz.co



KEY PLAN

### NOTES

### LEGEND

Ontario Building Code Data Matrix – Part 11 – Renovation of Existing Building		OBC Reference
11.1 Existing Building classification:	Describe Existing Use: Group A-2 Construction Index: 4 Hazard Index: 6 <b>Not Applicable (no change of major occupancy)</b>	11.2.1 T 11.2.1.1A T 11.2.1.1B to N
11.2 Alteration to Existing Building is:	Basic Renovation <input type="checkbox"/> Extensive Renovation <input checked="" type="checkbox"/>	11.3.3.1 11.3.3.2
11.3 Reduction in Performance Level:	Structural: <input type="checkbox"/> No <input type="checkbox"/> Yes By increase in occupant load: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (explain) By change of major occupancy: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (explain) Plumbing: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (explain) Sewage-system: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (explain)	11.4.2 11.4.2.1 11.4.2.2 11.4.2.3 11.4.2.4 11.4.2.5
11.4 Compensating Construction:	Structural: <input type="checkbox"/> No <input type="checkbox"/> Yes (explain) Increase in occupant load: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (explain) Change of major occupancy: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (explain) Plumbing: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (explain) Sewage System: <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (explain)	11.4.3 11.4.3.2 11.4.3.3 11.4.3.4 11.4.3.5 11.4.3.6
11.5 Compliance Alternatives Proposed:	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (give number(s)) _____	11.5.1
11.6 Alternative Measures Proposed:	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (explain) _____	11.5.2

© 2002 Ontario Association of Architects

December 14, 2005

## 2 OBC MATRIX

Item	Ontario's 2006 Building Code Data Matrix Part 3 or 9		OBC Reference	
	Part 11	Part 9	Part 11	Part 9
1 Project Description:	<input type="checkbox"/> New <input type="checkbox"/> Addition <input type="checkbox"/> Change of Use	<input checked="" type="checkbox"/> Part 11 11.1 to 11.4	<input checked="" type="checkbox"/> Part 3 1.1.2 [A]	<input type="checkbox"/> Part 9 1.1.2 [A] & 9.10.1.3
2 Major Occupancy(s)		3.1.2.1 (1)	9.10.2	
3 Building Area (m <sup>2</sup> )	Existing 3871m <sup>2</sup> New 67m <sup>2</sup> Total 3938m <sup>2</sup>	1.4.1.2 [A]	1.4.1.2 [A]	
4 Gross Area	Existing 3871m <sup>2</sup> New 67m <sup>2</sup> Total 3938m <sup>2</sup>	1.4.1.2 [A]	1.4.1.2 [A]	
5 Number of Storeys	Above grade 1 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 Street (Existing)	3.2.2.10 & 3.2.5	9.10.20	
7 Building Classification	3.2.2.26 Group A, Division 2, up to 2 Storeys, Increased Area, Sprinklered	3.2.2.20-83	9.10.2	
8 Sprinkler System Proposed	<input type="checkbox"/> entire building <input type="checkbox"/> selected compartments <input checked="" type="checkbox"/> selected floor areas <input type="checkbox"/> basement <input type="checkbox"/> in lieu of roof rating <input type="checkbox"/> not required	3.2.2.20-83 3.2.1.5 3.2.2.17 INDEX	9.10.8.2 INDEX	
9 Standpipe required	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	3.2.9	N/A	
10 Fire Alarm required	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	3.2.4	9.10.18	
11 Water Service/Supply is Adequate	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.2.5.7	N/A	
12 High Building	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.2.6	N/A	
13 Construction Restrictions	<input type="checkbox"/> Combustible permitted <input type="checkbox"/> Non-combustible required <input type="checkbox"/> Combustible <input type="checkbox"/> Non-combustible	<input checked="" type="checkbox"/> Both 3.2.2.20-83	9.10.6	
14 Mezzanine's Area m <sup>2</sup>	N/A	3.2.1.1 (3) & (8)	9.10.4.1	
15 Occupant load based on	<input type="checkbox"/> m <sup>2</sup> /person <input checked="" type="checkbox"/> design of building 512 Persons	3.1.17	9.9.1.3	
16 Barrier-free Design	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Explain)	3.8	9.5.2	
17 Hazardous Substances	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	3.3.1.2 & 3.3.1.19	9.10.1.3 (4)	

Required Fire Resistance Rating (FRR)	Horizontal Assemblies FRR (Hours)		Listed Design No. or Description (SG-2)	3.2.2.20-83 & 3.2.1.4		9.10.8 & 9.10.9					
	Floors	Roof		Floors	Roof						
19	Floors	N/A	Hours	FRR of Supporting Members	Listed Design No. or Description (SG-2)						
	Roof	N/A	Hours								
	Mezzanine	N/A	Hours								
	Floors	N/A	Hours								
19 (Spatial Separation – Construction of Exterior Walls)	Wall	Area of EBF (m <sup>2</sup> )	L/D (m)	L/H or H/L	Permitted Max. % of Openings	Proposed % of Openings	FRR (Hours)	Listed Design or Description	Comb. Const.	Comb. Constr. Nonc. Cladding	Non-comb. Constr.
	North										
	South										
	East										
West											
(Additional wall areas continued below)											
Other – Describe											

2006 Building Code Data Matrix, Part 3 or 9, updated February 28, 2007

### CONSULTANTS

#### ARCHITECTURAL

WILSON DIAZ ARCHITECTS INCORPORATED  
280 QUEENS AVE, SUITE 1Q  
LONDON, ONTARIO N6B 1X3  
T: (519) 439-0611  
F: (519) 438-5962

#### MECHANICAL & ELECTRICAL

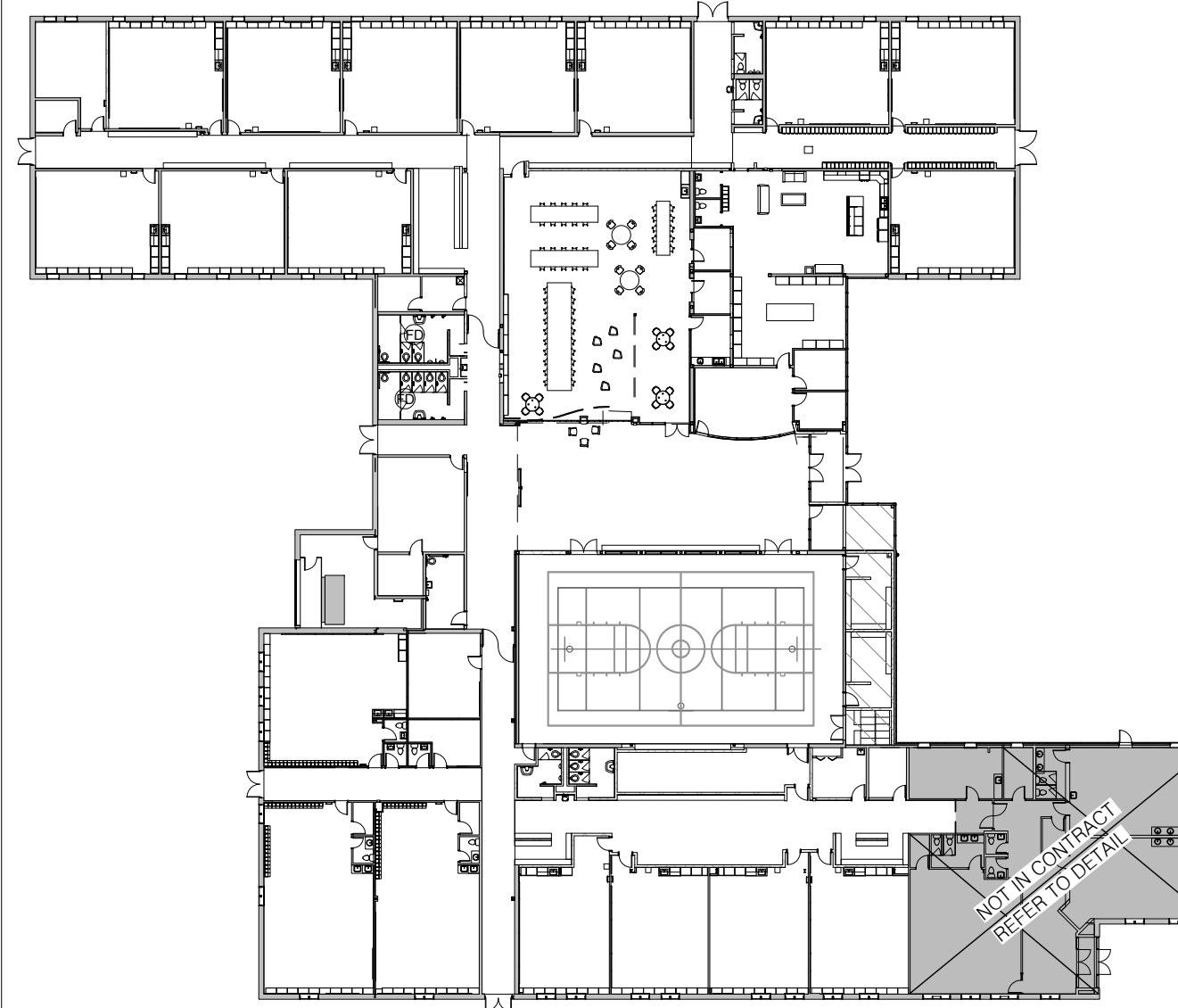
CHORLEY + BISSET CONSULTING ENGINEERS  
369 YORK ST, SUITE 2B  
LONDON, ONTARIO N6B 3R4  
T: (519) 679-8660  
F: (519) 679-2145

#### STRUCTURAL ENGINEERS

VANBOXMEER & STRANGES ENGINEERING LTD.  
458 QUEENS AVENUE  
LONDON, ONTARIO N6B 1X9  
T: (519) 433-4661

#### CIVIL ENGINEERS

DEVELOPMENT ENGINEERING LTD.  
41 ADELAIDE ST N, UNIT 71  
LONDON, ONTARIO N6B 3P4  
T: (519) 672-8310



1 SITE KEY PLAN N.T.S.

### ELECTRICAL DRAWINGS

- E101 - ELECTRICAL LEGEND, DRAWING LIST, SCHEDULES, ABBREVIATIONS, AND ELECTRICAL GENERAL NOTES
- E201 - PART GROUND FLOOR PLAN NORTH - LIGHTING AND FIRE ALARM
- E202 - PART GROUND FLOOR PLAN SOUTH - LIGHTING AND FIRE ALARM
- E301 - PART GROUND FLOOR PLAN NORTH - POWER AND SYSTEMS
- E302 - PART GROUND FLOOR PLAN SOUTH - POWER AND SYSTEMS
- E401 - ELECTRICAL RISERS
- E501 - ELECTRICAL DETAILS
- E502 - ELECTRICAL DETAILS
- E601 - PART GROUND FLOOR PLAN NORTH - LIGHTING AND FIRE ALARM DEMOLITION
- E602 - PART GROUND FLOOR PLAN SOUTH - LIGHTING AND FIRE ALARM DEMOLITION
- E701 - PART GROUND FLOOR PLAN NORTH - POWER AND SYSTEM DEMOLITION
- E702 - PART GROUND FLOOR PLAN SOUTH - POWER AND SYSTEM DEMOLITION

### DRAWING LIST

#### ARCHITECTURAL DRAWINGS

- A000 - COVER PAGE
- A010 - LIFE SAFETY PLAN AND SITE PLAN
- A050 - ASSEMBLY TYPES
- AD100 - DEMOLITION FLOOR PLAN
- AD200 - DEMOLITION REFLECTED CEILING PLAN
- AD300 - DEMOLITION EXTERIOR AND INTERIOR ELEVATIONS
- A100 - CONSTRUCTION FLOOR PLAN
- A120 - FLOOR FINISH PLAN
- A150 - ENLARGED FLOOR PLANS - CLASSROOMS
- A151 - ENLARGED FLOOR PLANS
- A152 - WASHROOM GROUPS, FINISH PLANS, AND ELEVATIONS
- A153 - GYMNASIUM ENLARGED PLAN
- A175 - CONSTRUCTION ROOF PLAN
- A176 - DEMOLITION ROOF PLAN
- A177 - ROOFING DETAILS
- A178 - ROOFING DETAILS
- A200 - CONSTRUCTION REFLECTED CEILING PLAN
- A300 - CONSTRUCTION EXTERIOR ELEVATIONS
- A301 - CONSTRUCTION EXTERIOR ELEVATIONS
- A400 - BUILDING SECTIONS
- A401 - BUILDING SECTIONS
- A500 - WALL SECTIONS
- A501 - WALL SECTIONS
- A600 - PLAN DETAILS
- A601 - PLAN DETAILS
- A602 - PLAN DETAILS
- A650 - SECTION DETAILS
- A651 - SECTION DETAILS
- A652 - SECTION DETAILS
- A653 - SECTION DETAILS
- A654 - SECTION DETAILS
- A800 - TYPICAL CLASSROOM ELEVATIONS - NORTH WING
- A801 - TYPICAL CLASSROOM ELEVATIONS - SOUTH WING
- A802 - KINDERGARTEN AND KITCHENETTE INTERIOR ELEVATIONS
- A803 - INTERIOR ELEVATIONS - ATRIUM
- A804 - INTERIOR ELEVATIONS - CORRIDOR
- A805 - INTERIOR ELEVATIONS - CORRIDOR
- A806 - INTERIOR ELEVATIONS - GYMNASIUM
- A900 - MILLWORK DETAILS
- A901 - MILLWORK DETAILS
- A1000 - SCHEDULES
- A1001 - ROOM FINISH SCHEDULE
- A1002 - GLAZING ELEVATIONS

#### CIVIL DRAWINGS

- SE1 - SITE SERVICING AND GRADING PLAN
- SE2 - NOTES AND DETAIL

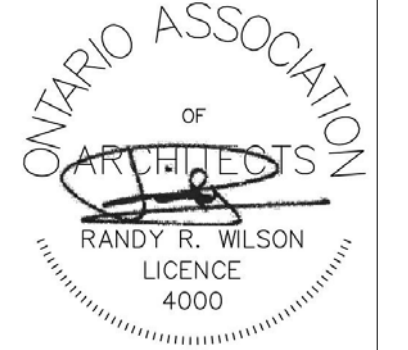
#### STRUCTURAL DRAWINGS

- S100 - FOUNDATION PLAN
- S101 - ROOF FRAMING PLAN
- S200 - SCHEDULES
- S201 - ELEVATIONS
- S202 - JOIST REINFORCING
- S301 - SECTIONS
- S302 - SECTIONS
- S303 - SECTIONS
- S304 - SECTIONS
- S305 - SECTIONS
- S306 - SECTIONS
- S400 - TYPICAL DETAILS
- S401 - TYPICAL DETAILS
- S402 - TYPICAL DETAILS
- S403 - TYPICAL DETAILS
- S404 - TYPICAL DETAILS
- S405 - TYPICAL DETAILS

#### MECHANICAL DRAWINGS

- M101 - MECHANICAL LEGEND AND DRAWING LIST
- M102 - SCHEDULES
- M103 - DETAILS
- M201 - PART GROUND FLOOR PLAN - DRAINAGE
- M202 - PART GROUND FLOOR PLAN - DRAINAGE
- M203 - PART GROUND FLOOR PLAN - PLUMBING
- M204 - PART GROUND FLOOR PLAN - PLUMBING
- M205 - PLUMBING DETAILS
- M301 - PART GROUND FLOOR PLAN - FIRE PROTECTION NORTH
- M302 - PART GROUND FLOOR PLAN - FIRE PROTECTION SOUTH
- M401 - PART GROUND FLOOR PLAN - HEATING
- M402 - PART GROUND FLOOR PLAN - HEATING
- M501 - PART GROUND FLOOR PLAN - AIR DISTRIBUTION
- M502 - PART GROUND FLOOR PLAN - AIR DISTRIBUTION
- M601 - MECHANICAL ROOF PLAN
- M602 - MECHANICAL ROOF PLAN DEMOLITION
- M701 - PART GROUND FLOOR PLAN - DRAINAGE DEMOLITION
- M702 - PART GROUND FLOOR PLAN - DRAINAGE DEMOLITION
- M703 - PART GROUND FLOOR PLAN - PLUMBING DEMOLITION
- M704 - PART GROUND FLOOR PLAN - PLUMBING DEMOLITION
- M705 - PART GROUND FLOOR PLAN - FIRE PROTECTION DEMOLITION
- M706 - PART GROUND FLOOR PLAN - FIRE PROTECTION DEMOLITION
- M707 - PART GROUND FLOOR PLAN - HEATING DEMOLITION
- M708 - PART GROUND FLOOR PLAN - HEATING DEMOLITION
- M709 - PART GROUND FLOOR PLAN - AIR DISTRIBUTION DEMOLITION
- M710 - PART GROUND FLOOR PLAN - AIR DISTRIBUTION DEMOLITION

No.	DATE	DESCRIPTION	REV.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



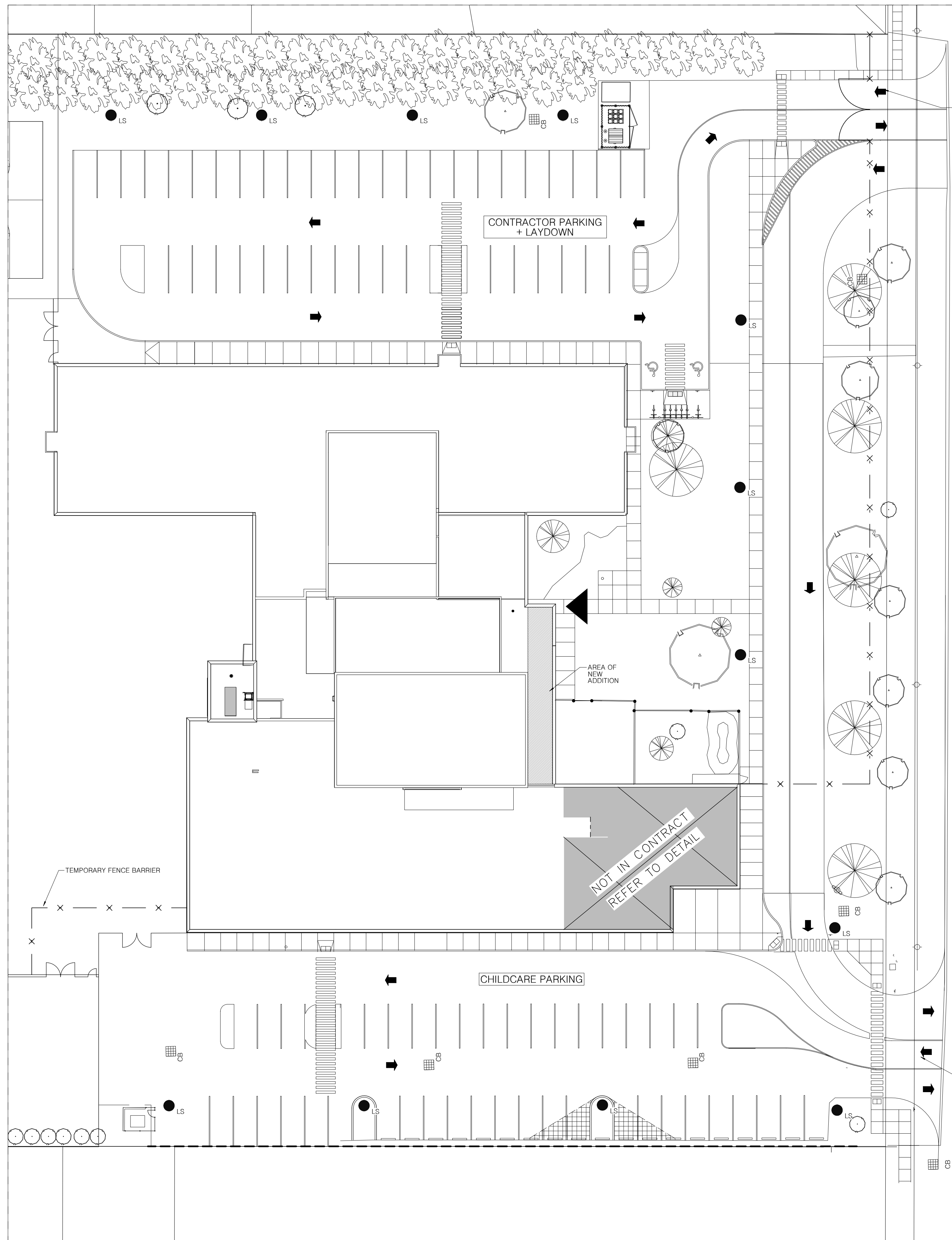
PROJECT TITLE

OUR LADY OF FATIMA

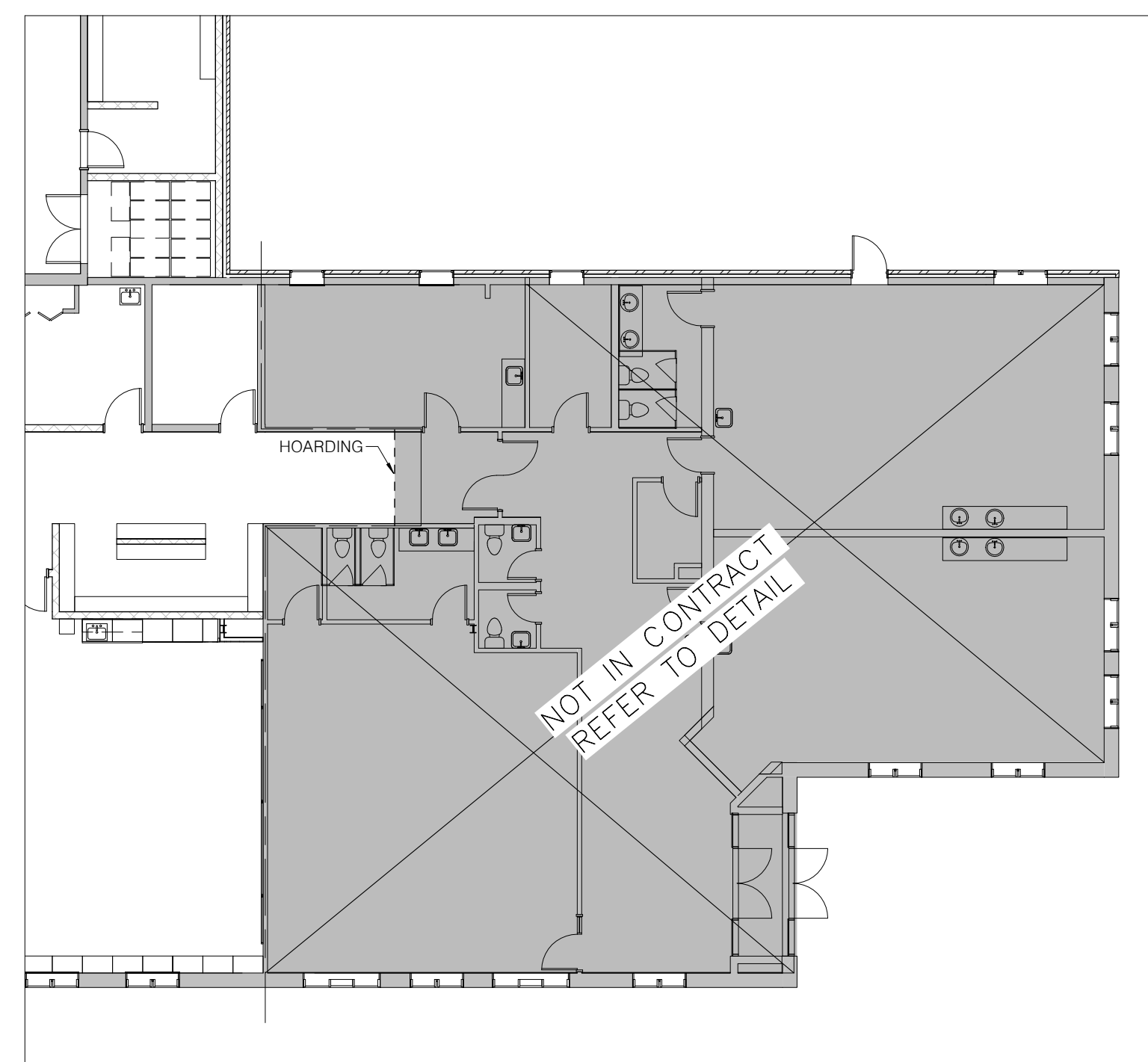
DRAWING TITLE

COVER PAGE

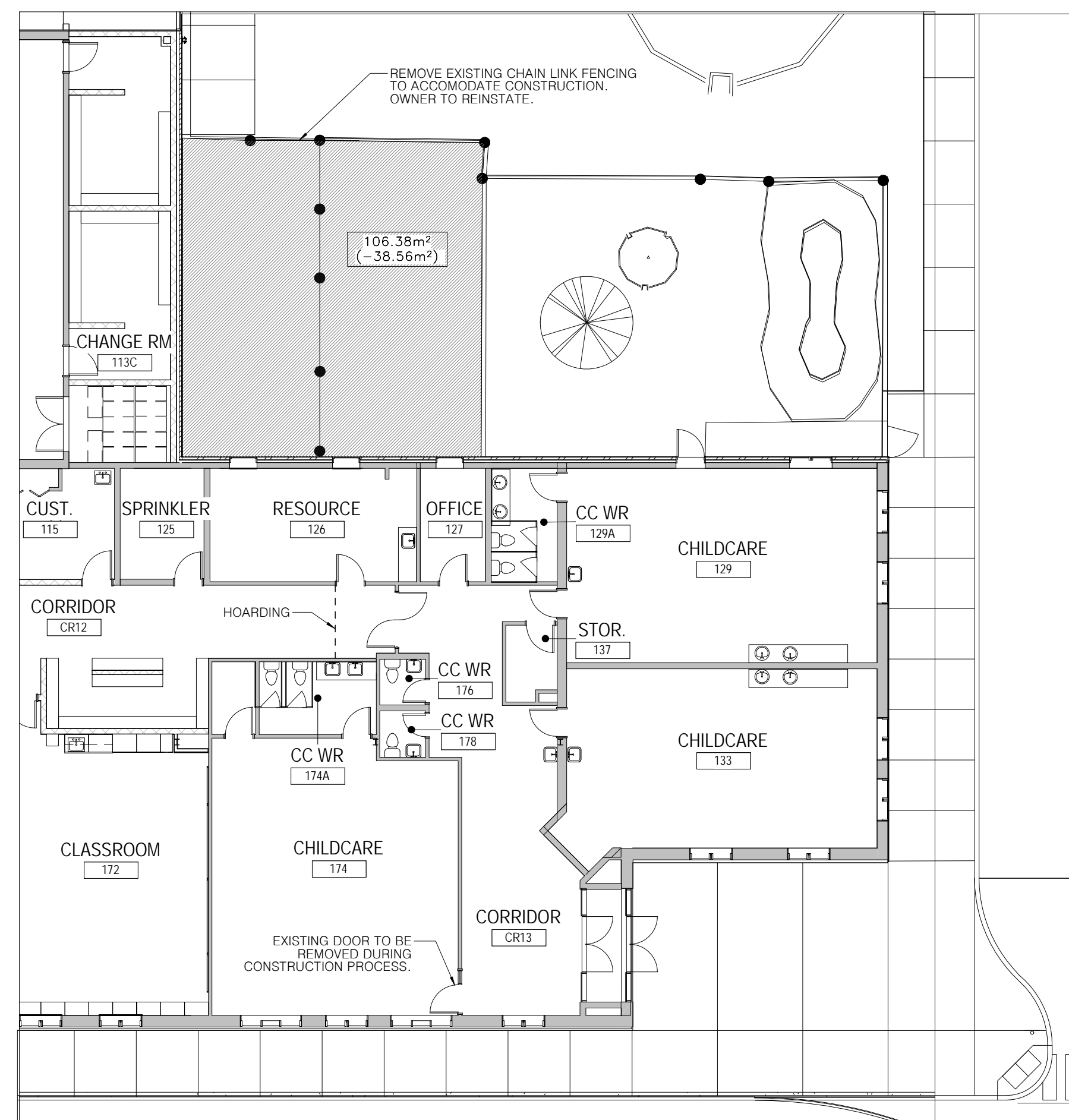
DATE PLOTTED	DRAWN BY	DRAWING No.
19/02/2020 12:26:52 PM	TJV/PC	
SCALE	CHECKED BY	
As indicated	RW	A000
PROJECT No.		
1901		



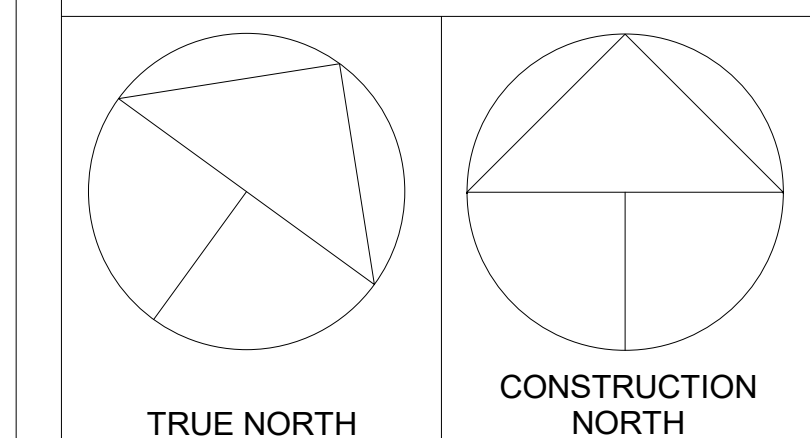
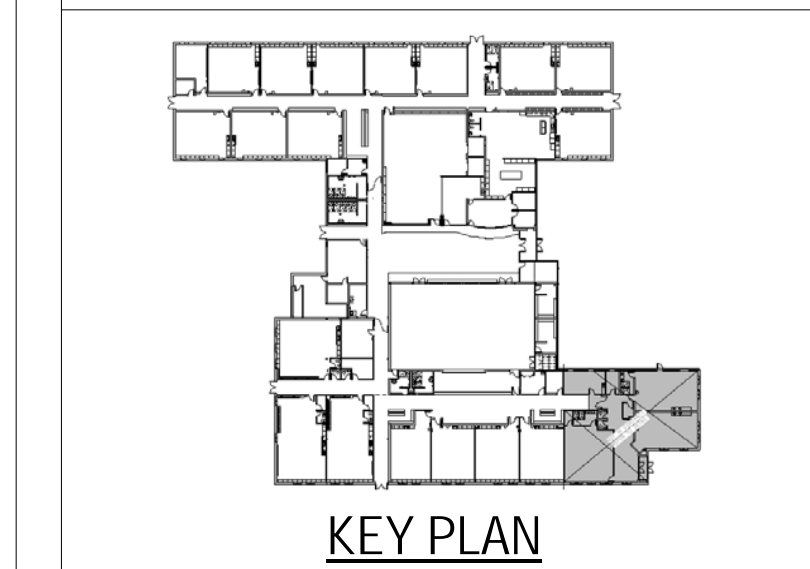
1 SITE PLAN  
SCALE 1 : 300



2 ENLARGED FLOOR PLAN - CHILDCARE N.I.C.  
SCALE 1 : 150



3 ENLARGED FLOOR PLAN - CHILDCARE  
SCALE 1 : 150



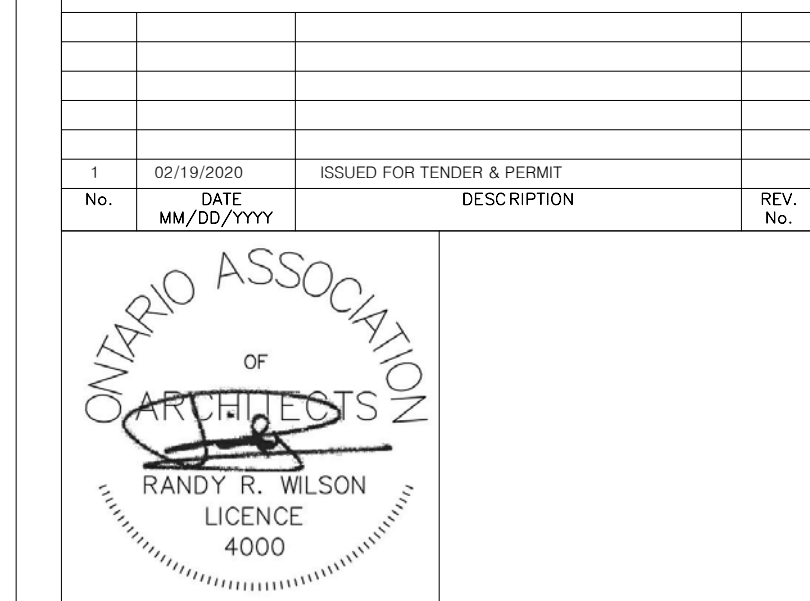
NOTES

CONSTRUCTION HOARDING — x —

LEGEND

CONSTRUCTION HOARDING — x —

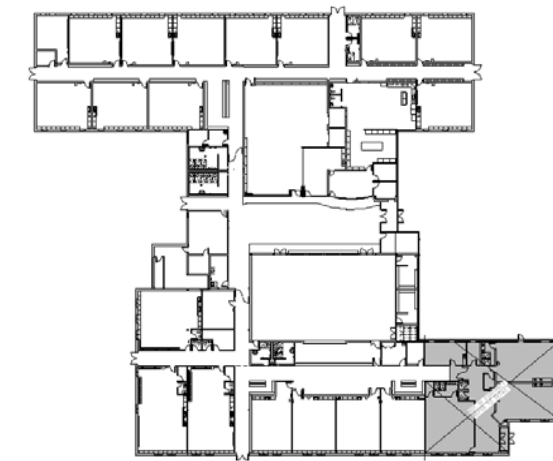
No.	DATE MM/DD/YYYY	ISSUED FOR TENDER & PERMIT DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**LIFE SAFETY PLAN AND SITE PLAN**

DATE PLOTTED 19/02/2020 11:50:39 AM	DRAWN BY PC	DRAWING No.
SCALE As indicated	CHECKED BY RW	<b>A010</b>
PROJECT No.	1901	

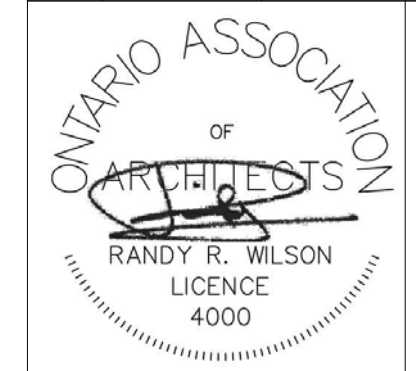


KEY PLAN

NOTES

LEGEND

No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



PROJECT TITLE  
**OUR LADY OF FATIMA**

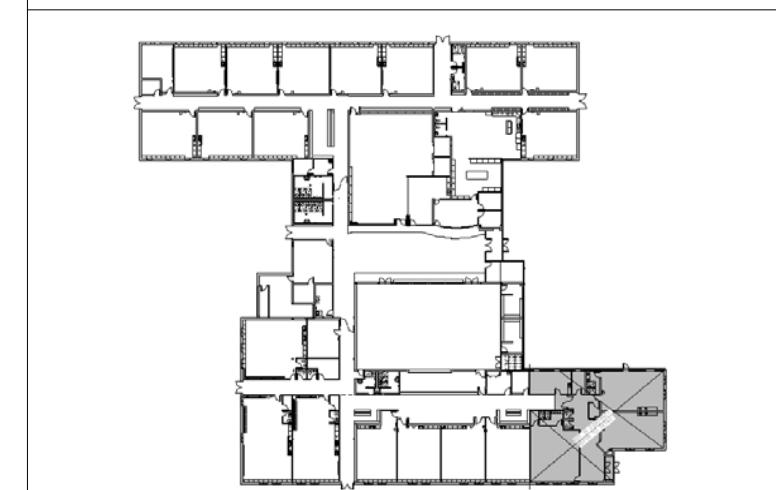
DRAWING TITLE  
**ASSEMBLY TYPES**

DATE PLOTTED 19/02/2020 11:50:41 AM	DRAWN BY PC	DRAWING No.
SCALE 1 : 20	CHECKED BY RW	<b>A050</b>
PROJECT No.	1901	

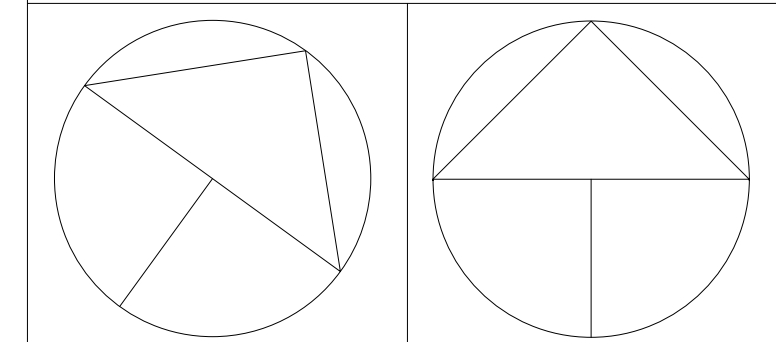
ASSEMBLY TYPES:

EXTERIOR WALL TYPES		
TYPE	DETAIL	DESCRIPTION
W1		MASONRY ON EXIST. CMU: -90 CSBU MASONRY -25 AIR BARRIER -80 SPRAY FOAM INSULATION -BLUESKIN SA WATER RESISTIVE A.V.B. -EXISTING 190 CONC. BLOCK
W2		NSMU BASE: -90 LIMESTONE MASONRY -25 AIR BARRIER -80 SPRAY FOAM INSULATION -BLUESKIN SA WATER RESISTIVE A.V.B. -EXISTING 190 CONC. BLOCK
W3		METAL SIDING ON EXST. CMU: -38 GAUGE HORIZONTAL CORRUGATED METAL SIDING -VERTICAL Z-BAR REINFORCING -25 AIR BARRIER -80 SPRAY FOAM INSULATION -BLUESKIN SA WATER RESISTIVE A.V.B. -EXISTING 190 CONC. BLOCK
W4		NEW ACOUSTIC CMU: -240 ACOUSTIC TYPE RSC "SOUNDBLOX" CMU
FW1		350 CMU FOUNDATION: -100 CMU -50 RIGID INSULATION -190 REINFORCED CONCRETE CMU (REFER TO STRUCTURAL)
INTERIOR WALL TYPES		
TYPE	DETAIL	DESCRIPTION
P1		GWB ON STUDS: -16 ABUSE RESISTANT GWB -92 STUDS @ 400 O.C. -ROXUL ACOUSTIC INSUL. BETWEEN STUDS IN CAVITY -16 ABUSE RESISTANT GWB
P1a		GWB ON STUDS: -16 ABUSE RESISTANT GWB -92 STUDS @ 400 O.C.
P2		GWB ON STUDS: -16 ABUSE RESISTANT GWB -152 STUDS @ 400 O.C. -ROXUL ACOUSTIC INSUL. BETWEEN STUDS IN CAVITY -16 ABUSE RESISTANT GWB
P3		GWB ON STUDS: -16 ABUSE RESISTANT GWB -152 STUDS @ 400 O.C. -ROXUL ACOUSTIC INSUL. BETWEEN STUDS IN CAVITY
F1		GWB ON STUDS: -22 METAL FURRING CHANNELS -16 ABUSE RESISTANT GWB
F2		GWB ON STUDS: -41 METAL STUDS @ 400 O.C. -16 ABUSE RESISTANT GWB
F3		GWB ON STUDS: -64 METAL STUDS @ 400 O.C. -16 ABUSE RESISTANT GWB
F4		GWB ON STUDS: -92 METAL STUDS @ 400 O.C. -16 ABUSE RESISTANT GWB
F5		EXISTING WALL: -90 CLAY BRICK -25 RIGID INSULATION -190 CONC. BLOCK NOTE: ALL OUTSIDE EXPOSED CORNERS TO BE ROUNDED.
B1		EXPOSED CMU: -NEW 140 CMU NOTE: ALL OUTSIDE EXPOSED CORNERS TO BE ROUNDED.
B2		EXPOSED CMU: -NEW 190 CMU NOTE: ALL OUTSIDE EXPOSED CORNERS TO BE ROUNDED.
B3		EXPOSED CMU: -NEW 290 CMU NOTE: ALL OUTSIDE EXPOSED CORNERS TO BE ROUNDED.

ROOF TYPES		
TYPE	DETAIL	DESCRIPTION
R1		NEW ROOF: -PEA STONE ROOFING GRAVEL -ON FLOOD COAT OF COLD ADHESIVE -ON TWO PLY MODIFIED BITUMEN ROOF MEMBRANE -ON 5 MM PROTECTION ASPHALT BOARD -ON TAPERED INSULATION AS NOTED -ON 100 RIGID INSULATION (ISO) -ON VAPOUR RETARDER AS SPECIFIED -ON 13 MM TYPE X GYPSUM BOARD (ISO) MECHANICALLY FASTENED TO DECK -ON 38 METAL DECK
R2		NEW ROOF ON EXISTING DECK: -PEA STONE ROOFING GRAVEL -ON FLOOD COAT OF COLD ADHESIVE -ON TWO PLY MODIFIED BITUMEN ROOF MEMBRANE -ON 5 MM PROTECTION ASPHALT BOARD -ON TAPERED INSULATION AS NOTED -ON 100 RIGID INSULATION (ISO) -ON VAPOUR RETARDER AS SPECIFIED -ON 13 MM TYPE X GYPSUM BOARD (ISO) MECHANICALLY FASTENED TO DECK -ON EXISTING METAL DECK
CEILING TYPES		
TYPE	DETAIL	DESCRIPTION
ACT		ACOUSTIC CEILING TILE: -ACT PANEL -ALUM. CHANNEL SYS.
GYP		GWB ON STUDS: -16 ABUSE RESISTANT GWB -102 STUDS @ 400 O.C.
FLOOR TYPES		
TYPE	DETAIL	DESCRIPTION
FL1.1		NEW CONC. SLAB ON GRADE: -FLOOR FINISH. REFER TO FINISHING PLAN -125 CONCRETE SLAB W/ WELDED WIRE MESH -MIN 200 COMPACTED GRANULAR FILL
CONTROL JOINT DETAIL		



KEY PLAN



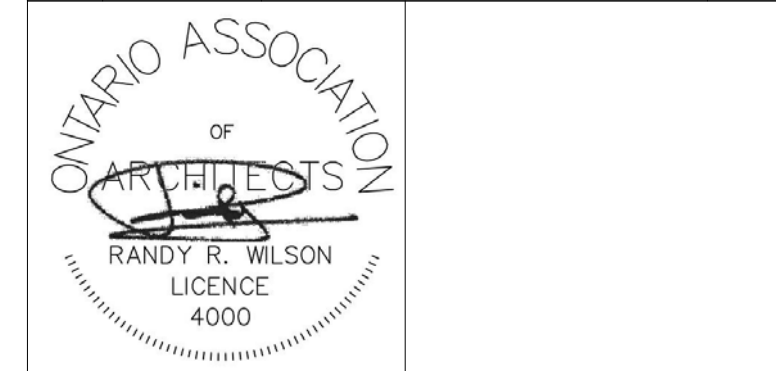
TRUE NORTH CONSTRUCTION NORTH

NOTES

LEGEND

SYMBOL	DESCRIPTION
[Grid Pattern]	AREA OF WORK N.I.C.
[Dashed Line]	ACT CEILING TILE TO BE REMOVED
[Dotted Line]	PORTION OF EXISTING WALLS TO BE REMOVED
[Hatched Area]	EXTERIOR MASONRY & INSULATION TO BE REMOVED EXISTING CONC. BLOCK TO REMAIN
[Solid Grey Area]	AREA OF CONCRETE FLOOR TO BE REMOVED FOR PLUMBING
[Dotted Grey Area]	AREA OF BLOCK WALL TO BE REMOVED FOR PLUMBING
[Door Symbol]	EXISTING DOOR & FRAME TO BE REMOVED
[Window Symbol]	EXISTING WINDOW & FRAME TO BE REMOVED

No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



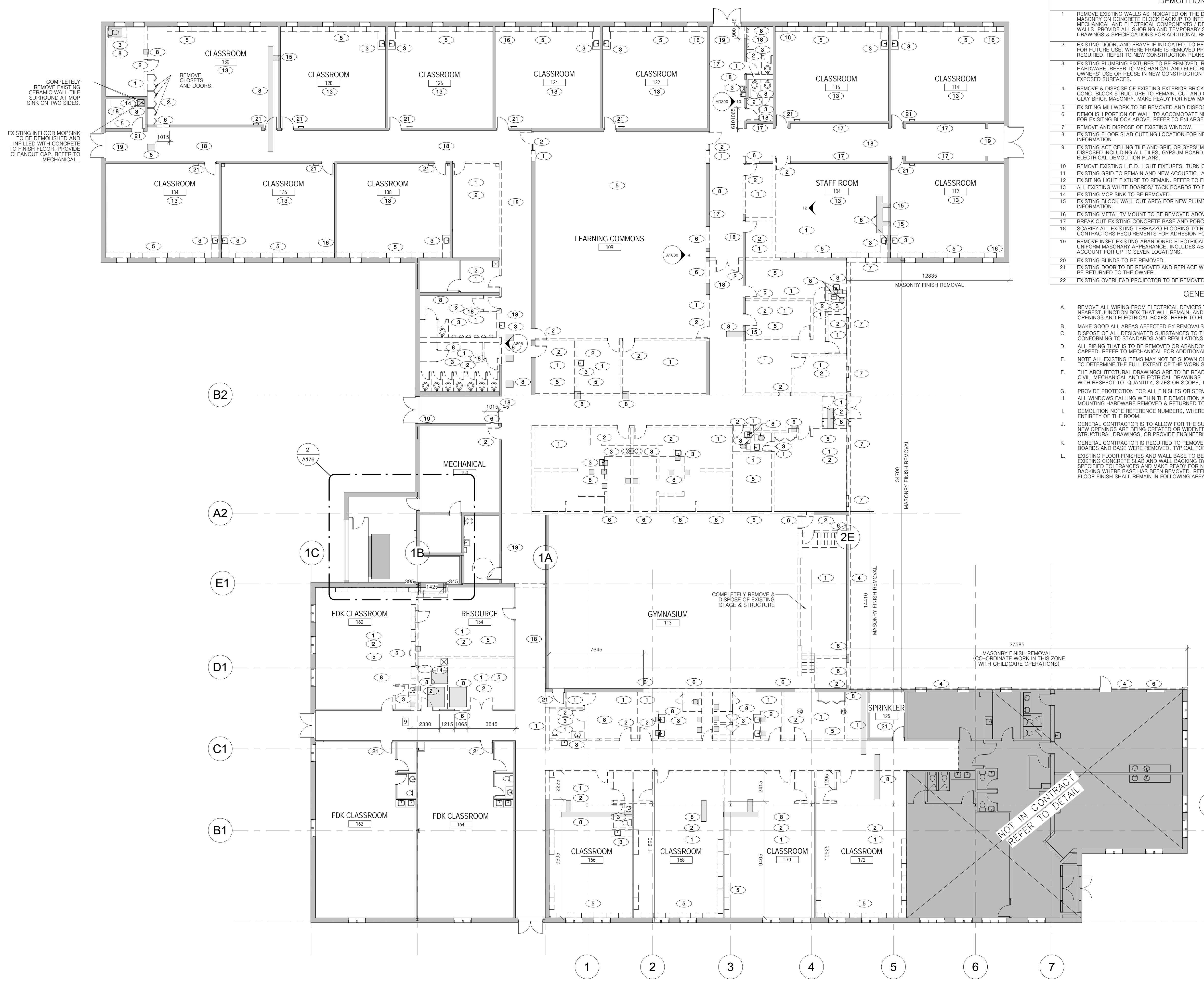
PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**DEMOLITION FLOOR PLAN**

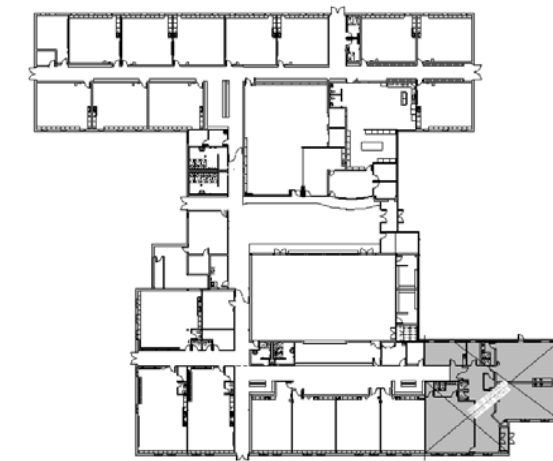
DATE PLOTTED 19/02/2020 2:14:17 PM	DRAWN BY TJV	DRAWING No. AD100
SCALE As indicated	CHECKED BY RRW	
PROJECT No. 1901		

- DEMOLITION SPECIFIC NOTES**
- REMOVE EXISTING WALLS AS INDICATED ON THE DRAWINGS. CONSTRUCTION TYPE MAY VARY FROM EXTERIOR MASONRY ON CONCRETE BLOCK BACKUP TO INTERIOR CONCRETE BLOCK AND/OR DRYWALL PARTITIONS. REMOVE MECHANICAL AND ELECTRICAL COMPONENTS (EQUIPMENT, BACK TO SOURCE) ANCHORED TO OR CONCEAL WITHIN WALLS. PROVIDE ALL SHORING AND TEMPORARY SUPPORT REQUIRED TO MAKE EXISTING STRUCTURE SAFE. REFER TO DRAWINGS & SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
  - EXISTING DOOR AND FRAME IF INDICATED, TO BE REMOVED. BOX LABEL AND TURN OVER HARDWARE TO OWNER FOR FUTURE USE. WHERE FRAME IS REMOVED PREPARE OPENING TO RECEIVE NEW INFILL OR DOOR AND FRAME IF REQUIRED. REFER TO NEW CONSTRUCTION PLANS AND ELEVATIONS.
  - EXISTING PLUMBING FIXTURES TO BE REMOVED. REMOVE ALL EQUIPMENT, CAP & REMOVE SINKS, DRAINS, AND HARDWARE. REFER TO MECHANICAL AND ELECTRICAL FOR ADDITIONAL REQUIREMENTS. ONLY RETAIN FIXTURES FOR OWNERS' USE OR REUSE IN NEW CONSTRUCTION WHERE SPECIFICALLY NOTED. REPAIR AND MAKE GOOD ALL EXPOSED SURFACES.
  - REMOVE & DISPOSE OF EXISTING EXTERIOR BRICK AND RIGID INSULATION BACK TO EXISTING CONC. BLOCK. WALL CONC. BLOCK STRUCTURE TO REMAIN. CUT AND GRIND TO FLUSH ALL REINFORCING BETWEEN BLOCK AND REMOVED CLAY BRICK MASONRY. MAKE READY FOR NEW MASONRY.
  - EXISTING MILLWORK TO BE REMOVED AND DISPOSED.
  - DEMOLISH PORTION OF WALL TO ACCOMMODATE NEW DOOR OR WINDOW OPENING. PROVIDE TEMPORARY SUPPORT FOR EXISTING BLOCK ABOVE. REFER TO ENLARGED PLANS FOR LOCATION.
  - REMOVE AND DISPOSE OF EXISTING WINDOW.
  - EXISTING FLOOR SLAB CUTTING LOCATION FOR NEW PIPING LINES. REFER TO MECHANICAL DRAWINGS FOR MORE INFORMATION.
  - EXISTING ACT CEILING TILE AND GRID OR GYPSUM BOARD CEILING W/ LIGHT FIXTURES/DEVICES TO BE REMOVED AND DISPOSED INCLUDING ALL TILES, GYPSUM BOARD, SUPPORT HANGARS AND FRAMING. REFER TO MECHANICAL AND ELECTRICAL DEMOLITION PLANS.
  - REMOVE EXISTING L.E.D. LIGHT FIXTURES. TURN OVER EXISTING LED BULB TO OWNER.
  - EXISTING GRID TO REMAIN AND NEW ACOUSTIC LAY IN TILES FLOOR TO BE INSTALLED.
  - EXISTING LIGHT FIXTURE TO REMAIN. REFER TO ELECTRICAL DRAWINGS FOR MORE INFORMATION.
  - ALL EXISTING WHITE BOARDS/ TACK BOARDS TO BE REMOVED AND DISPOSED.
  - EXISTING MOP SINK TO BE REMOVED.
  - EXISTING BLOCK WALL CLUT AREA FOR NEW PLUMBING PIPE LINES. REFER TO MECHANICAL DRAWINGS FOR MORE INFORMATION.
  - EXISTING METAL TV MOUNT TO BE REMOVED ABOVE CEILING LINE BACK TO STRUCTURE.
  - BREAK OUT EXISTING CONCRETE BASE AND PORCELAIN WALL BASE.
  - SCABBY ALL EXISTING TERRAZZO FLOORING TO REMOVE ALL FINISH COATINGS ACCEPTABLE TO FLOORING CONTRACTORS REQUIREMENTS FOR ADHESION FOR PORCELAIN TILE FLOORING.
  - REMOVE INSET EXISTING ABANDONED ELECTRICAL AND DEVICE BOXES. INFILL WITH COMPLETE BLOCK TO ACHIEVE UNIFORM MASONRY APPEARANCE. INCLUDES ABANDONED THERMOSTATES, CONTROL AND ELECTRICAL DEVICES ACCOUNT FOR UP TO SEVEN LOCATIONS.
  - EXISTING BLINDS TO BE REMOVED.
  - EXISTING DOOR TO BE REMOVED AND REPLACE WITH NEW DOOR IN AN EXISTING FRAME AND EXISTING HARDWARE TO BE RETURNED TO THE OWNER.
  - EXISTING OVERHEAD PROJECTOR TO BE REMOVED AND TURNED OVER TO OWNER.

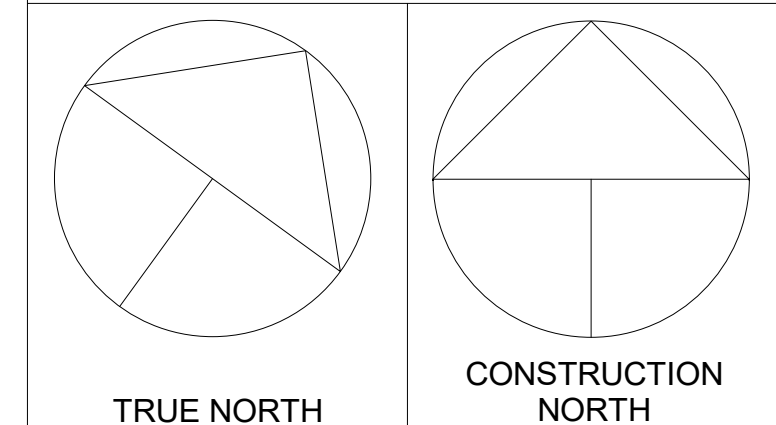
- GENERAL NOTES**
- REMOVE ALL WIRING FROM ELECTRICAL DEVICES THAT WILL BE REMOVED AND ALL REDUNDANT CONDUIT BACK TO NEAREST JUNCTION BOX THAT WILL REMAIN. MAKE SAFE. INSTALL METAL COVER PLATES OVER EXPOSED OPENINGS AND ELECTRICAL BOXES. REFER TO ELECTRICAL FOR ADDITIONAL REQUIREMENTS.
  - MAKE GOOD ALL AREAS AFFECTED BY REMOVALS - FLUSH TO ADJACENT SURFACE AND MATCH TO EXISTING FINISH.
  - DISPOSE OF ALL DESIGNATED SUBSTANCES TO THE REQUIREMENTS AS SET OUT IN THE SPECIFICATIONS AND CONFORMING TO STANDARDS AND REGULATIONS OF AUTHORITIES HAVING JURISDICTION.
  - ALL PIPING THAT IS TO BE REMOVED OR ABANDONED IS TO BE REMOVED BACK TO THE NEAREST JUNCTION AND CAPPED. REFER TO MECHANICAL FOR ADDITIONAL REQUIREMENTS.
  - NOTE ALL EXISTING ITEMS MAY NOT BE SHOWN ON THESE DRAWINGS. A CAREFUL REVIEW OF THE SITE IS REQUIRED TO DETERMINE THE FULL EXTENT OF THE WORK SHOWN. CONTACT ARCHITECT PRIOR TO BID CLOSE TO CONFIRM.
  - THE ARCHITECTURAL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL PROJECT MANUALS, STRUCTURAL, CIVIL, MECHANICAL, AND ELECTRICAL DRAWINGS. IN CASE OF DIFFERENCES BETWEEN CONSULTANTS' DOCUMENTS WITH RESPECT TO QUANTITY, SIZES OR SCOPE, THE GREATER SHALL APPLY.
  - PROVIDE PROTECTION FOR ALL FINISHES OR SERVICES TO REMAIN.
  - ALL WINDOWS FALLING WITHIN THE DEMOLITION AREA NORTH WING ARE TO HAVE THEIR COVERINGS, FITTINGS, AND MOUNTING HARDWARE REMOVED & RETURNED TO THE OWNER.
  - DEMOLITION NOTE REFERENCE NUMBERS, WHERE LOCATED ADJACENT TO A ROOM NAME/NUMBER APPLY TO THE ENTIRETY OF THE ROOM.
  - GENERAL CONTRACTOR IS TO ALLOW FOR THE SUPPLY AND INSTALLATION OF LOOSE LINTELS AS REQUIRED WHERE NEW OPENINGS ARE BEING CREATED OR WIDENED. REFER TO THE LOOSE LINTEL SCHEDULE PROVIDED ON THE STRUCTURAL DRAWINGS, OR PROVIDE ENGINEERING WHERE THERE ARE NO STRUCTURAL DRAWINGS OR SCHEDULE.
  - GENERAL CONTRACTOR IS REQUIRED TO REMOVE ALL REMAINING ADHESIVES ON WALLS WHERE COMMUNICATION BOARDS AND BASE WERE REMOVED. TYPICAL FOR ALL ROOMS AFFECTED BY WORK.
  - EXISTING FLOOR FINISHES AND WALL BASE TO BE REMOVED INCLUDING ALL ADHESIVES AND MORTAR DOWN TO EXISTING CONCRETE SLAB AND WALL BACKING BY MEANS OF GRINDING. PREPARE FLOOR SURFACE LEVEL TO WITHIN SPECIFIED TOLERANCES AND MAKE READY FOR NEW FINISHES. PROVIDE ANY AND ALL REMEDIAL WORK TO WALL BACKING WHERE BASE HAS BEEN REMOVED. REFER TO NEW CONSTRUCTION PLANS AND ELEVATIONS. THE EXISTING FLOOR FINISH SHALL REMAIN IN FOLLOWING AREA: 150, 150A, 150B, 152, 144, & 144A.



1 4 DEMOLITION PLAN PHASE 4  
SCALE 1 : 150



KEY PLAN

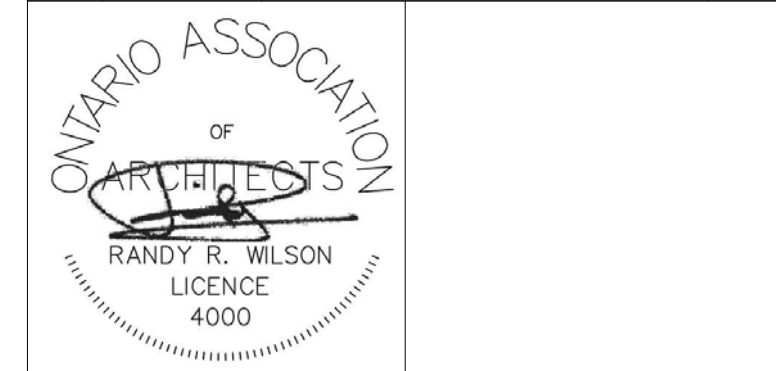


NOTES

LEGEND

①	DEMOLITION NOTE REFERENCE NUMBER
[Hatched Box]	AREA OF WORK N.I.C.
[Dashed Line]	ACT CEILING TILE TO BE REMOVED
[Dotted Line]	PORTION OF EXISTING WALLS TO BE REMOVED
[Cross-hatched Box]	EXTERIOR MASONRY & INSULATION TO BE REMOVED
[Solid Grey Box]	EXISTING CONC. BLOCK TO REMAIN
[Diagonal Line Box]	AREA OF CONCRETE FLOOR TO BE REMOVED FOR PLUMBING
[Dark Grey Box]	ROOMS COMPLETE DURING PHASE 3 OF CONSTRUCTION.

1	02/19/2020	ISSUED FOR TENDER & PERMIT	REV.
No.	DATE	DESCRIPTION	No.
	MM/DD/YYYY		



PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**DEMOLITION REFLECTED CEILING PLAN**

DATE PLOTTED 19/02/2020 11:55:51 AM	DRAWN BY TJV	DRAWING No.
SCALE As indicated	CHECKED BY RRW	<b>AD200</b>
PROJECT No.	1901	



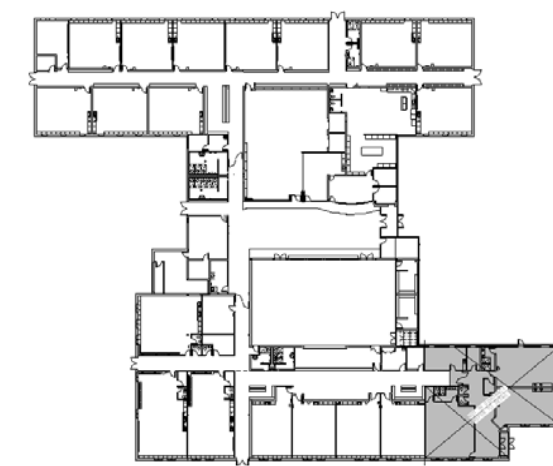
1 REFLECTED CEILING DEMO PLAN  
SCALE 1:150

DEMOLITION SPECIFIC NOTES

- REMOVE EXISTING WALLS AS INDICATED ON THE DRAWINGS. CONSTRUCTION TYPE MAY VARY FROM EXTERIOR MASONRY ON CONCRETE BLOCK BACKUP TO INTERIOR CONCRETE BLOCK AND/OR DRYWALL PARTITIONS. REMOVE MECHANICAL AND ELECTRICAL COMPONENTS / DEVICES (BACK TO SOURCE) ANCHORED TO OR CONCEAL WITHIN WALLS. PROVIDE ALL SHORING AND TEMPORARY SUPPORT REQUIRED TO MAKE EXISTING STRUCTURE SAFE. REFER TO DRAWINGS & SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- EXISTING DOOR, AND FRAME IF INDICATED, TO BE REMOVED. BOX, LABEL AND TURN OVER HARDWARE TO OWNER FOR FUTURE USE. WHERE FRAME IS REMOVED PREPARE OPENING TO RECEIVE NEW INFILL OR DOOR AND FRAME IF REQUIRED. REFER TO NEW CONSTRUCTION PLANS AND ELEVATIONS.
- EXISTING PLUMBING FIXTURES TO BE REMOVED. REMOVE ALL EQUIPMENT, CAP & REMOVE SINKS, DRAINS, AND HARDWARE. REFER TO MECHANICAL AND ELECTRICAL FOR ADDITIONAL REQUIREMENTS. ONLY RETAIN FIXTURES FOR OWNERS' USE OR REUSE IN NEW CONSTRUCTION WHERE SPECIFICALLY NOTED. REPAIR AND MAKE GOOD ALL EXPOSED SURFACES.
- REMOVE & DISPOSE OF EXISTING EXTERIOR BRICK AND RIGID INSULATION BACK TO EXISTING CONC. BLOCK WALL CONC. BLOCK STRUCTURE TO REMAIN. CUT AND GRIND TO FLUSH ALL REINFORCING BETWEEN BLOCK AND REMOVED CLAY BRICK MASONRY. MAKE READY FOR NEW MASONRY.
- EXISTING MILLWORK TO BE REMOVED AND DISPOSED.
- DEMOLISH PORTION OF WALL TO ACCOMMODATE NEW DOOR OR WINDOW OPENING. PROVIDE TEMPORARY SUPPORT FOR EXISTING BLOCK ABOVE. REFER TO ENLARGED PLANS FOR LOCATION.
- REMOVE AND DISPOSE OF EXISTING WINDOW.
- EXISTING FLOOR SLAB CUTTING LOCATION FOR NEW PIPING LINES. REFER TO MECHANICAL DRAWINGS FOR MORE INFORMATION.
- EXISTING ACT CEILING TILE AND GRID OR GYPSUM BOARD CEILING W/ LIGHT FIXTURES/DEVICES TO BE REMOVED AND DISPOSED INCLUDING ALL TILES, GYPSUM BOARD, SUPPORT HANGARS AND FRAMING. REFER TO MECHANICAL AND ELECTRICAL DEMOLITION PLANS.
- REMOVE EXISTING L.E.D. LIGHT FIXTURES. TURN OVER EXISTING LED BULB TO OWNER.
- EXISTING GRID TO REMAIN AND NEW ACOUSTIC LAY IN TILES TILES TO BE INSTALLED.
- EXISTING LIGHT FIXTURE TO REMAIN. REFER TO ELECTRICAL DRAWINGS FOR MORE INFORMATION.
- ALL EXISTING WHITE BOARDS/TACK BOARDS TO BE REMOVED AND DISPOSED.
- EXISTING TOP SINK TO BE REMOVED.
- EXISTING BLOCK WALL CUT AREA FOR NEW PLUMBING PIPE LINES. REFER TO MECHANICAL DRAWINGS FOR MORE INFORMATION.
- EXISTING METAL TV MOUNT TO BE REMOVED ABOVE CEILING LINE BACK TO STRUCTURE.
- BREAK OUT EXISTING CONCRETE BASE AND PORCELAIN WALL BASE.
- SCARIFY ALL EXISTING TERRAZZO FLOORING TO REMOVE ALL FINISH COATINGS ACCEPTABLE TO FLOORING CONTRACTORS REQUIREMENTS FOR ADHESION FOR PORCELAIN TILE FLOORING.
- REMOVE INSET EXISTING ABANDONED ELECTRICAL AND DEVICE BOXES. INFILL WITH COMPLETE BLOCK TO ACHIEVE UNIFORM MASONRY APPEARANCE. INCLUDES ABANDONED THERMOSTATES, CONTROL AND ELECTRICAL DEVICES ACCOUNT FOR UP TO SEVEN LOCATIONS.
- EXISTING BLINDS TO BE REMOVED.
- EXISTING DOOR TO BE REMOVED AND REPLACE WITH NEW DOOR IN AN EXISTING FRAME AND EXISTING HARDWARE TO BE RETURNED TO THE OWNER.
- EXISTING OVERHEAD PROJECTOR TO BE REMOVED AND TURNED OVER TO OWNER.

GENERAL DEMOLITION NOTES

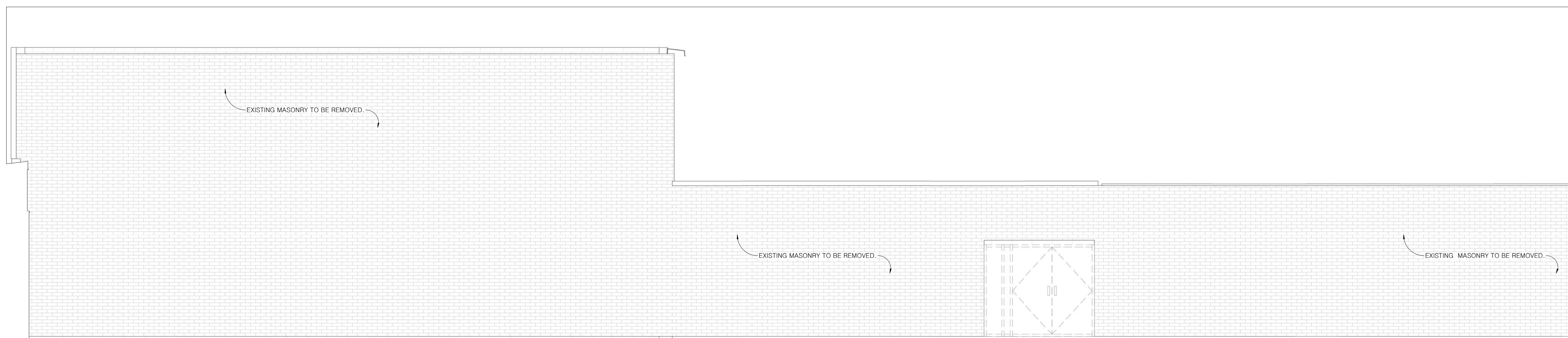
- REMOVE ALL WIRING FROM ELECTRICAL DEVICES THAT WILL BE REMOVED AND ALL REDUNDANT CONDUIT BACK TO NEAREST JUNCTION BOX THAT WILL REMAIN, AND MAKE SAFE. INSTALL METAL COVER PLATES OVER EXPOSED OPENINGS AND ELECTRICAL BOXES. REFER TO ELECTRICAL FOR ADDITIONAL REQUIREMENTS.
- MAKE GOOD ALL AREAS AFFECTED BY REMOVALS - FLUSH TO ADJACENT SURFACE AND MATCH TO EXISTING FINISH.
- DISPOSE OF ALL DESIGNATED SUBSTANCES TO THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
- ALL PIPING THAT IS TO BE REMOVED OR ABANDONED IS TO BE REMOVED BACK TO THE NEAREST JUNCTION AND CAPPED. REFER TO MECHANICAL FOR ADDITIONAL REQUIREMENTS.
- NOTE ALL EXISTING ITEMS MAY NOT BE SHOWN ON THESE DRAWINGS. A CAREFUL REVIEW OF THE SITE IS REQUIRED TO DETERMINE THE FULL EXTENT OF THE WORK AND CONTACT ARCHITECT PRIOR TO BID CLOSE TO CONFIRM.
- THE ARCHITECTURAL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL PROJECT MANUALS, STRUCTURAL, CIVIL, MECHANICAL AND ELECTRICAL DRAWINGS. IN CASE OF DIFFERENCES BETWEEN CONSULTANTS' DOCUMENTS WITH RESPECT TO QUANTITY, SIZES OR SCOPE, THE GREATER SHALL APPLY.
- PROVIDE PROTECTION FOR ALL FINISHES OR SERVICES TO REMAIN.
- ALL WINDOWS FALLING WITHIN THE DEMOLITION AREA ARE TO HAVE THEIR COVERINGS, FITTINGS, AND MOUNTING HARDWARE REMOVED & RETURNED TO THE OWNER.
- DEMOLITION NOTE REFERENCE NUMBERS, WHERE LOCATED ADJACENT TO A ROOM NAME/NUMBER APPLY TO THE ENTIRETY OF THE ROOM.
- GENERAL CONTRACTOR IS TO ALLOW FOR THE SUPPLY AND INSTALLATION OF LOOSE LINTELS AS REQUIRED WHERE NEW OPENINGS ARE INDICATED. REFER TO THE LOOSE LINTEL SCHEDULE PROVIDED ON THE DRAWINGS, OR PROVIDE ENGINEERING WHERE THERE ARE NO STRUCTURAL DRAWINGS OR SCHEDULE.
- GENERAL CONTRACTOR IS REQUIRED TO REMOVE ALL REMAINING ADHESIVES ON WALLS WHERE COMMUNICATION BOARDS WERE REMOVED UNLESS BEING COVERED WITH NEW BOARDS. TYPICAL FOR ALL ROOMS AFFECTED BY WORK.
- EXISTING FLOOR FINISHES AND WALL BASE TO BE REMOVED INCLUDING ALL ADHESIVES AND MORTAR DOWN TO EXISTING CONCRETE SLAB AND WALL BACKING BY MEANS OF GRINDING. PREPARE FLOOR SURFACE LEVEL TO WITHIN SPECIFIED TOLERANCES AND MAKE READY FOR NEW FINISHES. PROVIDE ANY AND ALL REMEDIAL WORK TO WALL BACKING WHERE BASE HAS BEEN REMOVED. REFER TO NEW CONSTRUCTION PLANS AND ELEVATIONS. THE EXISTING FLOOR FINISH SHALL REMAIN IN FOLLOWING AREAS: 150, 150B, 152, 144, & 144A.
- REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR DEMOLITION OF FIXTURES.



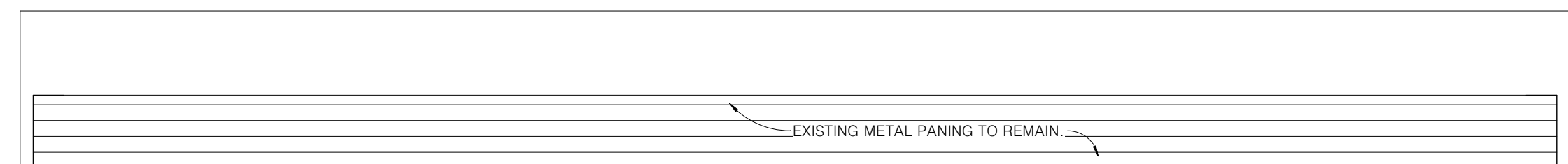
KEY PLAN

NOTES

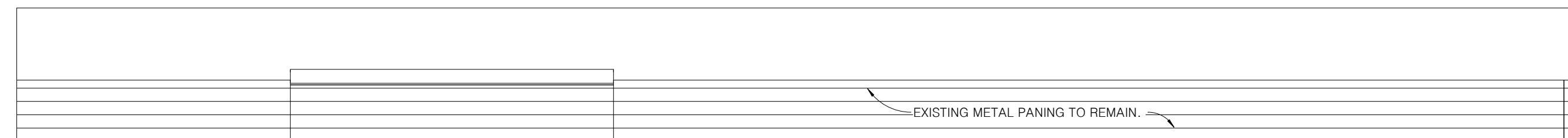
LEGEND



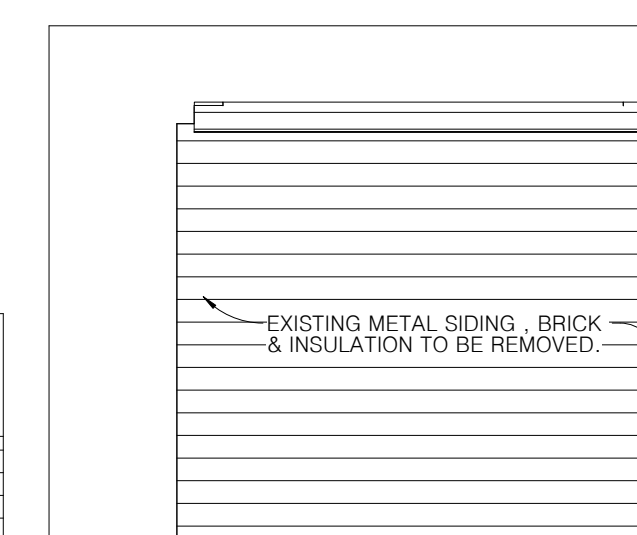
1 BUILDING ELEVATION - EAST  
 SCALE 1 : 50



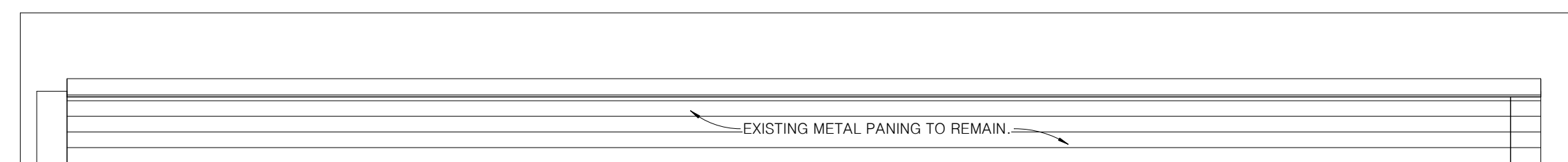
4 BUILDING ELEVATION  
 SCALE 1 : 50



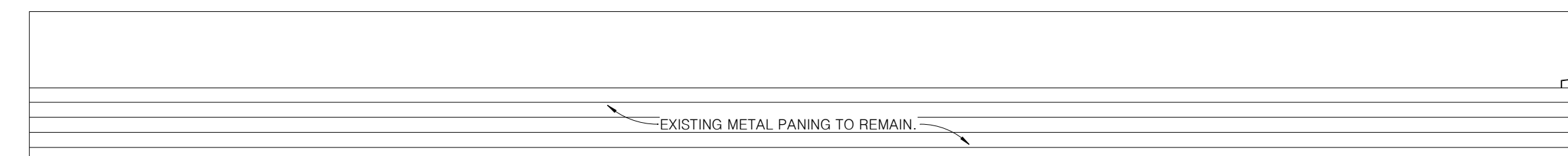
3 BUILDING ELEVATION  
 SCALE 1 : 50



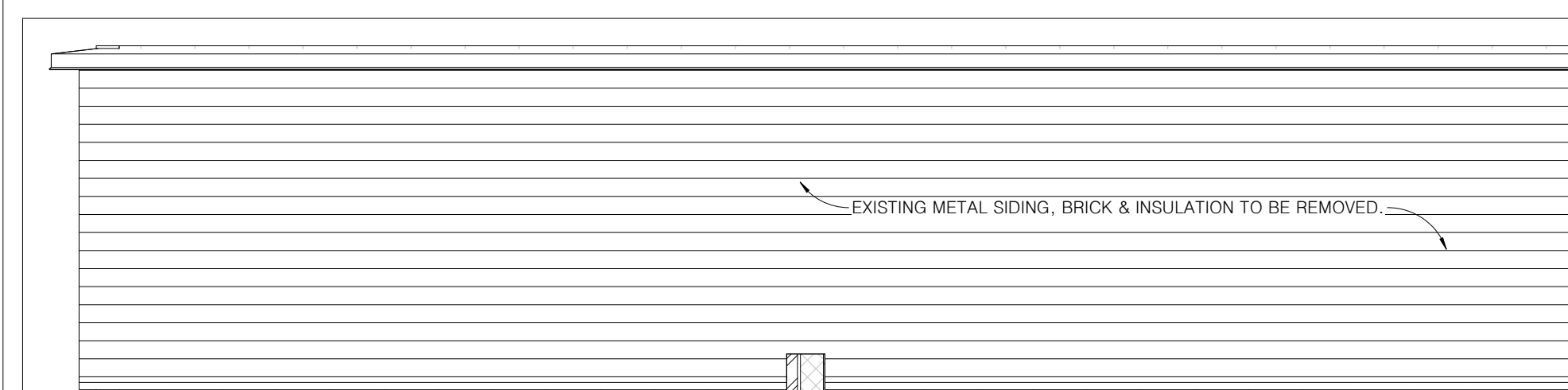
2 BUILDING ELEVATION  
 SCALE 1 : 50



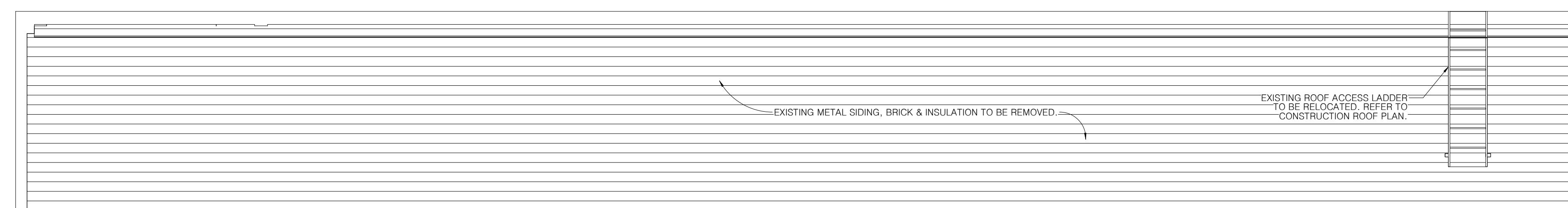
6 BUILDING ELEVATION  
 SCALE 1 : 50



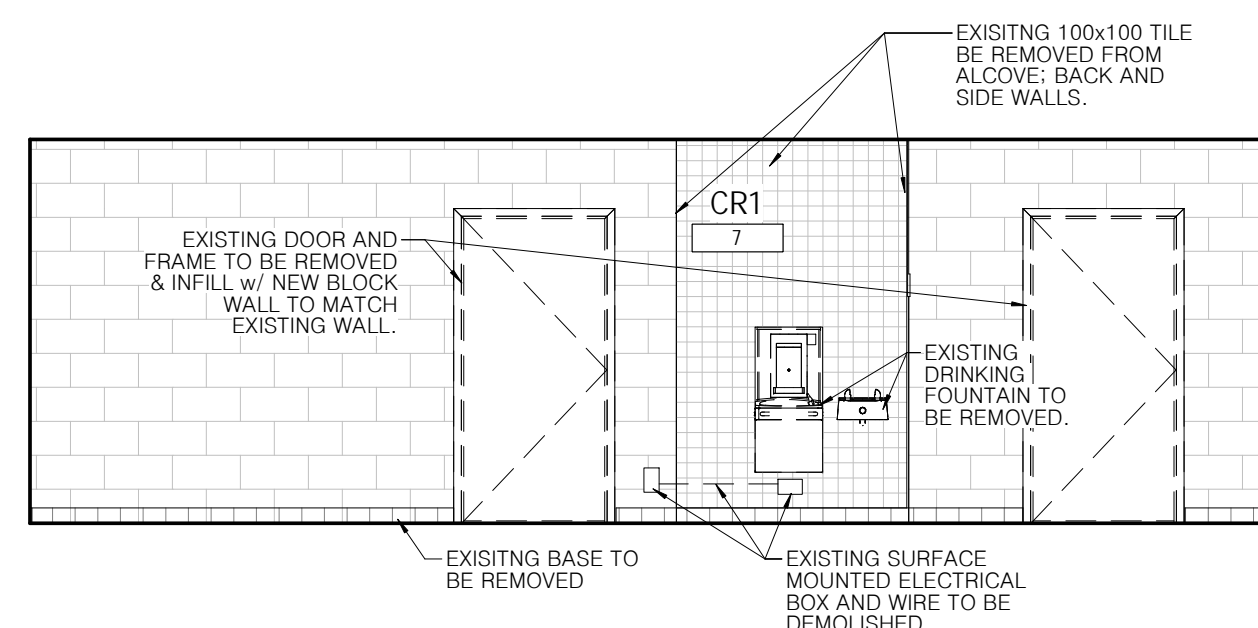
5 BUILDING ELEVATION  
 SCALE 1 : 50



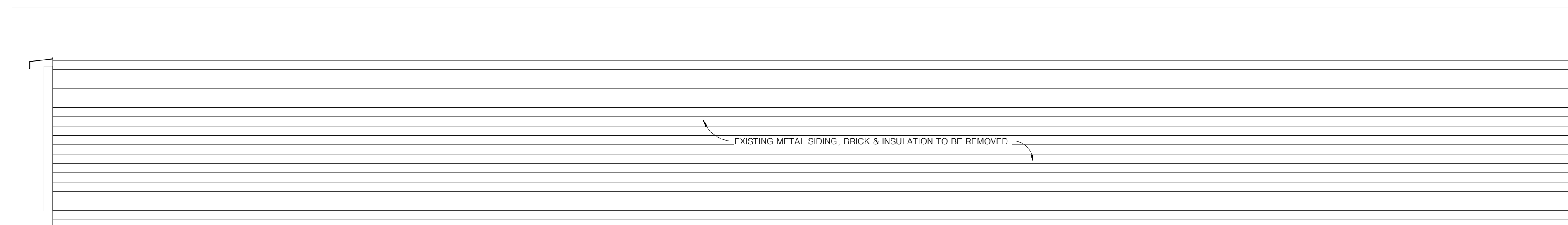
8 BUILDING ELEVATION  
 SCALE 1 : 50



7 BUILDING ELEVATION  
 SCALE 1 : 50

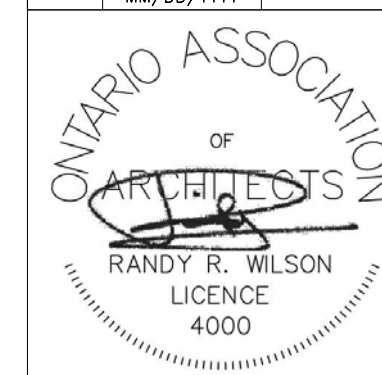


10 CORRIDOR ELEVATION AT WASHROOMS  
 SCALE 1 : 50



9 BUILDING ELEVATION  
 SCALE 1 : 50

No.	DATE MM/DD/YYYY	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



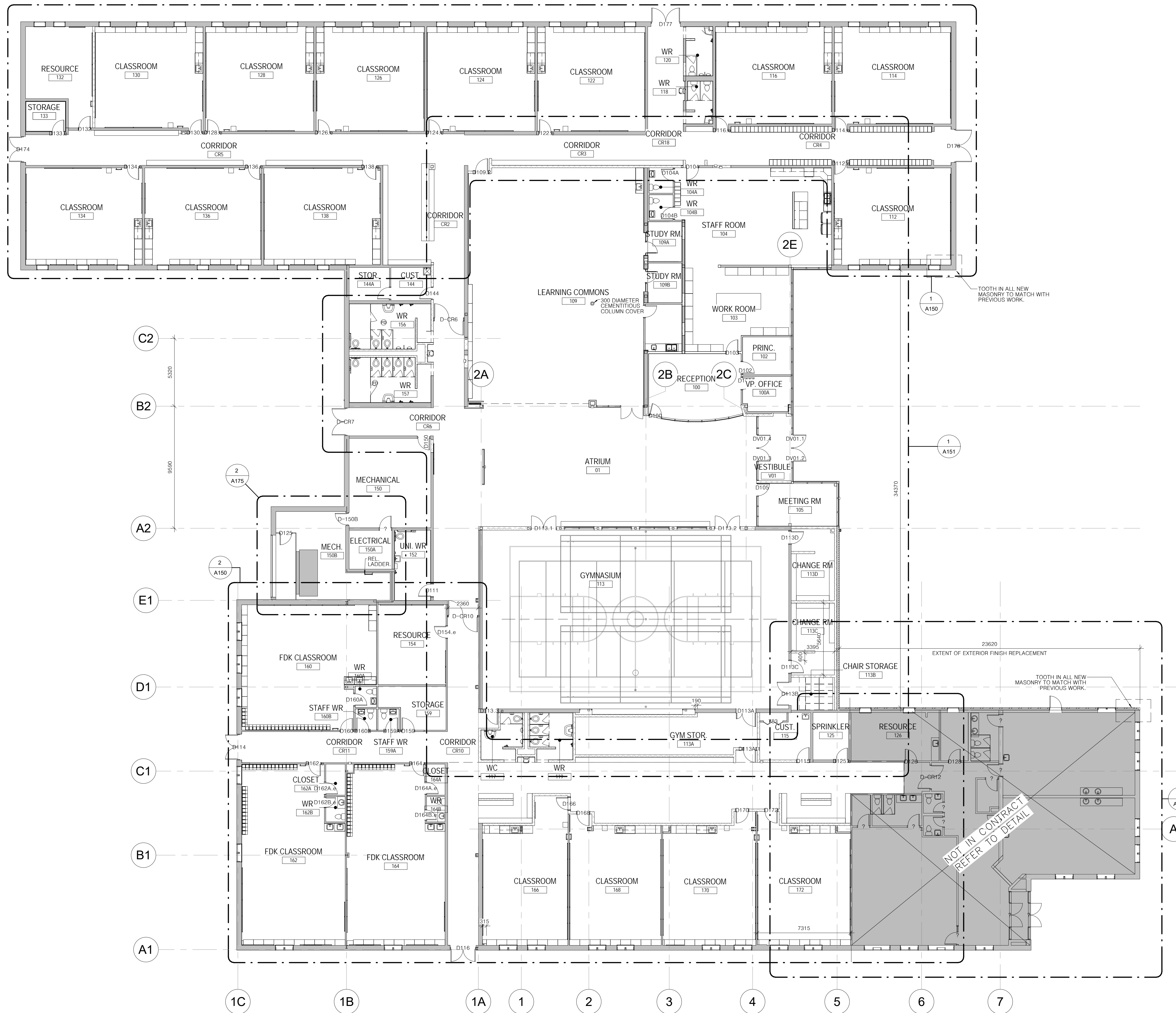
PROJECT TITLE

OUR LADY OF FATIMA

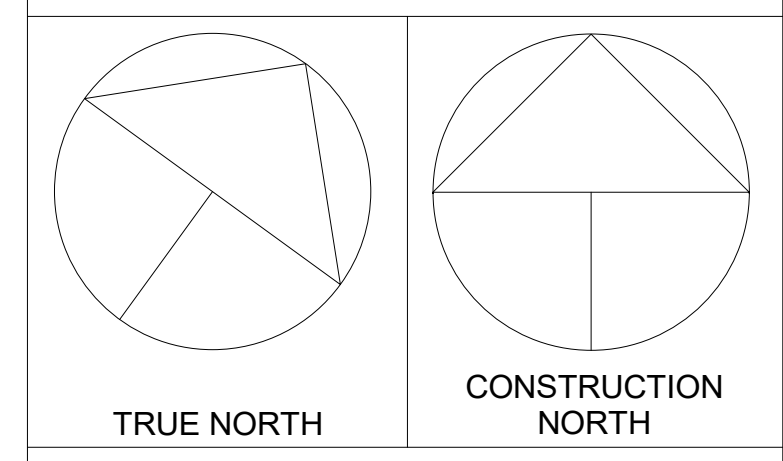
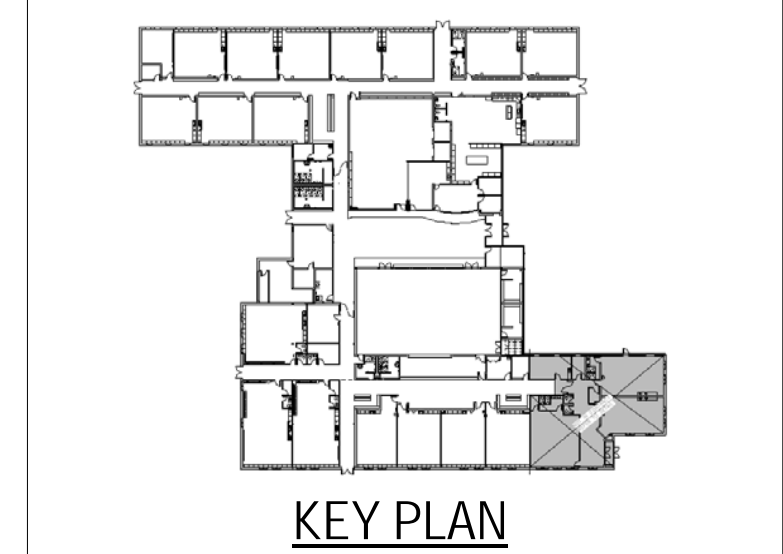
DRAWING TITLE

DEMOLITION EXTERIOR AND INTERIOR ELEVATIONS

DATE PLOTTED 19/02/2020 11:56:12 AM	DRAWN BY PC	DRAWING No.
SCALE 1 : 50	CHECKED BY RRW	AD300
PROJECT No.	1901	



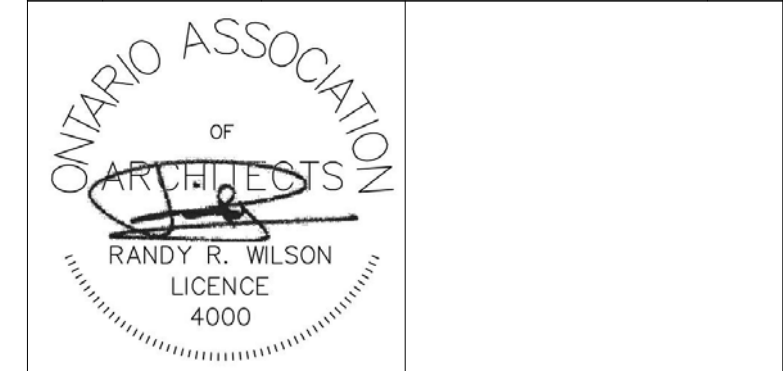
1 CONSTRUCTION FLOOR PLAN  
SCALE 1:150



NOTES

LEGEND

No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	
	MM/DD/YYYY		

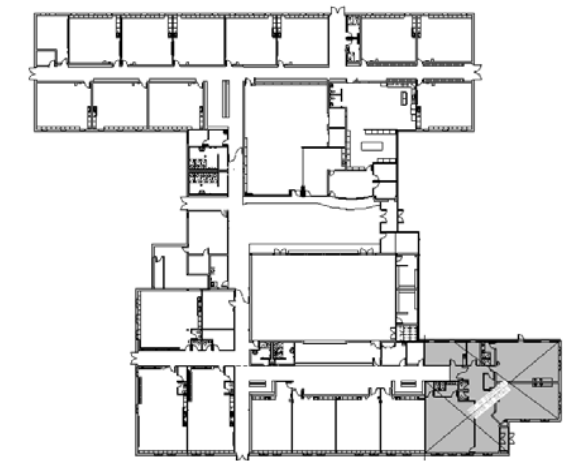


PROJECT TITLE  
**OUR LADY OF FATIMA**

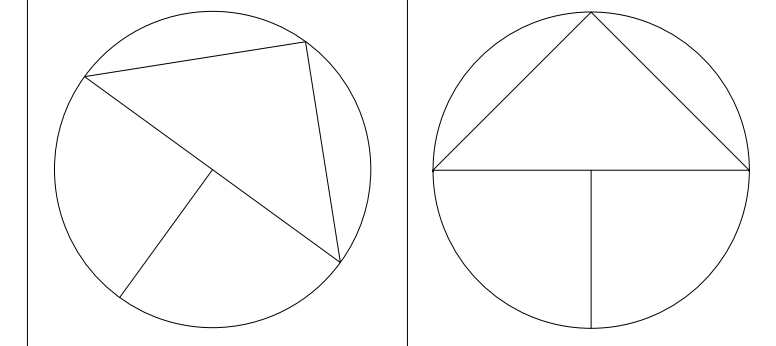
DRAWING TITLE  
**CONSTRUCTION FLOOR PLAN**

DATE PLOTTED 19/02/2020 11:50:56 AM	DRAWN BY MFP	DRAWING No.
SCALE 1:150	CHECKED BY RW	<b>A100</b>
PROJECT No.	1901	





KEY PLAN



TRUE NORTH CONSTRUCTION NORTH

NOTES

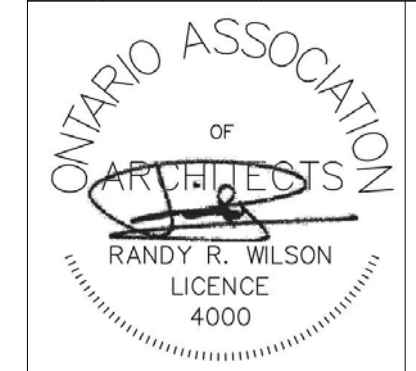
WHERE NOTED AS VCT.,  
ALTERNATE PRICE IS  
QT-1, UNLESS NOTED TO  
BE QT-2

AT EVERY FLOOR FINISH  
TRANSITION, PROVIDE AN  
APPROPRIATE METAL  
TRANSITION STRIP.  
REFER TO  
SPECIFICATIONS.

LEGEND

	PCT1 - PORCELAIN TILE W/ PCT BASE
	PCT2 - PORCELAIN TILE W/ PCT BASE - HIGHLIGHT PATTERN
	VCT - VINYL COMPOSITE TILE
	QT-1 ALT. QUARTZ COMPOSITE TILE (305 x 305mm)
	QT-2 ALT. QUARTZ COMPOSITE TILE (610 X 610mm) WHERE NOTED.
	TG-1 - TEXAS GRANITE TILE (910 X 910mm)
	RES - RESILIENT SPORTS FLOORING
	FLOORING EXISTING CONDITION TO REMAIN.
	EXPOSED CONCRETE (SEALED)

1	02/19/2020	ISSUED FOR TENDER & PERMIT		
No.	DATE	DESCRIPTION	REV.	No.
	MM/DD/YYYY			



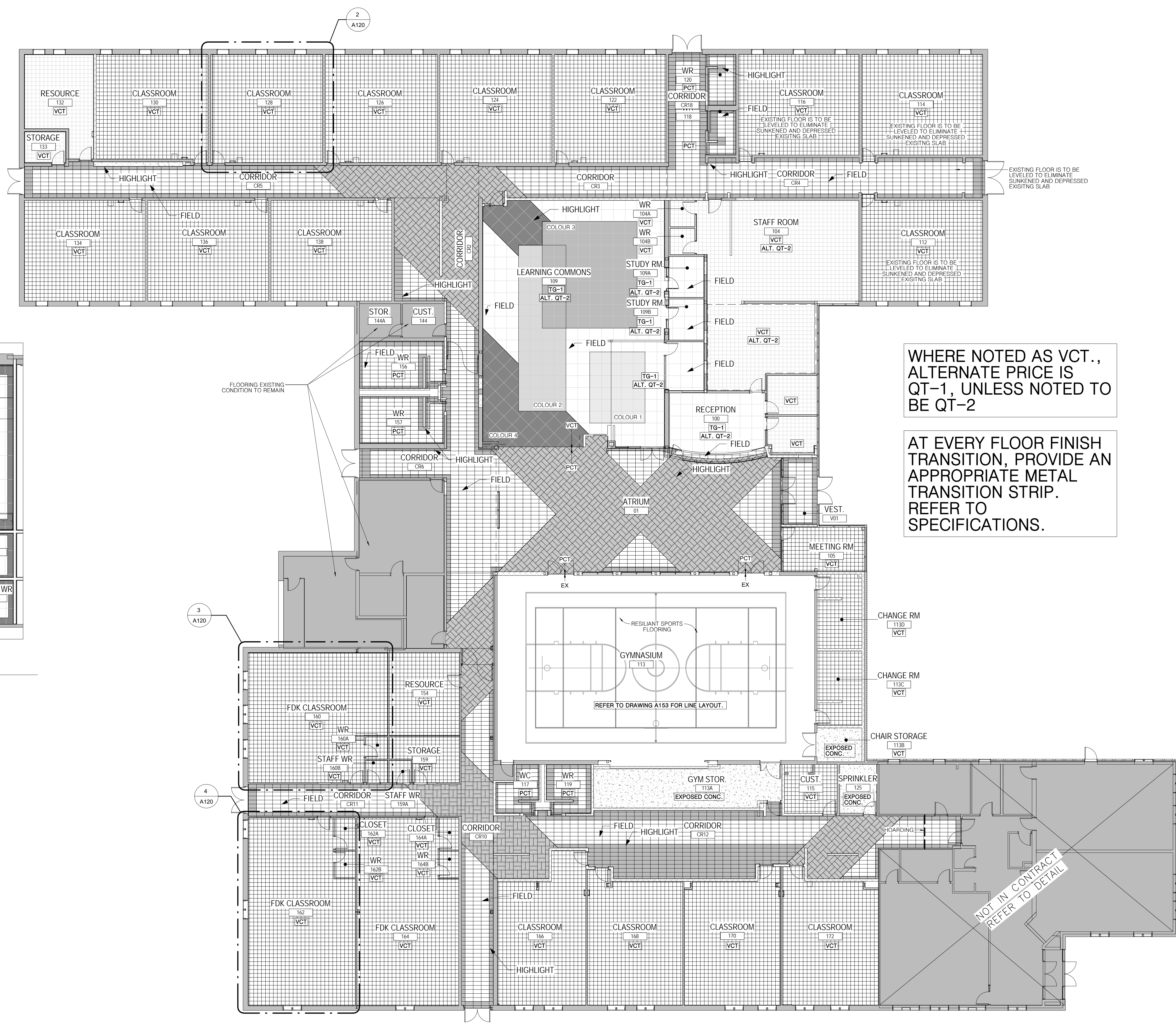
PROJECT TITLE

OUR LADY OF FATIMA

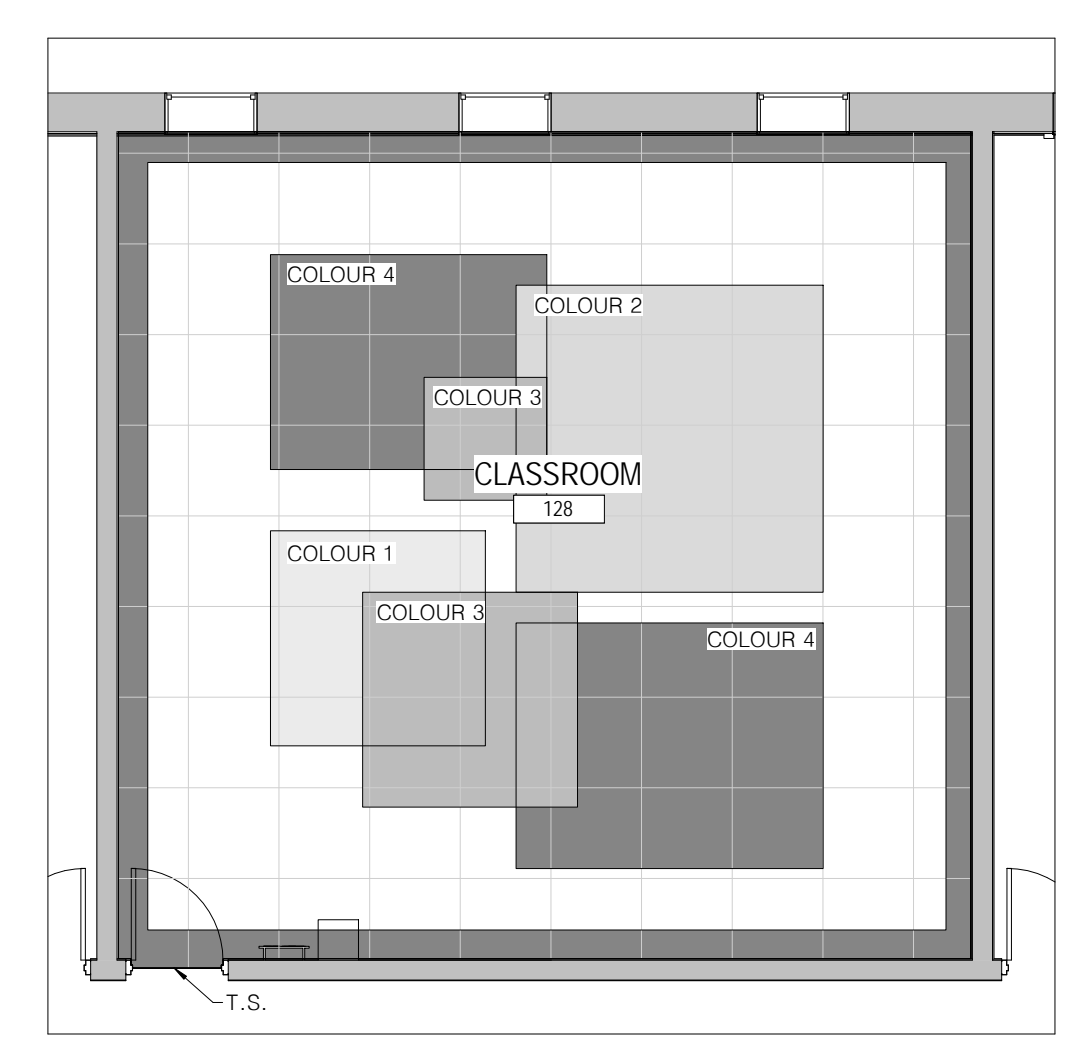
DRAWING TITLE

FLOOR FINISH PLAN

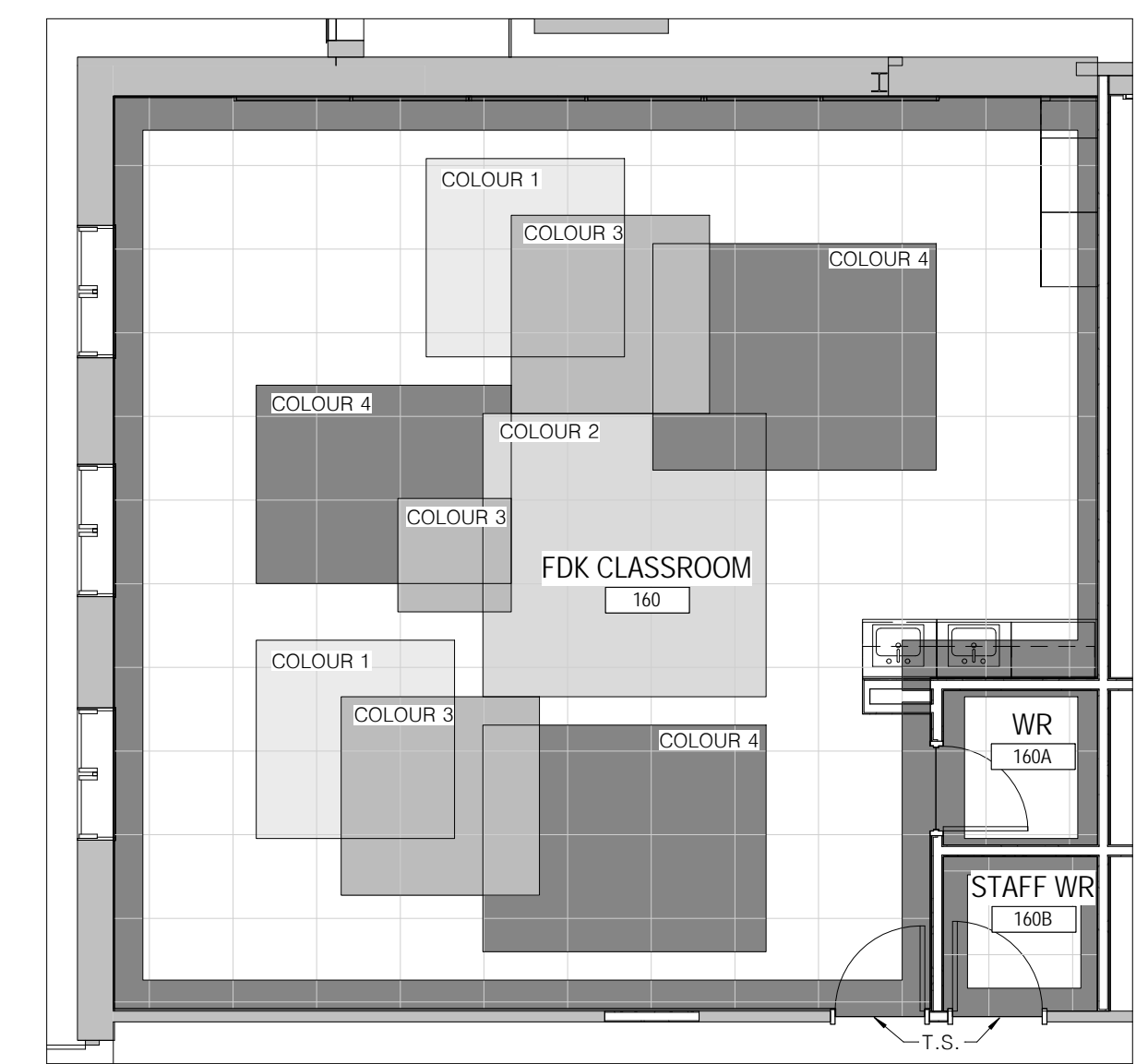
DATE PLOTTED	DRAWN BY	DRAWING No.
19/02/2020 11:51:04 AM	PC	
SCALE	CHECKED BY	
As indicated	RW	A120
PROJECT No.		1901



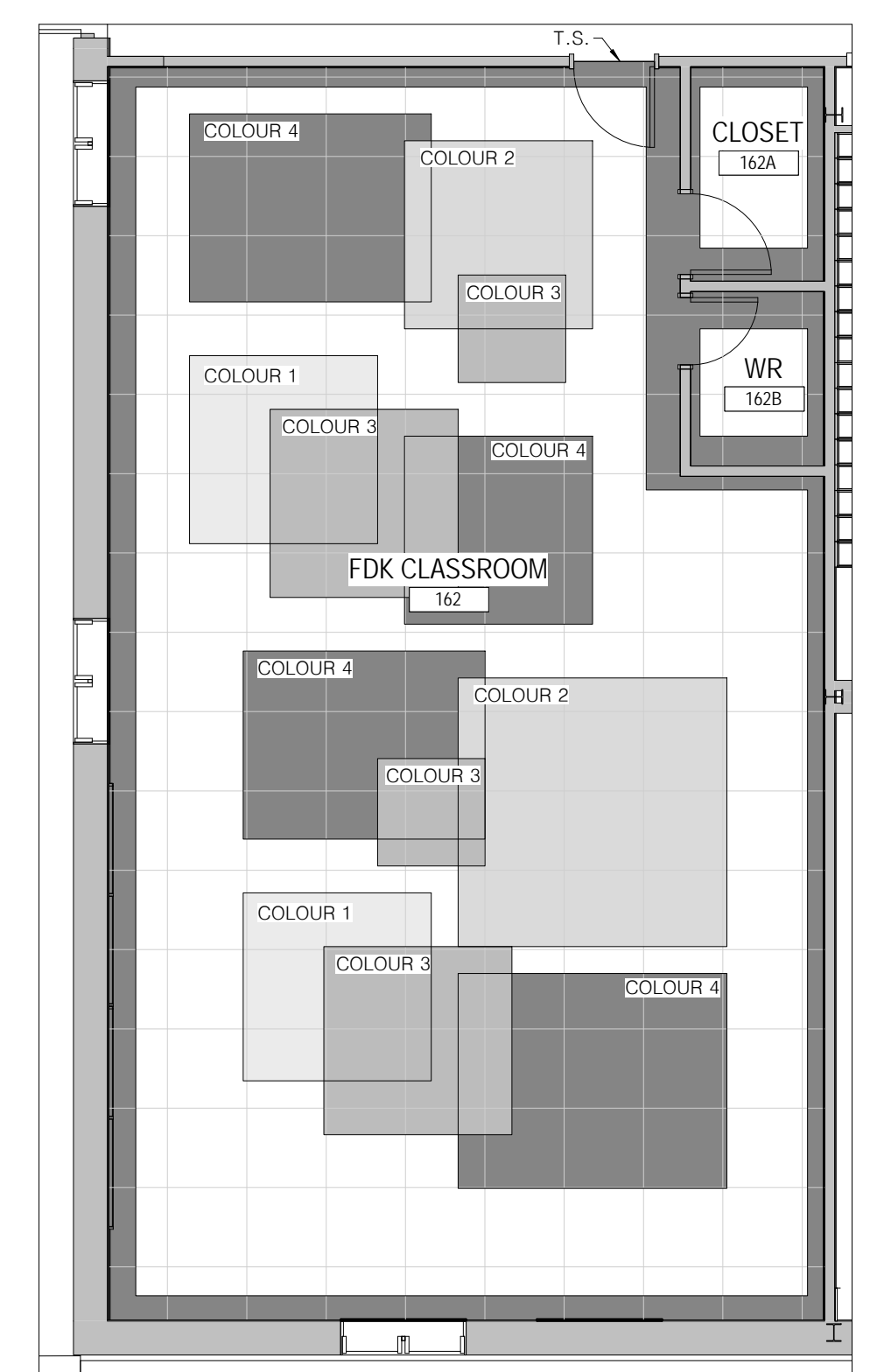
1 FLOOR FINISH PLAN  
SCALE 1 : 150



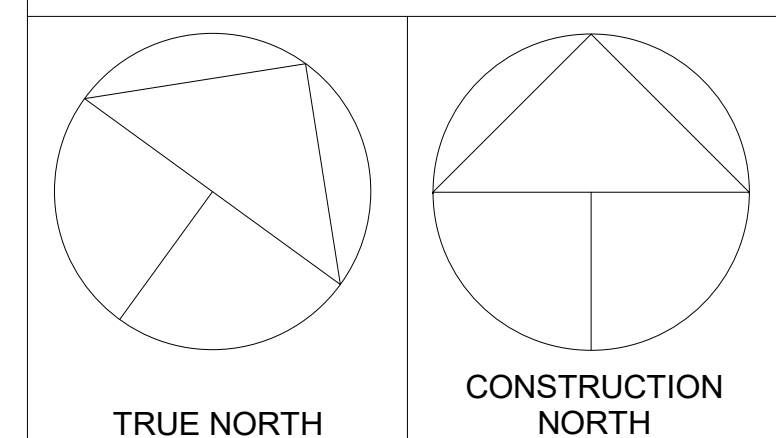
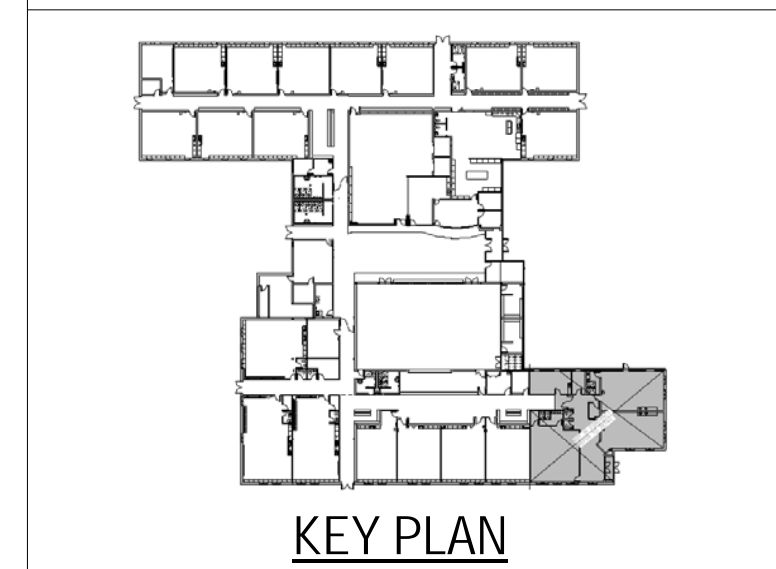
2 TYP. CLASSROOM FINISHING PLAN  
SCALE 1 : 75



3 TYP. CLASSROOM FINISHING PLAN  
SCALE 1 : 75



4 TYP. CLASSROOM FINISHING PLAN  
SCALE 1 : 75

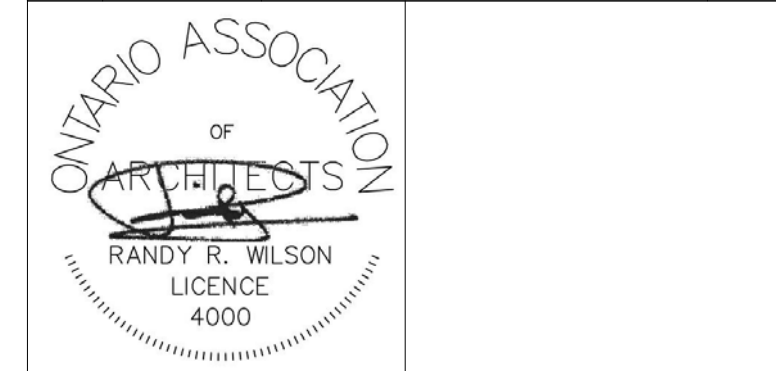


NOTES

LEGEND

- EXISTING WALLS REMAINING
- NEW BLOCK WALL
- NEW GYPSUM BOARD WALL
- FOLDING METAL GRILLES

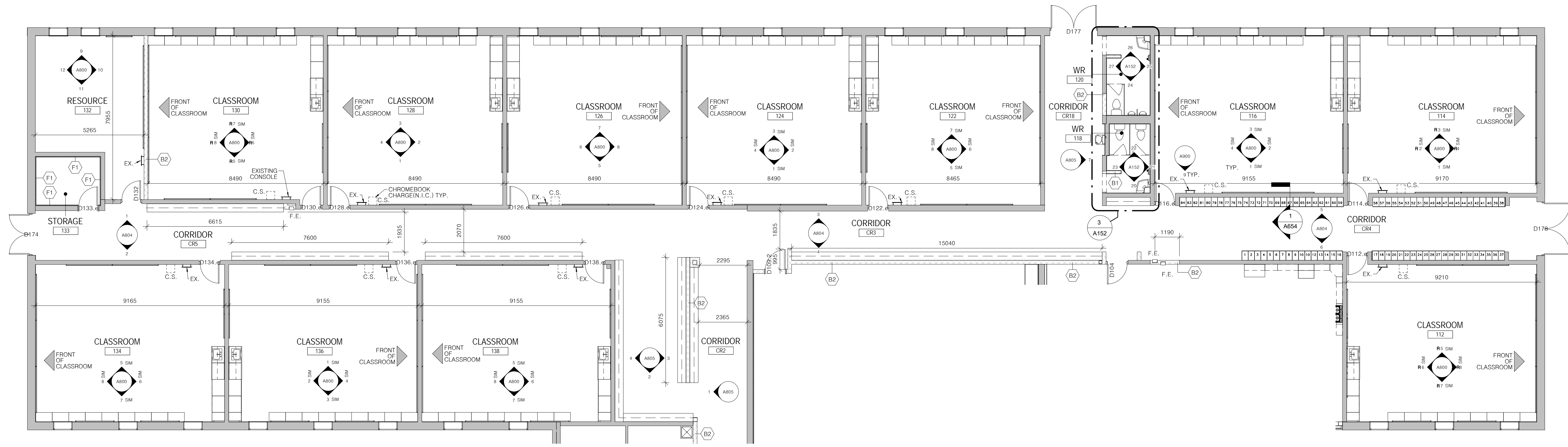
No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	
	MM/DD/YYYY		



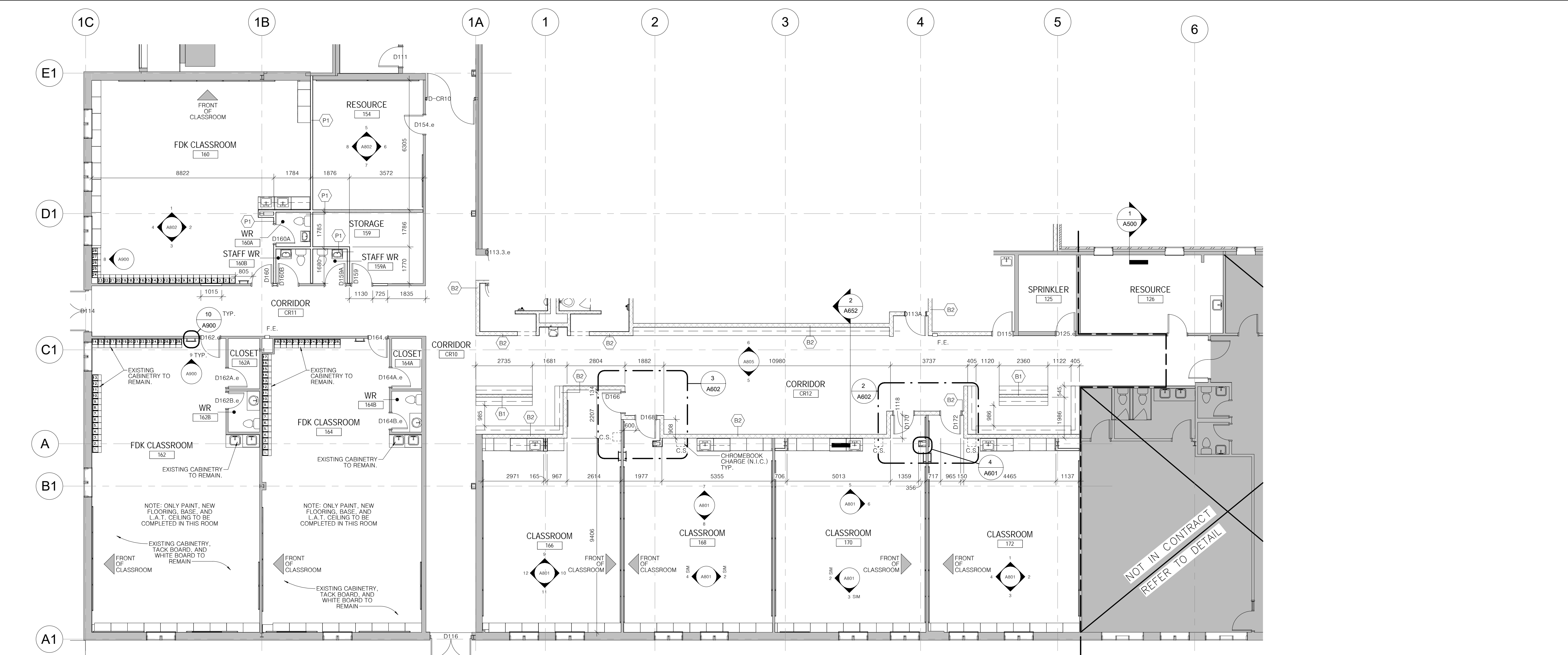
PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**ENLARGED FLOOR PLANS - CLASSROOMS**

DATE PLOTTED 19/02/2020 11:51:17 AM	DRAWN BY TJV	DRAWING No. <b>A150</b>
SCALE As indicated	CHECKED BY RRW	
PROJECT No. 1901		

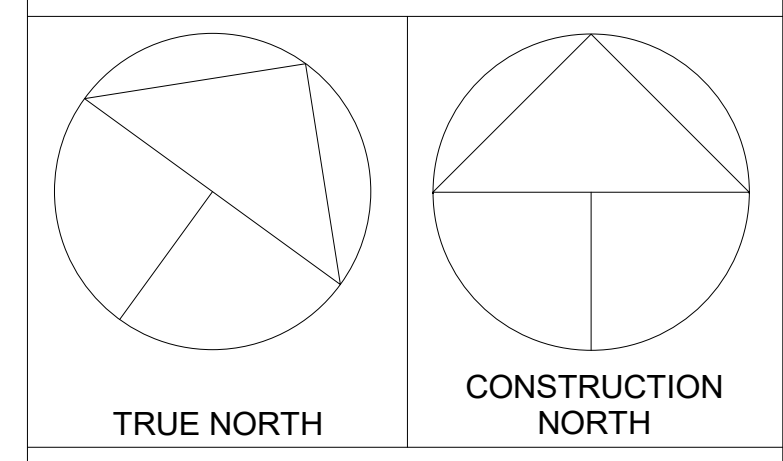
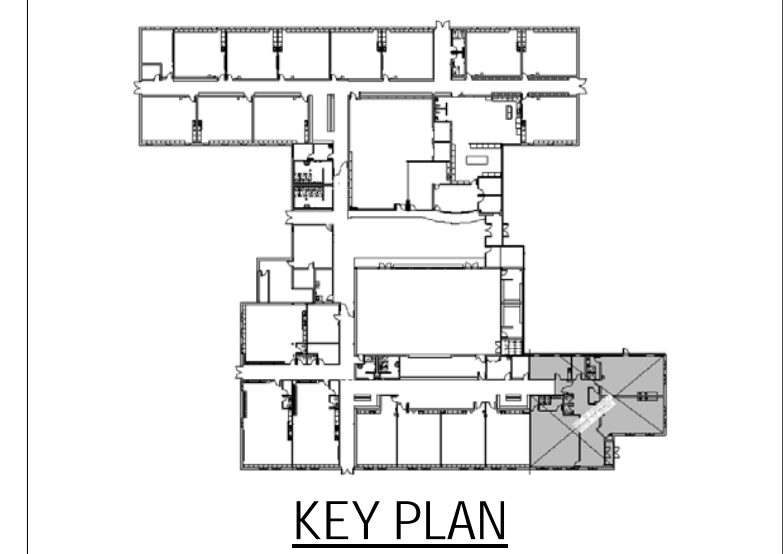


1 ENLARGED FLOOR PLAN - CLASSROOMS - NORTH  
SCALE 1 : 100



2 ENLARGED FLOOR PLAN - CLASSROOMS - SOUTH  
SCALE 1 : 100

NOT IN CONTRACT  
REFER TO DETAIL

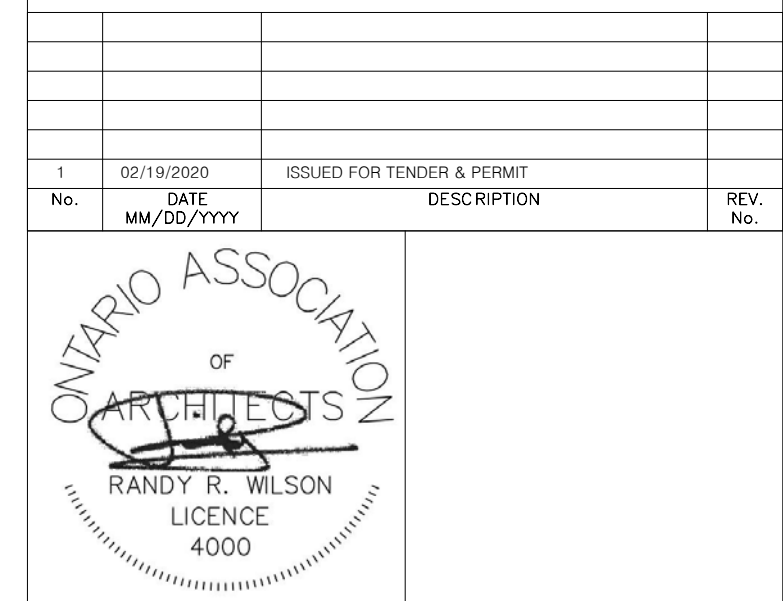


**NOTES**

**LEGEND**

- EXISTING WALLS REMAINING
- NEW BLOCK WALL
- NEW GYPSUM BOARD WALL
- FOLDING METAL GRILLES

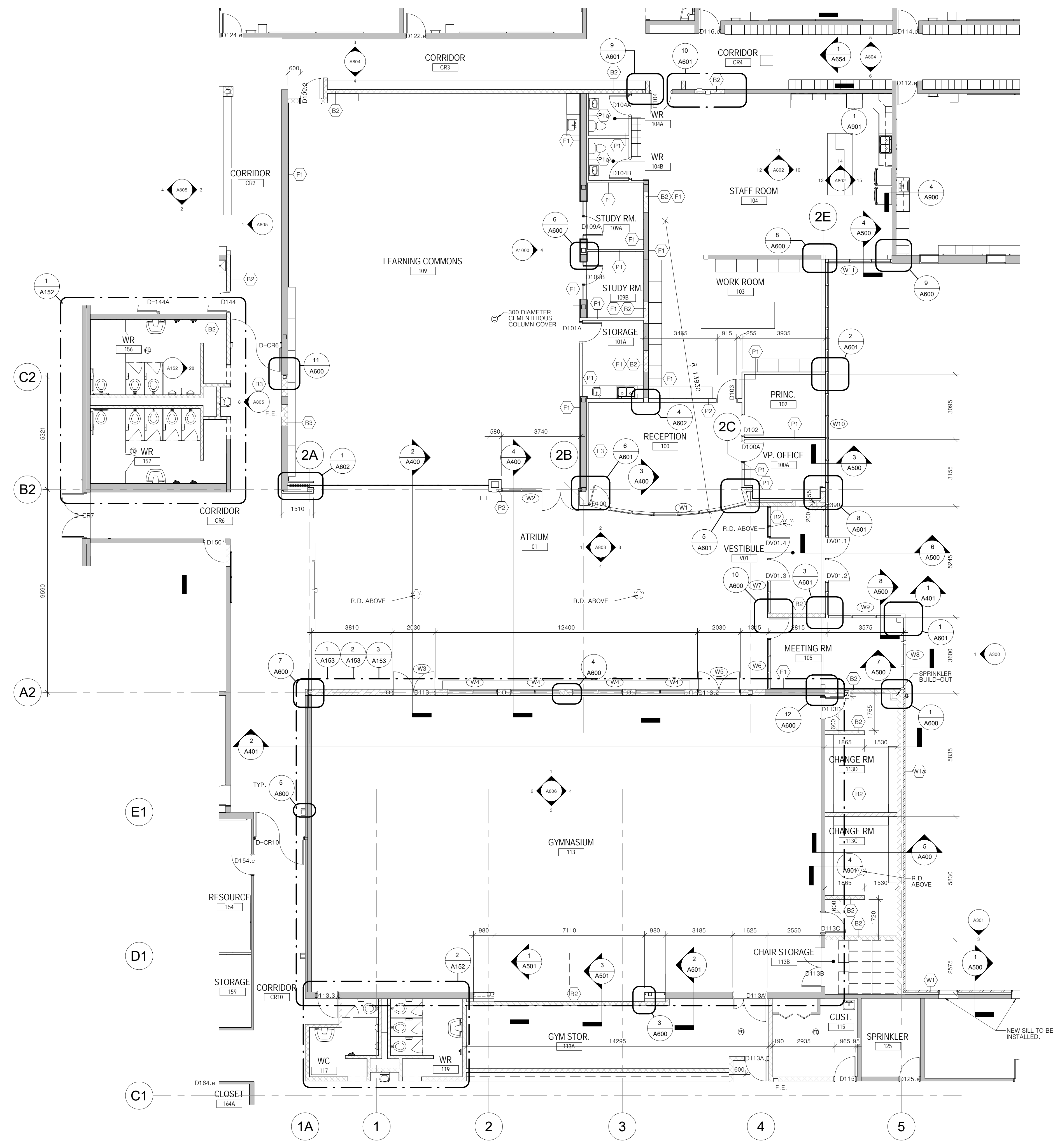
No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



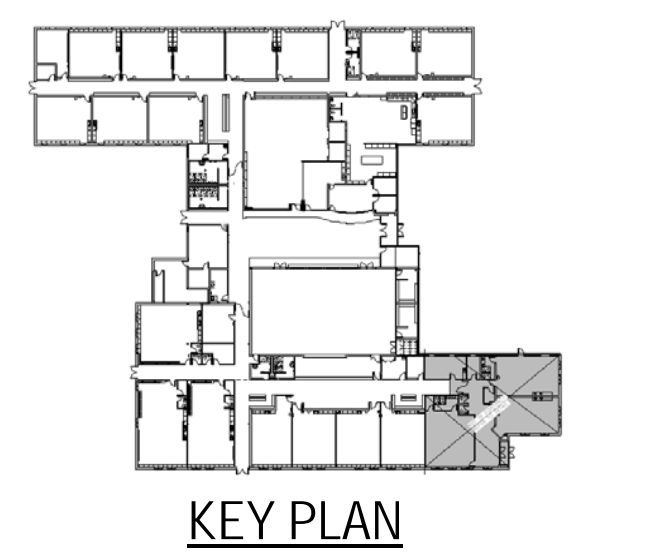
PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**ENLARGED FLOOR PLANS**

DATE PLOTTED 19/02/2020 11:51:26 AM	DRAWN BY TJW/PC	DRAWING No.
SCALE As indicated	CHECKED BY RRW	<b>A151</b>
PROJECT No. 1901		



**1 ENLARGED GYM & ENTRY FLOOR PLAN**  
SCALE 1:100

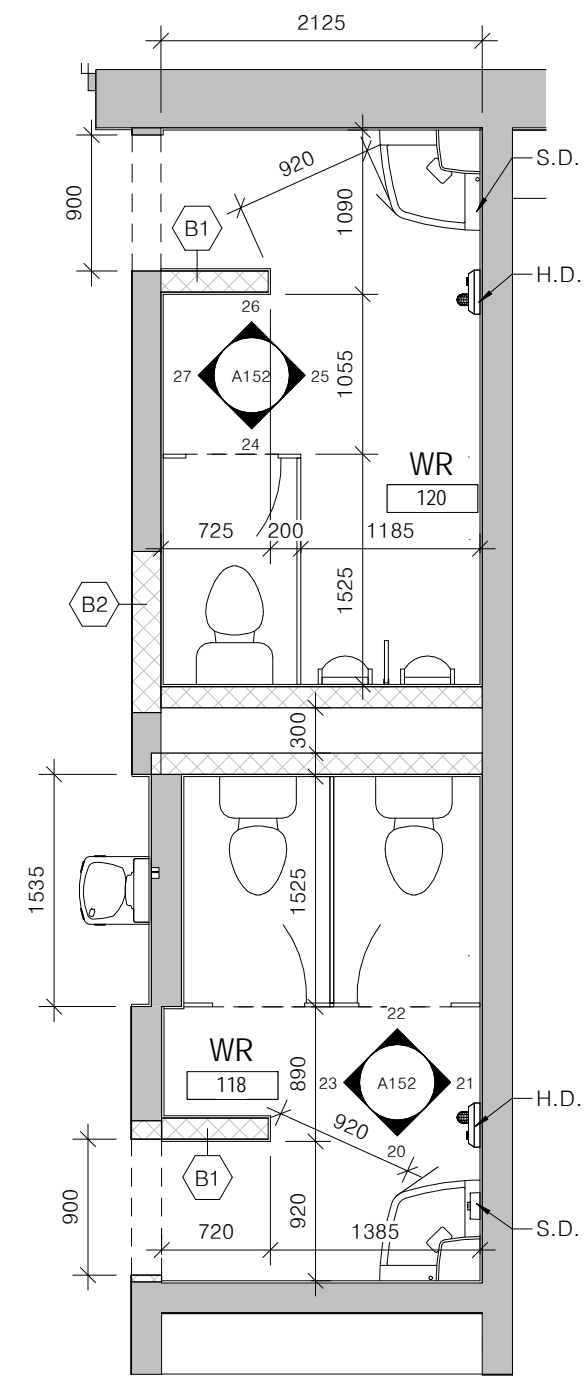


KEY PLAN

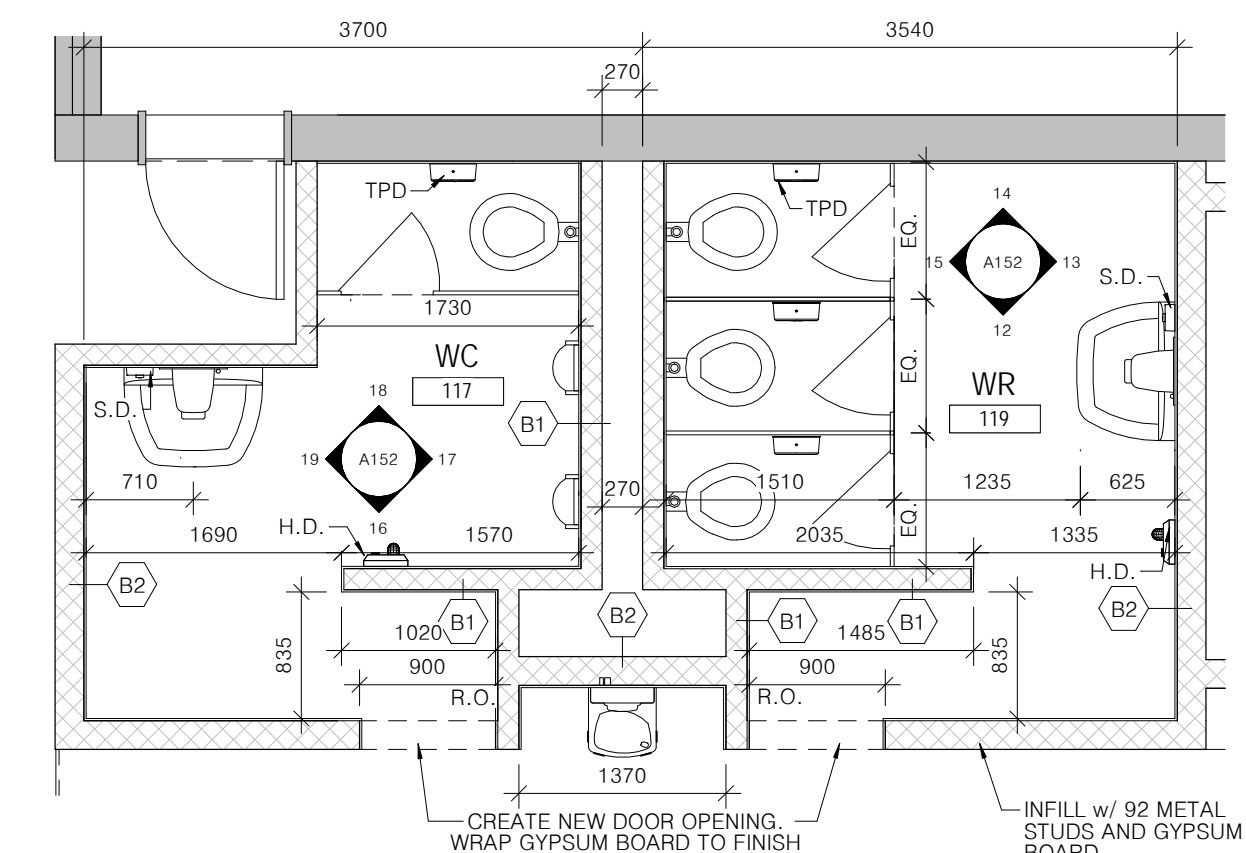
NOTES

LEGEND

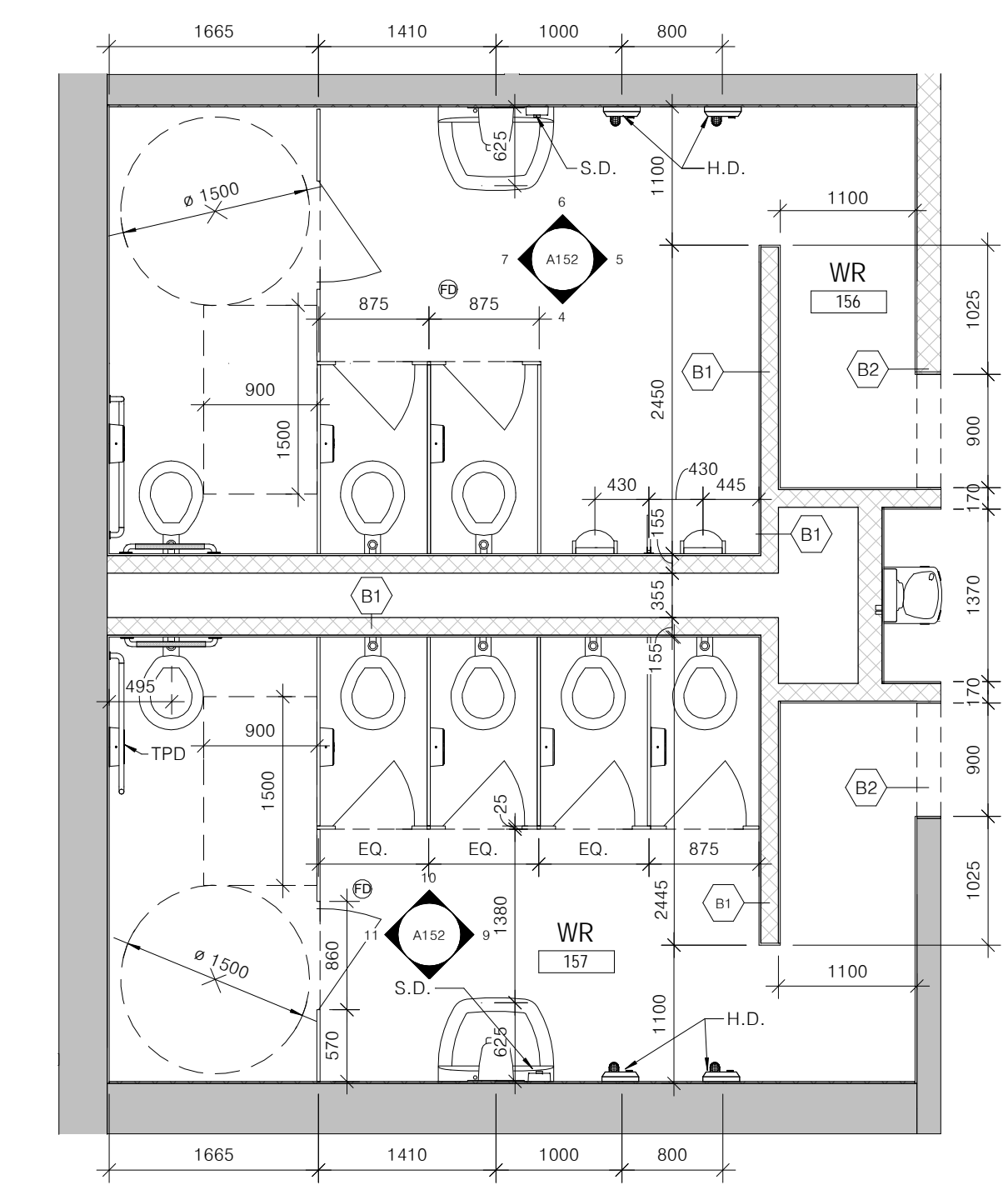
	PCT3 - FIELD CERAMIC TILE
	PCT4 - ACCENT TILE



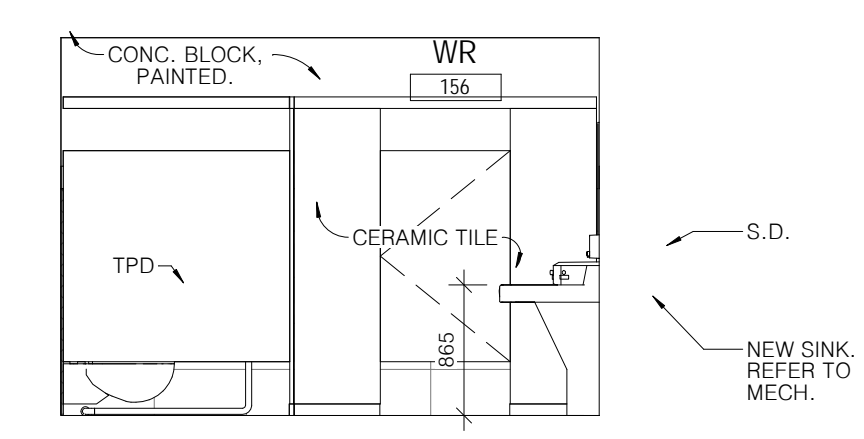
3 ENLARGED FLOOR PLAN - WASHROOMS - NORTH  
SCALE 1:50



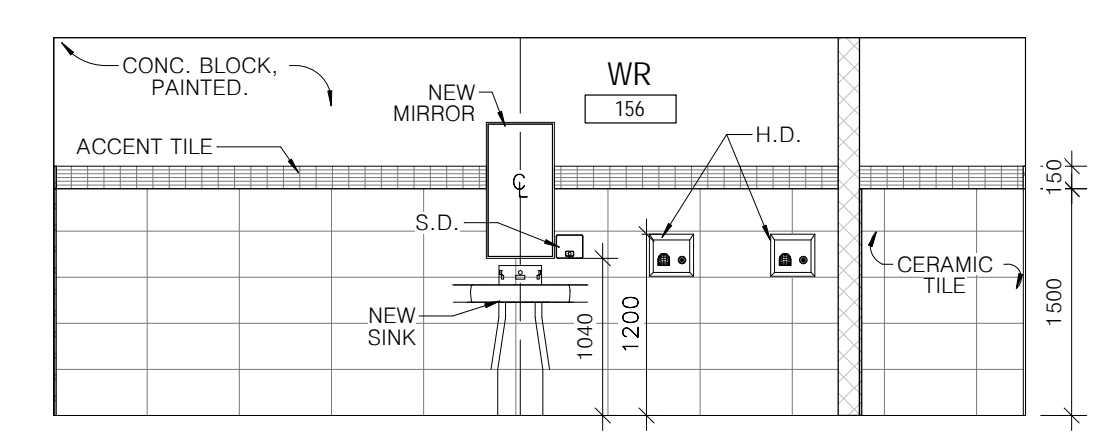
2 ENLARGED FLOOR PLAN - WASHROOMS - SOUTH  
SCALE 1:50



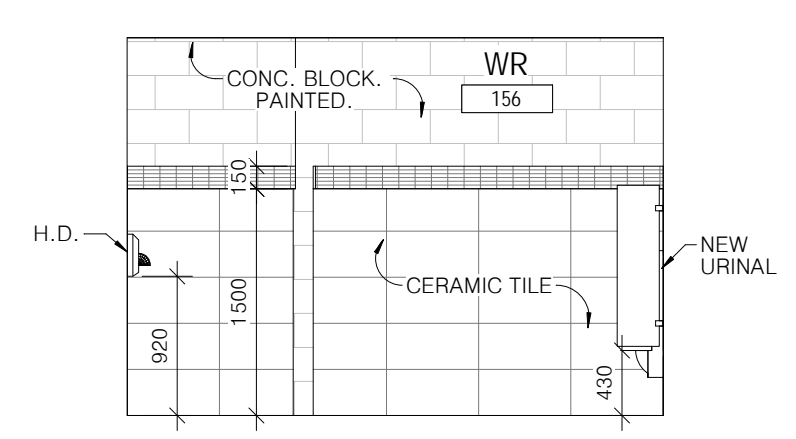
1 ENLARGED FLOOR PLAN - WASHROOM 156 & 157  
SCALE 1:50



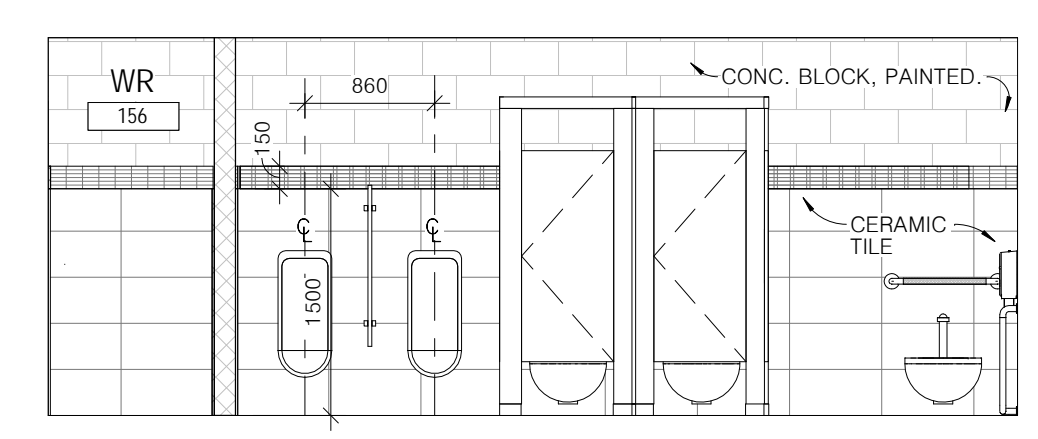
7 BOY'S WR ELEVATION  
SCALE 1:50



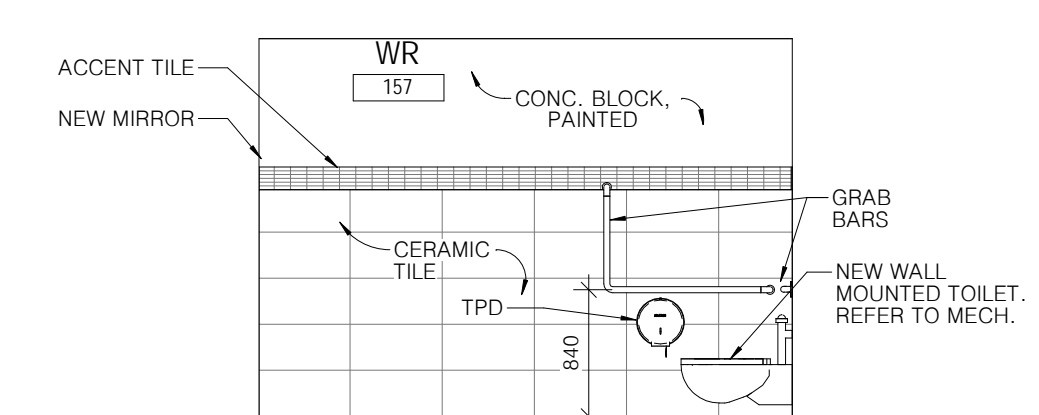
6 BOY'S WR ELEVATION - SINKS  
SCALE 1:50



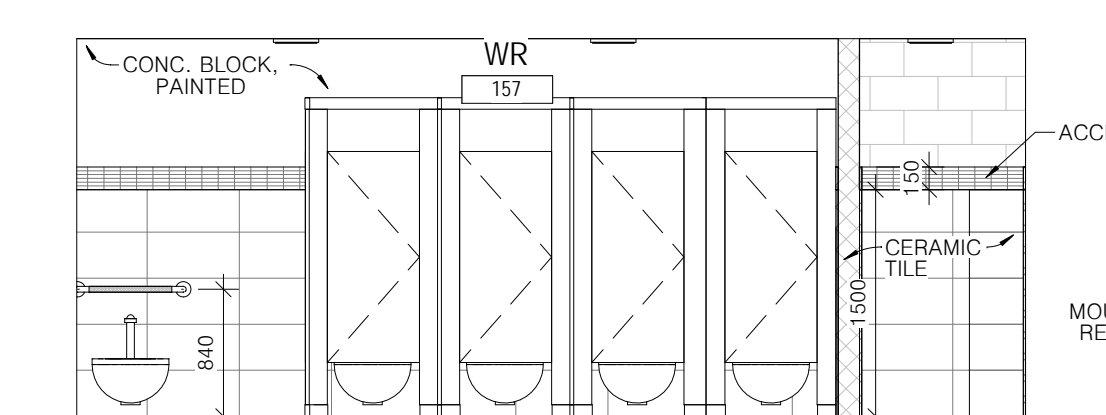
5 BOY'S WR ELEVATION  
SCALE 1:50



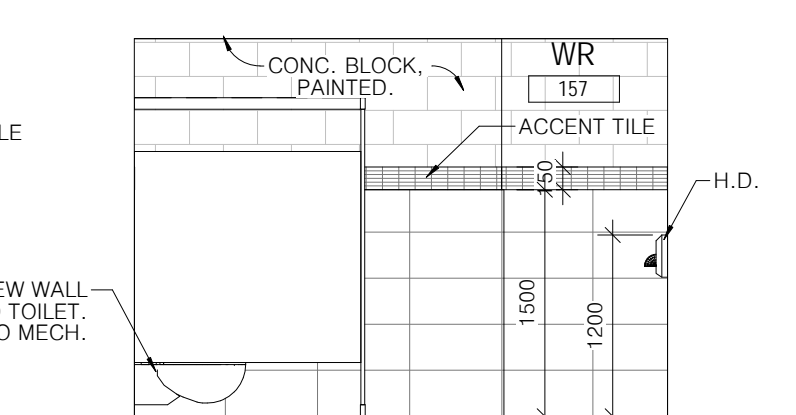
4 BOY'S WR ELEVATION - STALLS  
SCALE 1:50



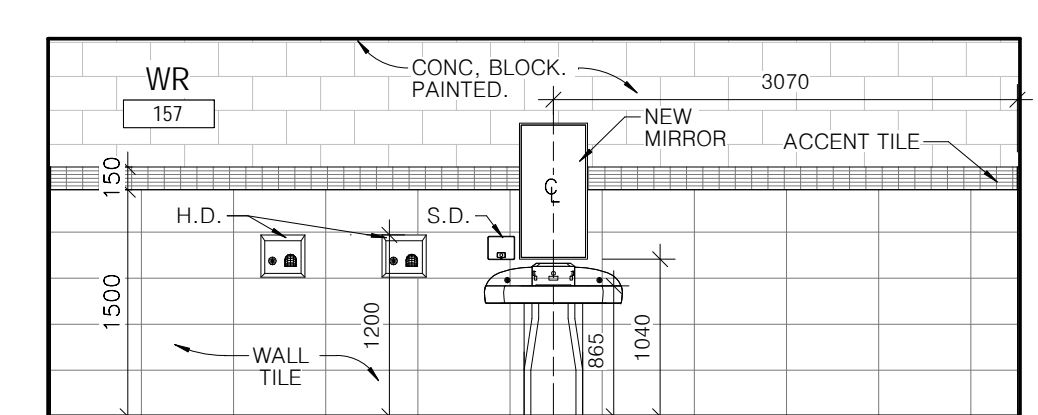
11 GIRL'S WR ELEVATION  
SCALE 1:50



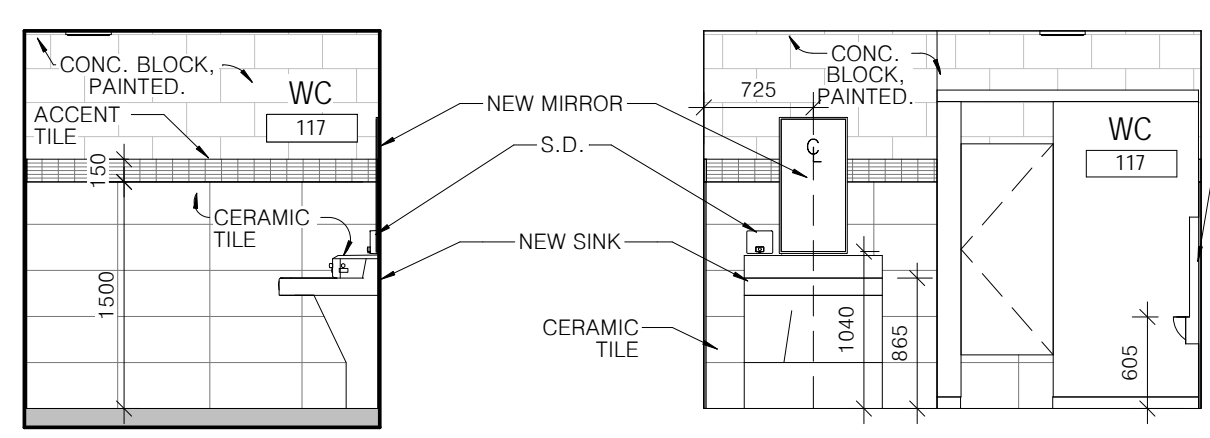
10 GIRL'S WR ELEVATION STALLS  
SCALE 1:50



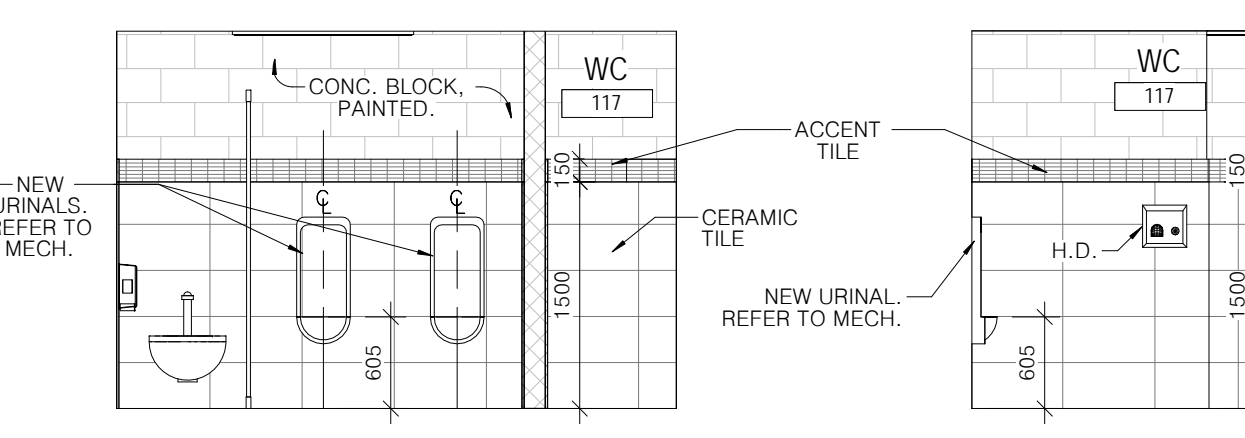
9 GIRL'S WR ELEVATION  
SCALE 1:50



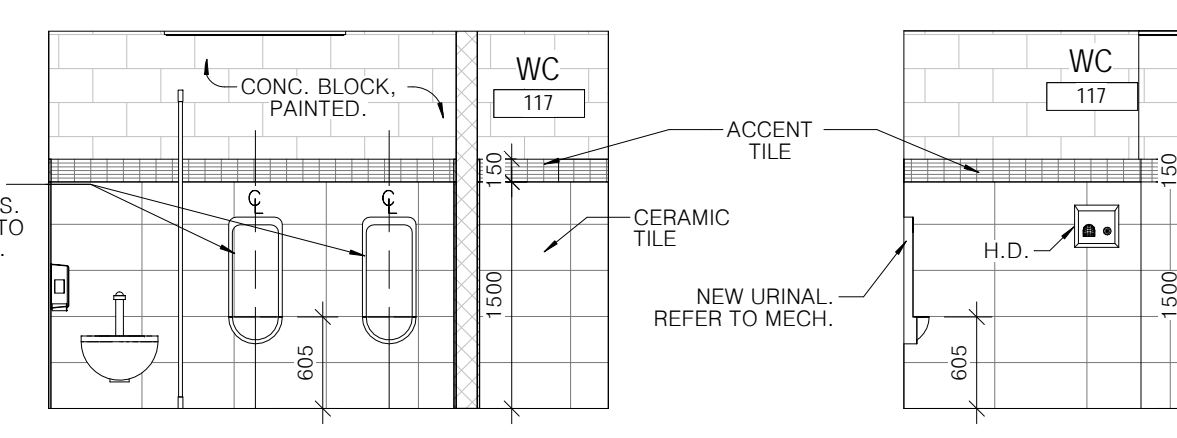
8 GIRL'S WR ELEVATION - SINK  
SCALE 1:50



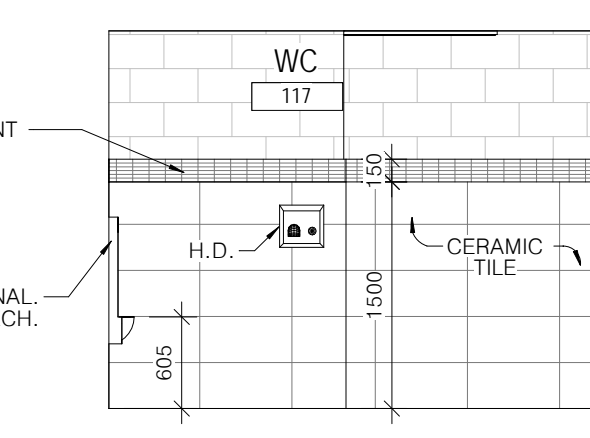
19 BOY'S WR ELEV. - SINK  
SCALE 1:50



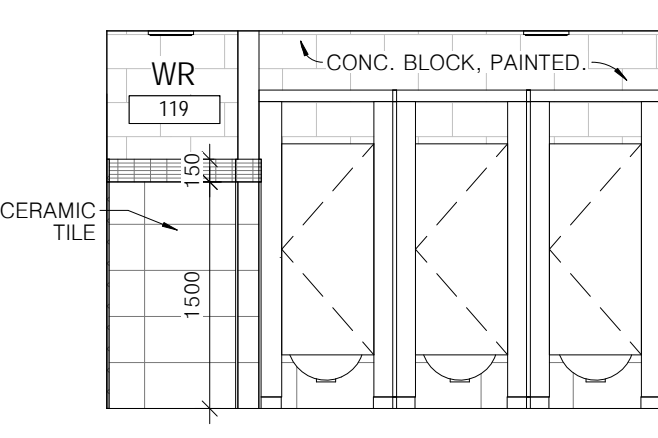
18 BOY'S WR ELEV. - SINK  
SCALE 1:50



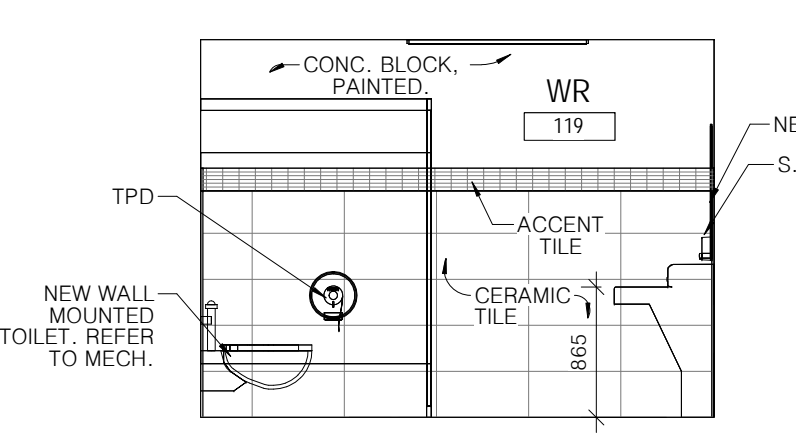
17 BOY'S WR ELEV. - STALLS  
SCALE 1:50



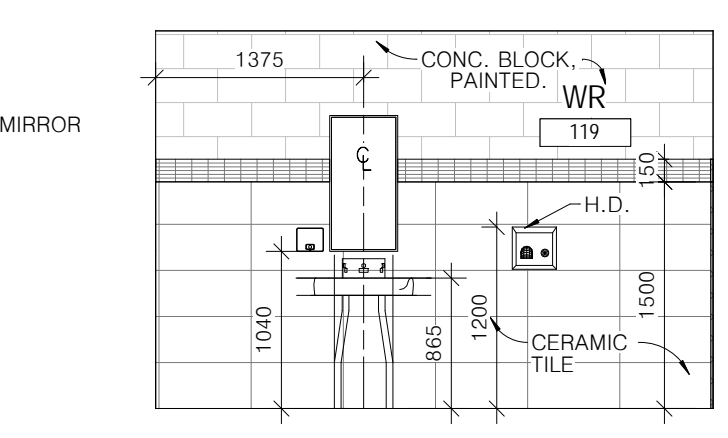
16 INTERIOR ELEVATION  
SCALE 1:50



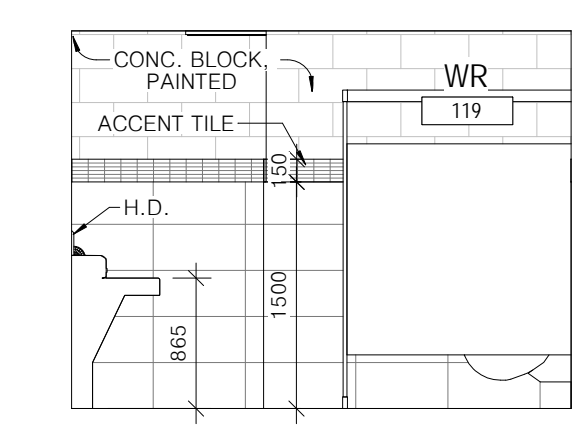
15 GIRL'S WR ELEV. - STALLS  
SCALE 1:50



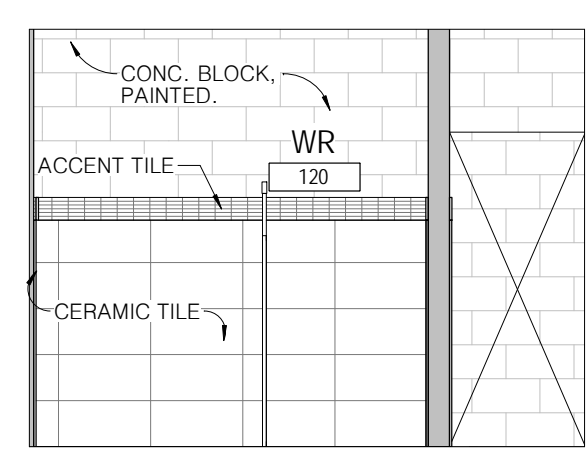
14 INTERIOR ELEVATION  
SCALE 1:50



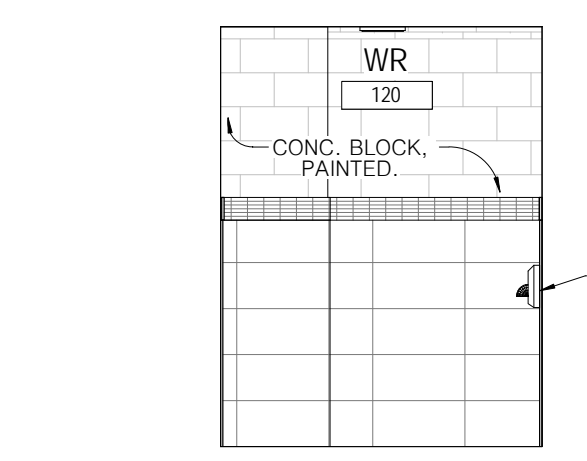
13 GIRL'S WR ELEV. - SINK  
SCALE 1:50



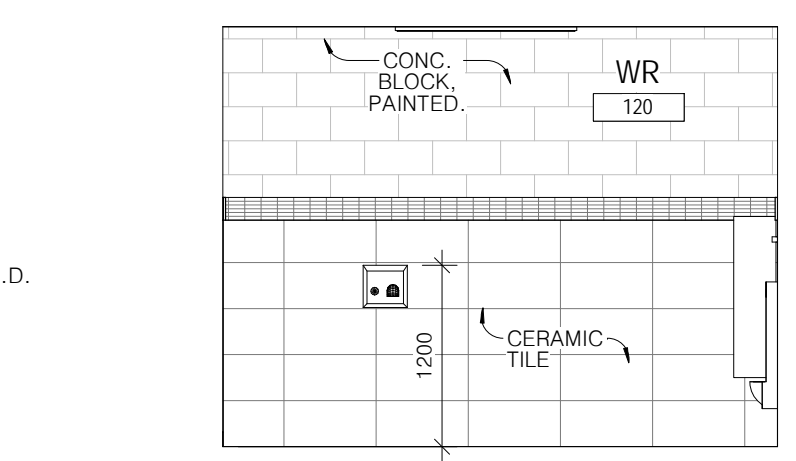
12 INTERIOR ELEVATION  
SCALE 1:50



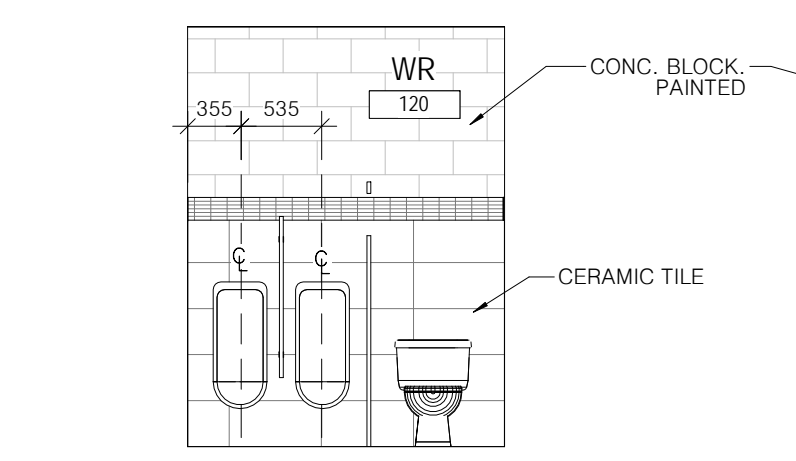
27 INTERIOR ELEVATION  
SCALE 1:50



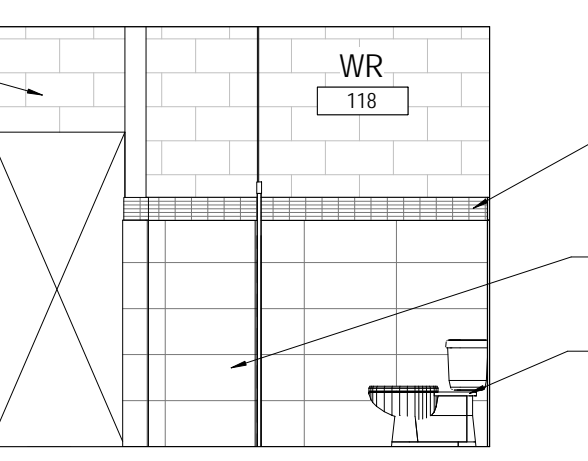
26 INTERIOR ELEVATION  
SCALE 1:50



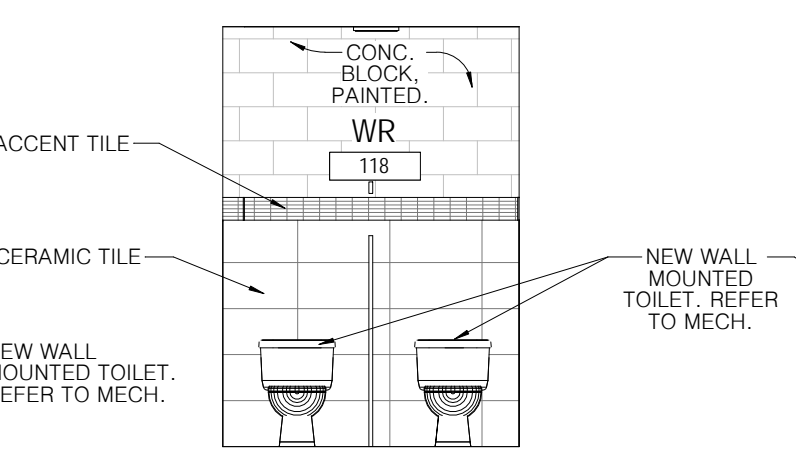
25 INTERIOR ELEVATION  
SCALE 1:50



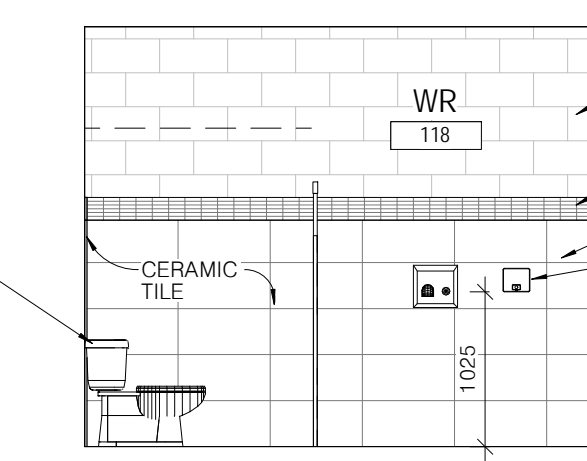
24 BOY'S WR ELEV. - STALLS  
SCALE 1:50



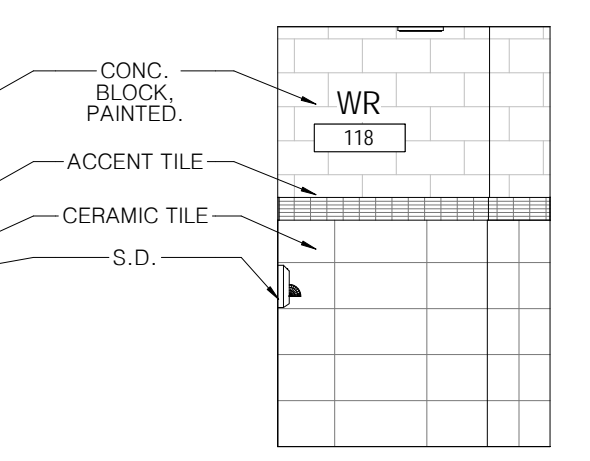
23 INTERIOR ELEVATION  
SCALE 1:50



22 GIRL'S WR ELEV. - STALLS  
SCALE 1:50

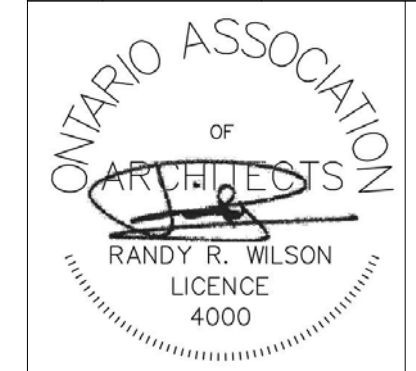


21 INTERIOR ELEVATION  
SCALE 1:50



20 INTERIOR ELEVATION  
SCALE 1:50

No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	
	MM/DD/YYYY		



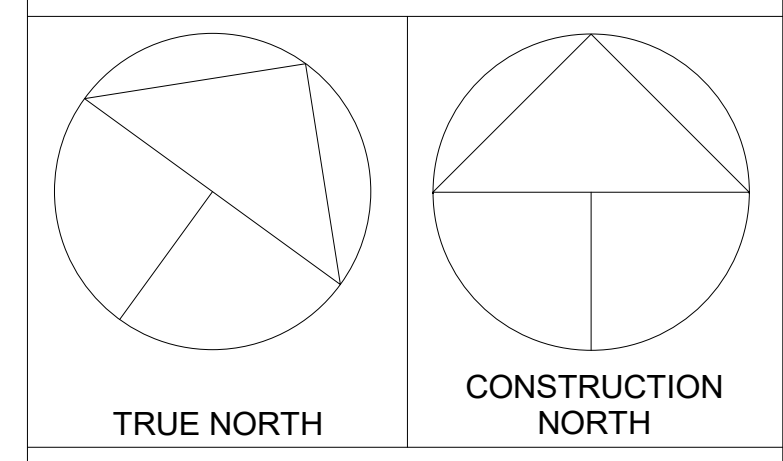
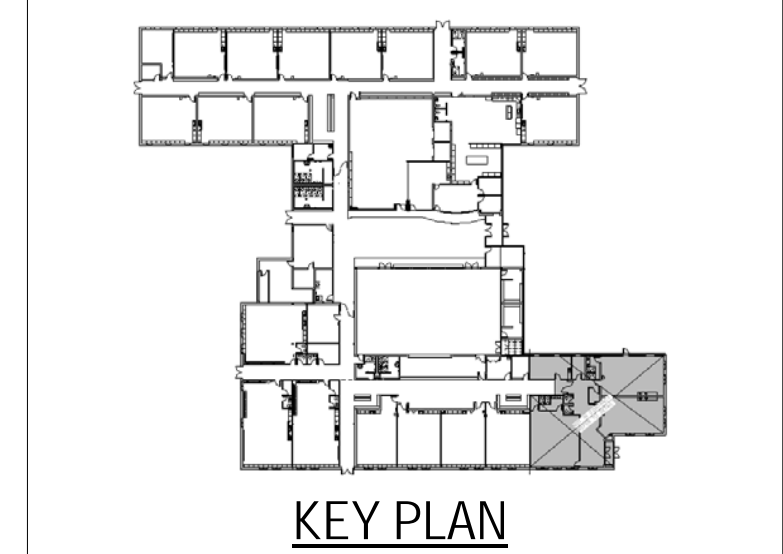
PROJECT TITLE

OUR LADY OF FATIMA

DRAWING TITLE

WASHROOM GROUPS, FINISH PLANS AND ELEVATIONS

DATE PLOTTED 19/02/2020 2:13:42 PM	DRAWN BY TJW/PC	DRAWING No.
SCALE 1:30	CHECKED BY RRW	<b>A152</b>
PROJECT No.	1901	

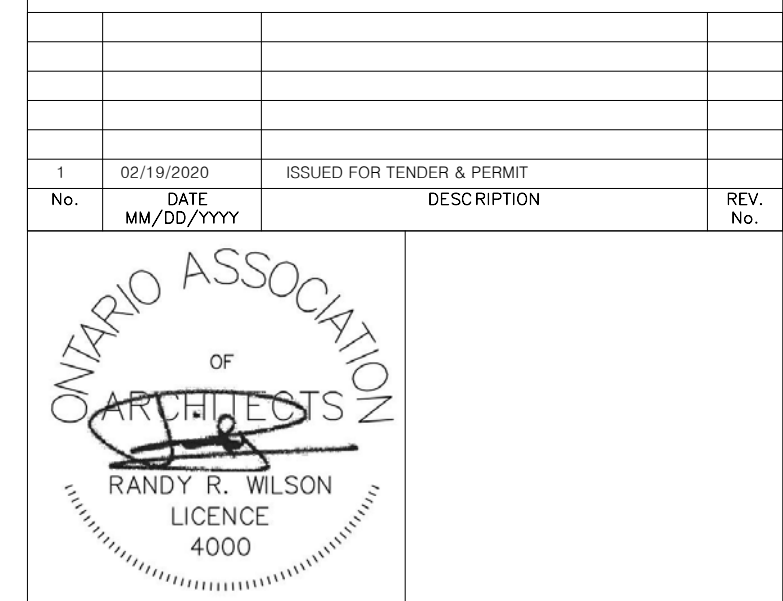


**NOTES**

1. FLOOR SOCKETS TO BE OWNER SUPPLIED BUT INSTALLED BY GC.

**LEGEND**

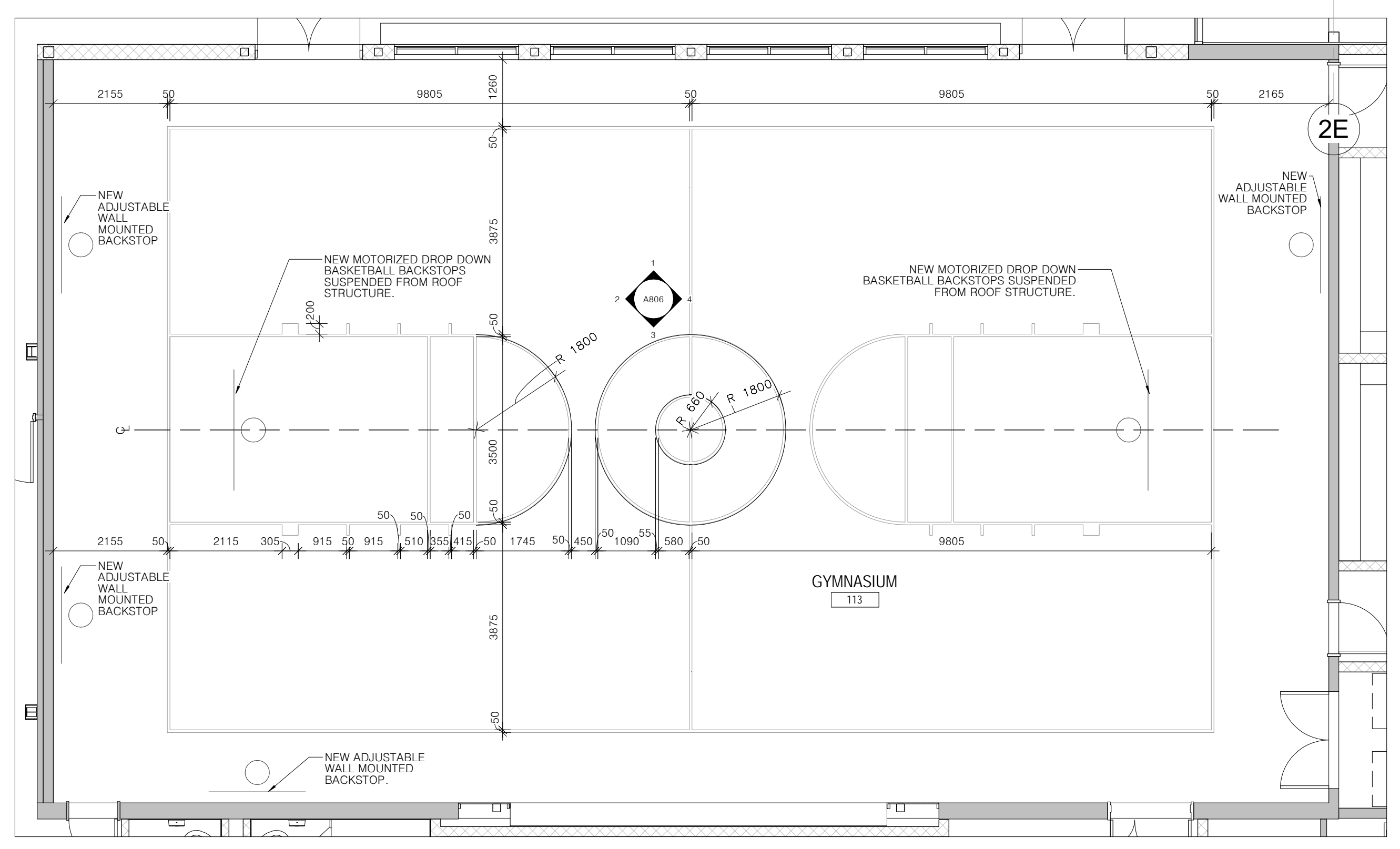
No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



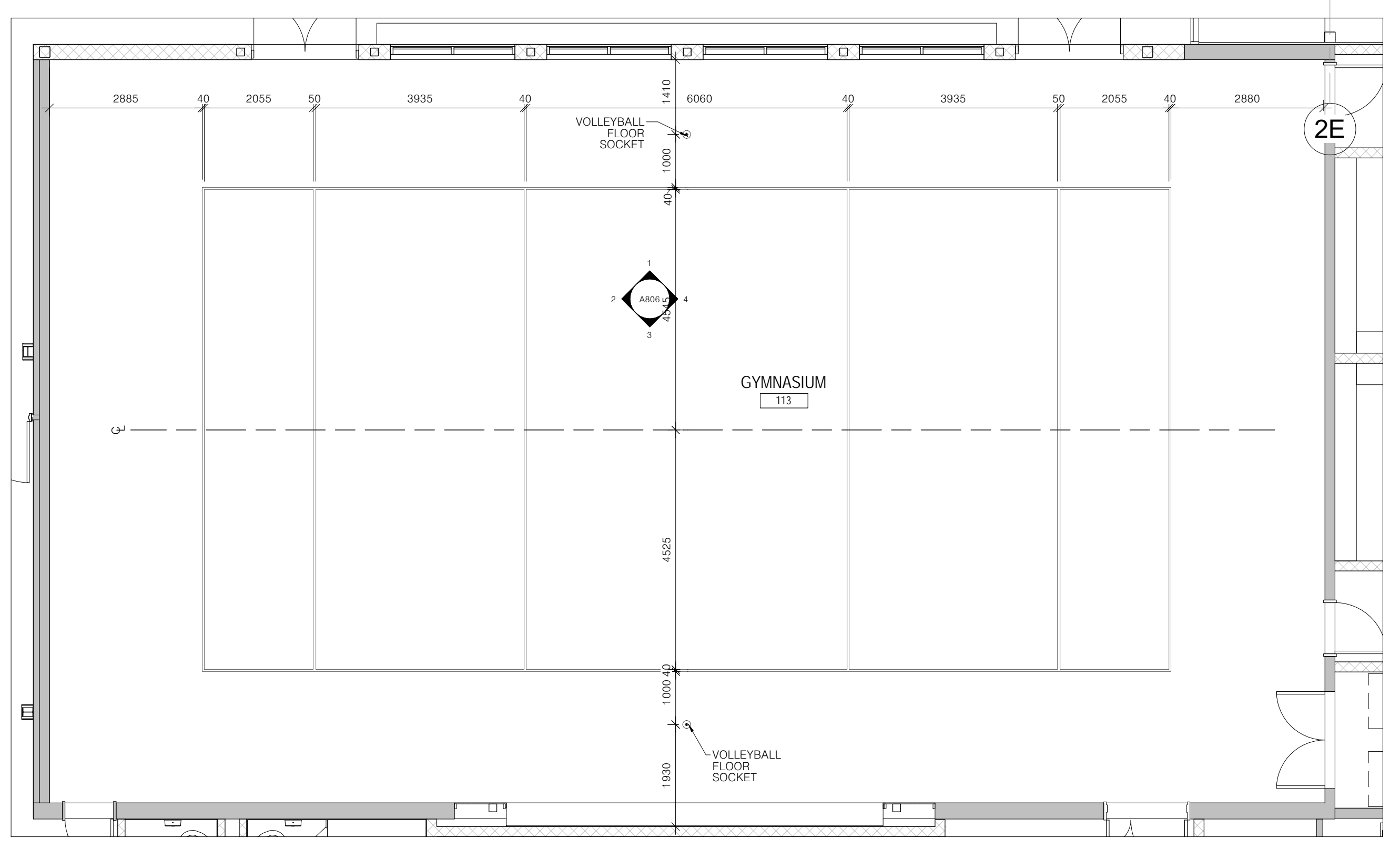
PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**GYMNASIUM ENLARGED PLAN**

DATE PLOTTED 19/02/2020 11:51:50 AM	DRAWN BY PKC	DRAWING No.
SCALE As indicated	CHECKED BY RW	<b>A153</b>
PROJECT No. 1901		

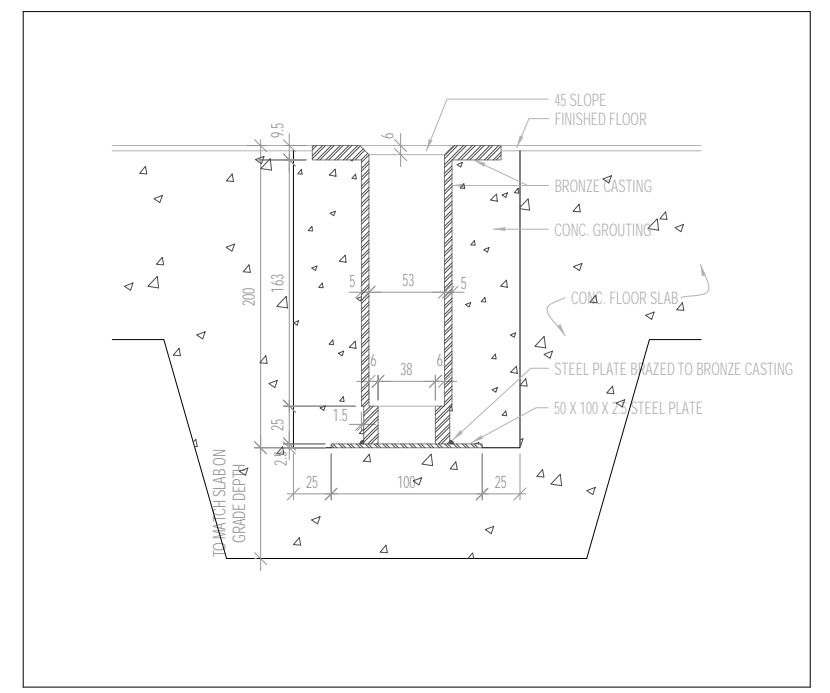


1 GYM LINE LAYOUT - BASKETBALL COURT  
SCALE 1:75

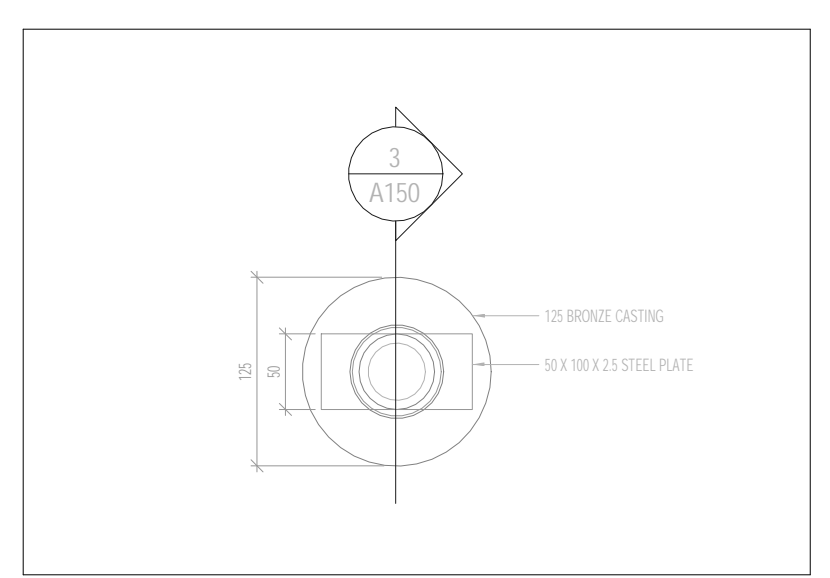


2 GYM LINE LAYOUT - VOLLEYBALL COURT  
SCALE 1:75

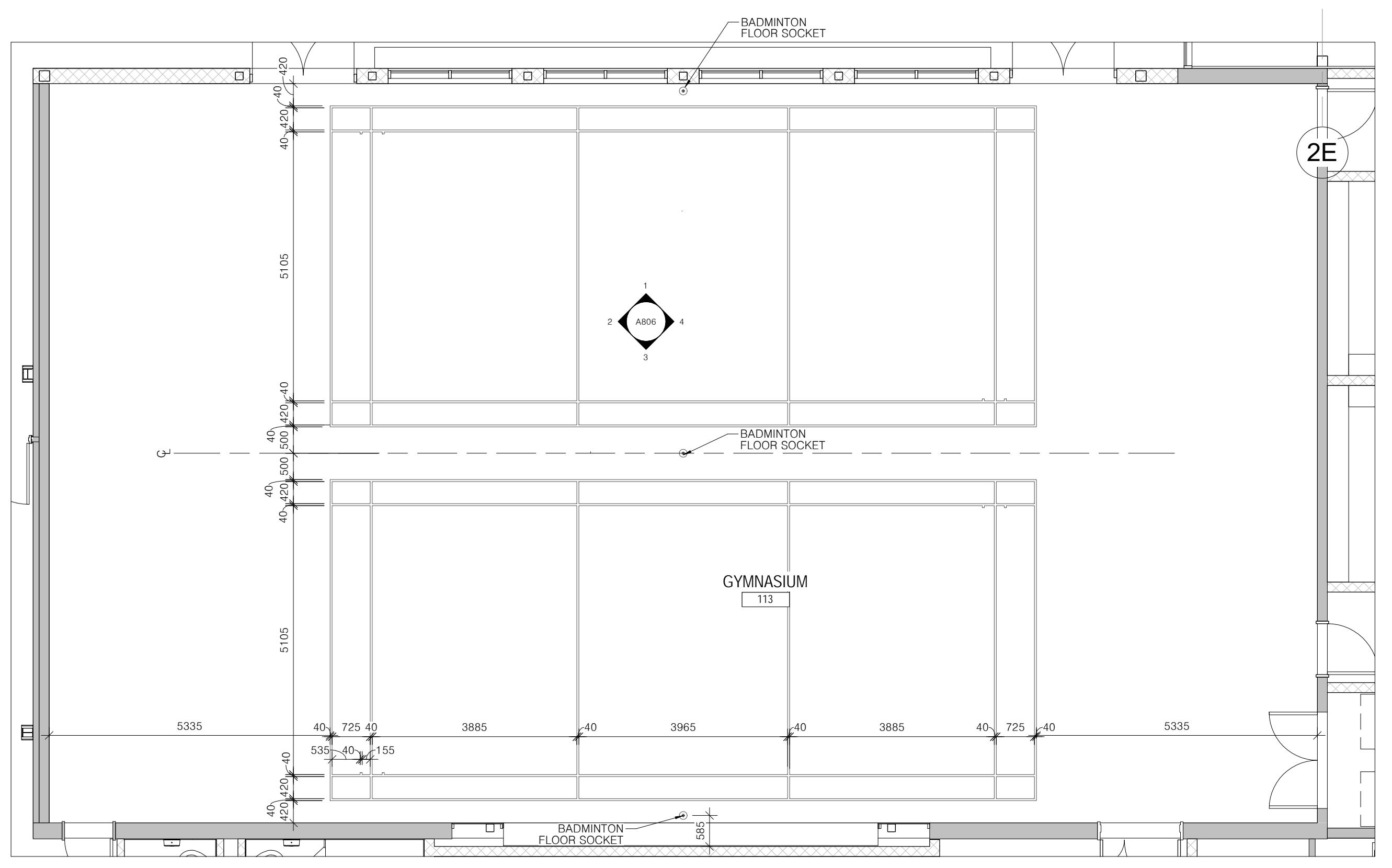
FLOOR SOCKETS TO BE OWNER SUPPLIED BUT INSTALLED BY GC.



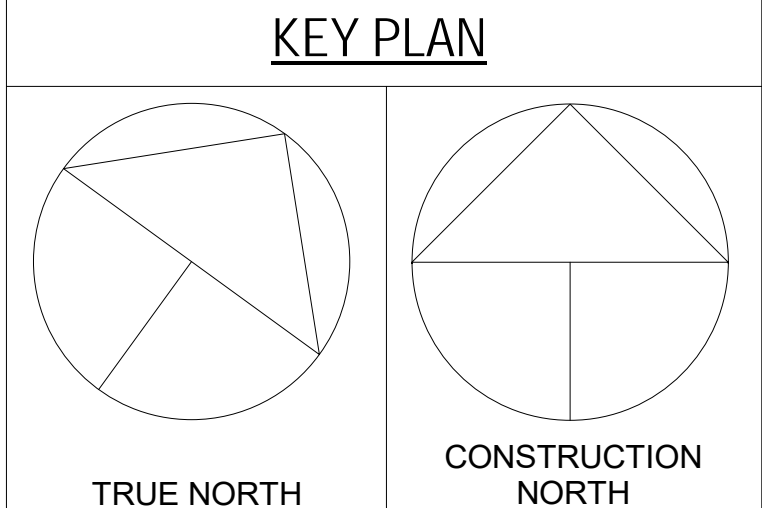
4 FLOOR SOCKET DETAIL  
SCALE 1:5



5 TYP. FLOOR SOCKET PLAN  
SCALE 1:5



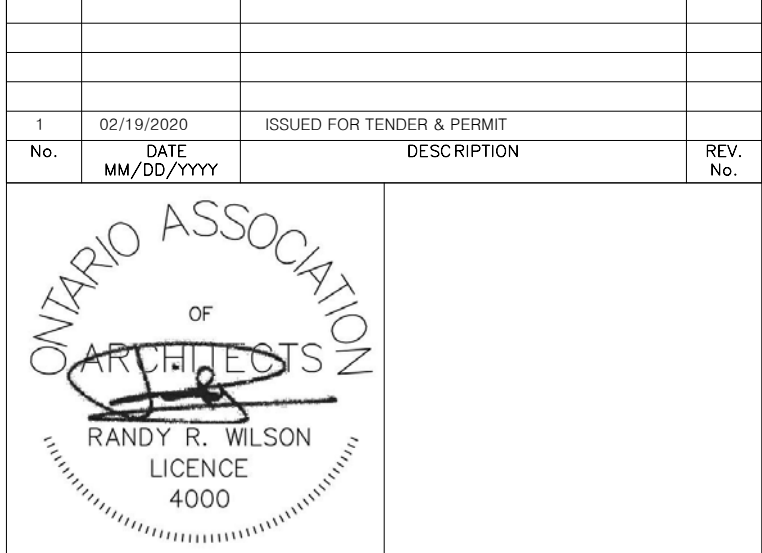
3 GYM LINE LAYOUT - BADMINTON COURT  
SCALE 1:75



**NOTES**  
 (This section is currently blank for notes)

**LEGEND**  
 AREA OF NEW 2PLY MOD-BIT ROOF

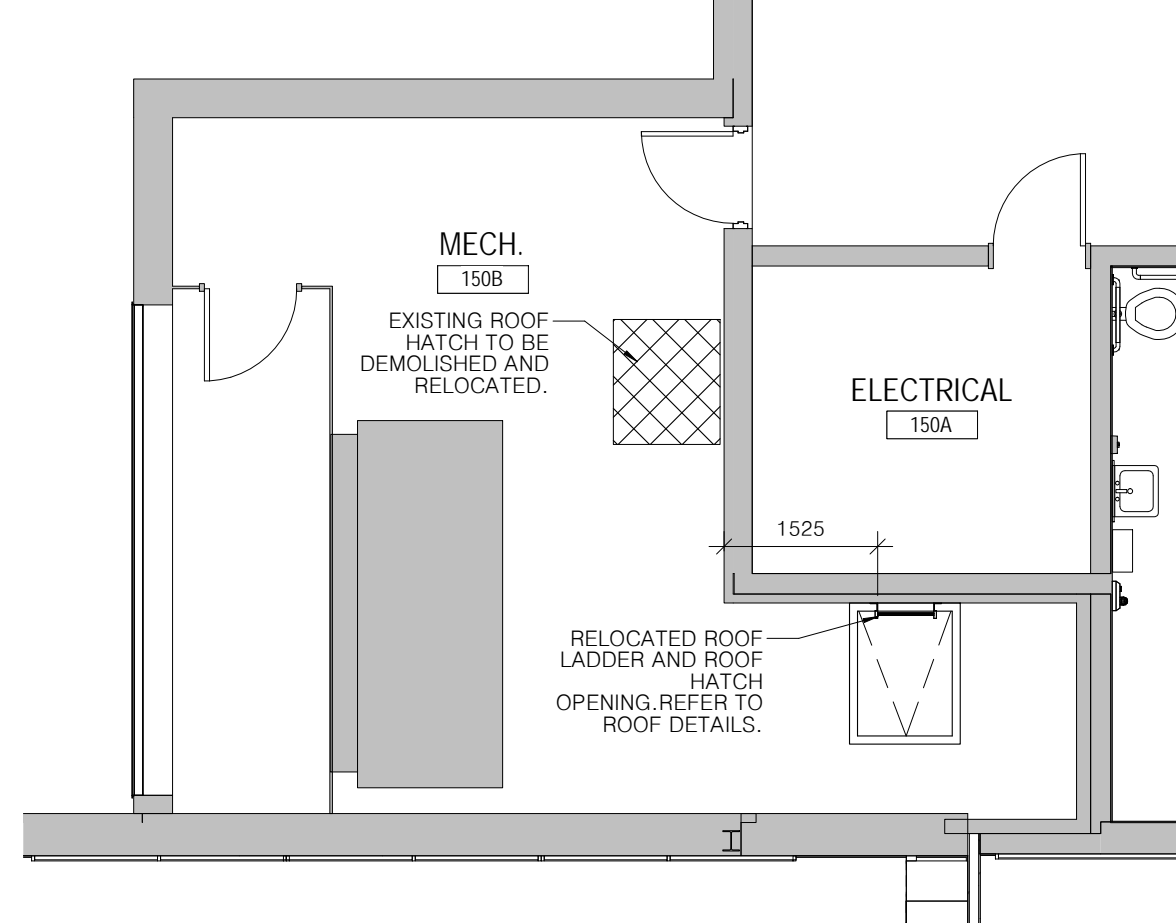
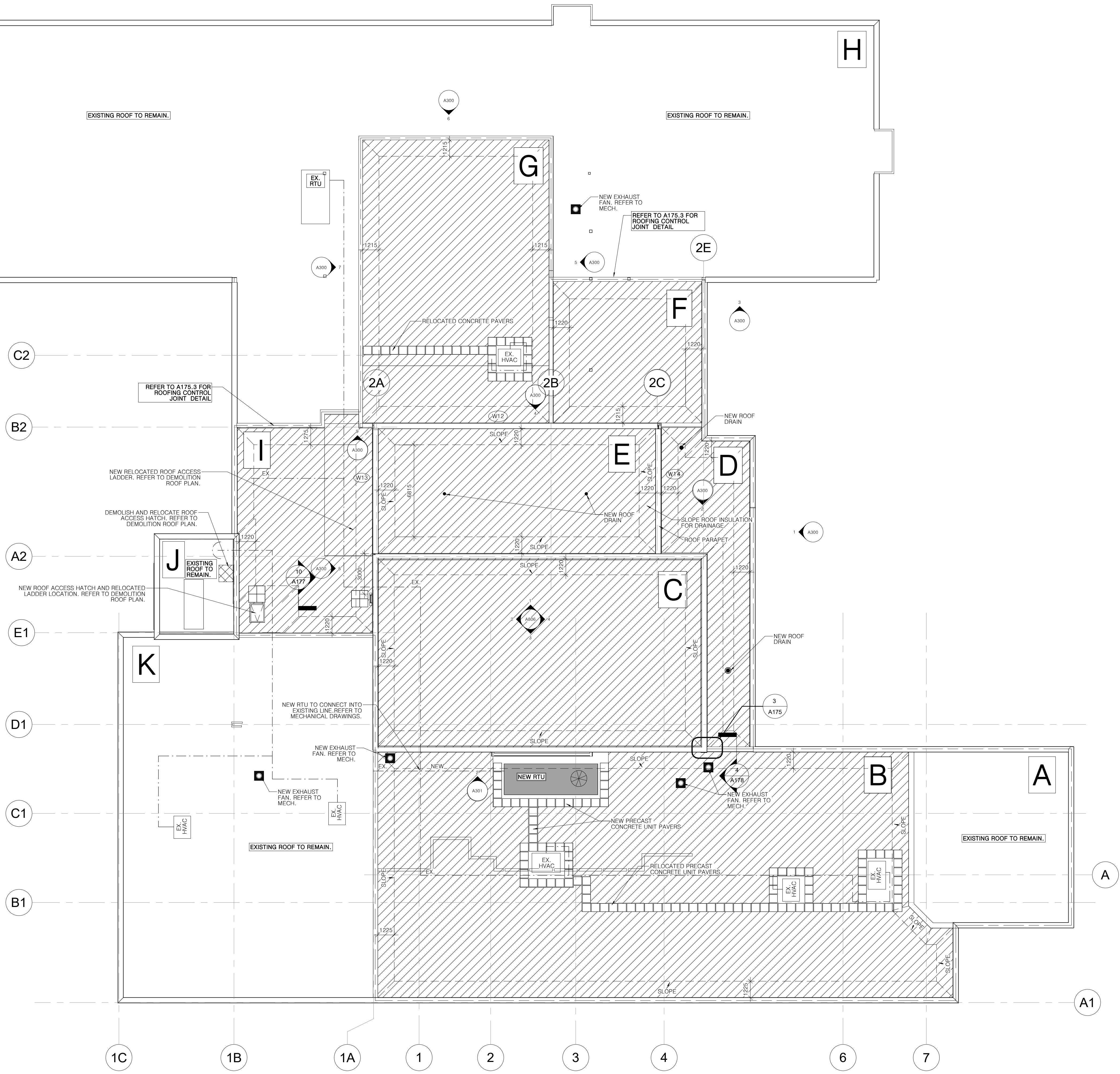
No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



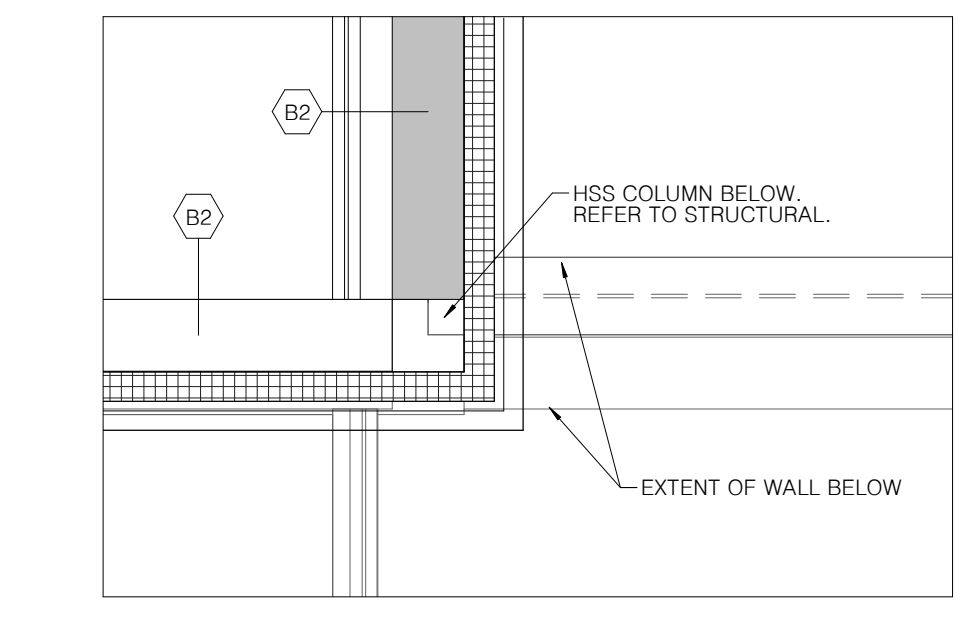
PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**CONSTRUCTION ROOF PLAN**

DATE PLOTTED 19/02/2020 11:51:54 AM	DRAWN BY PKC	DRAWING No. <b>A175</b>
SCALE As indicated	CHECKED BY RW	
PROJECT No. 1901		

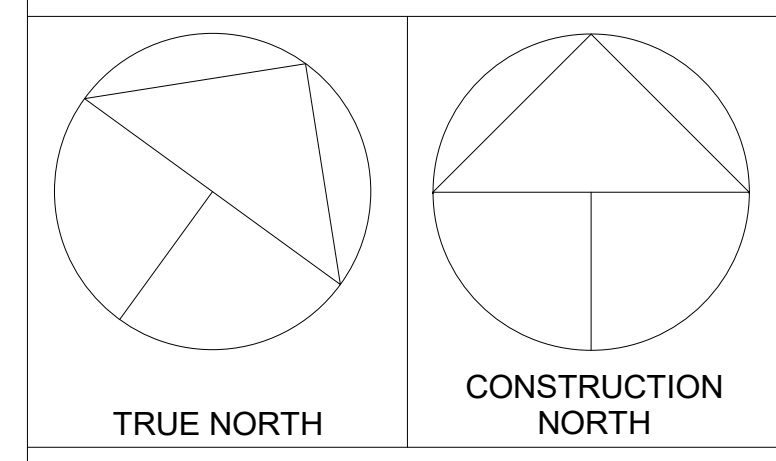
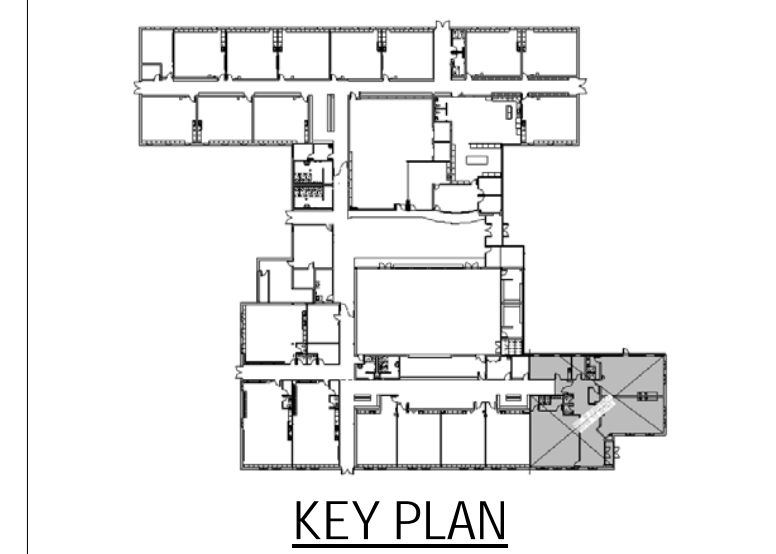


2 CONSTRUCTION FLOOR PLAN - MECH. ROOM  
 SCALE 1: 75



3 EXTERIOR WALL PLAN DETAIL  
 SCALE 1: 20

1 ROOF PLAN  
 SCALE 1: 150



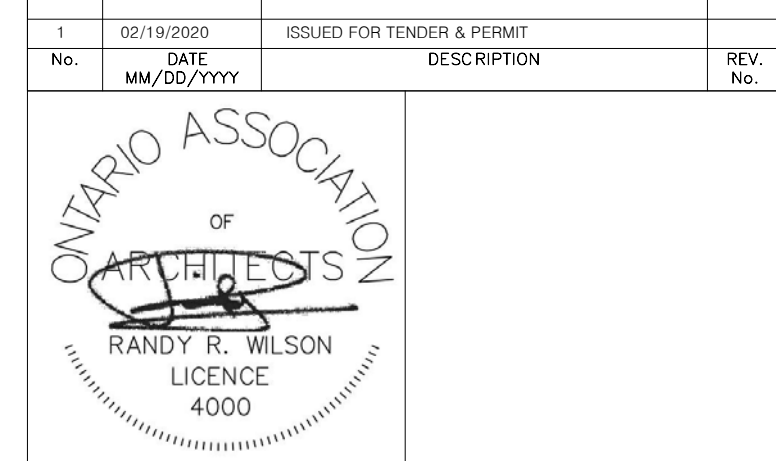
**NOTES**

1. DEMOLITION ROOF PLAN TO BE REMOVED AND PREPARED FOR NEW 2PLY MOD-BIT ROOFING

**LEGEND**

- EXISTING ROOF TO BE REMOVED AND PREPARED FOR NEW 2PLY MOD-BIT ROOFING
- HOT EXHAUST FAN
- VENT PIPE STACK
- EXHAUST FAN
- SLOPED ROOF DRAIN (2% SLOPE/ 4 FT)
- ROOF HATCH
- EX. HVAC
- EXISTING GAS LINE

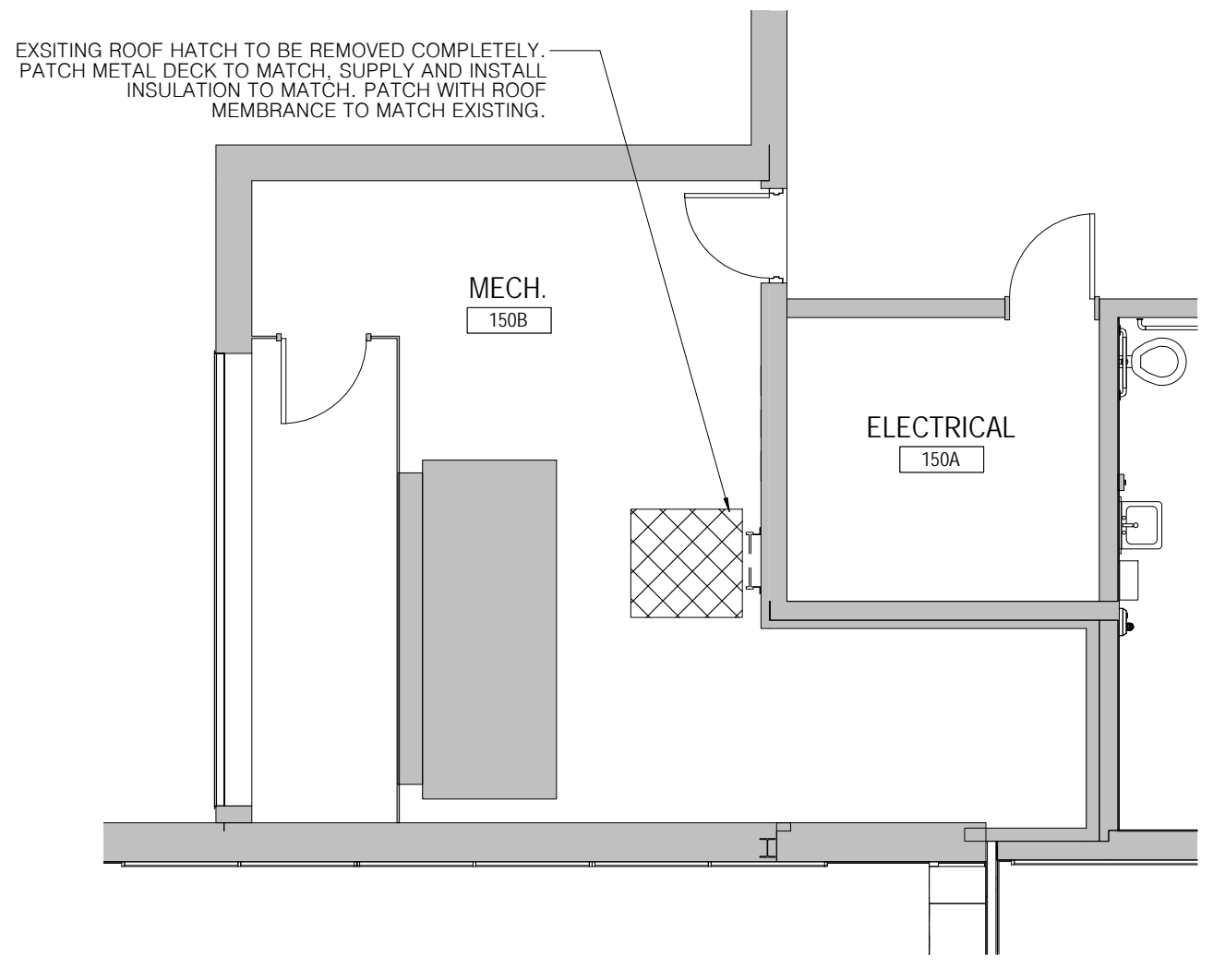
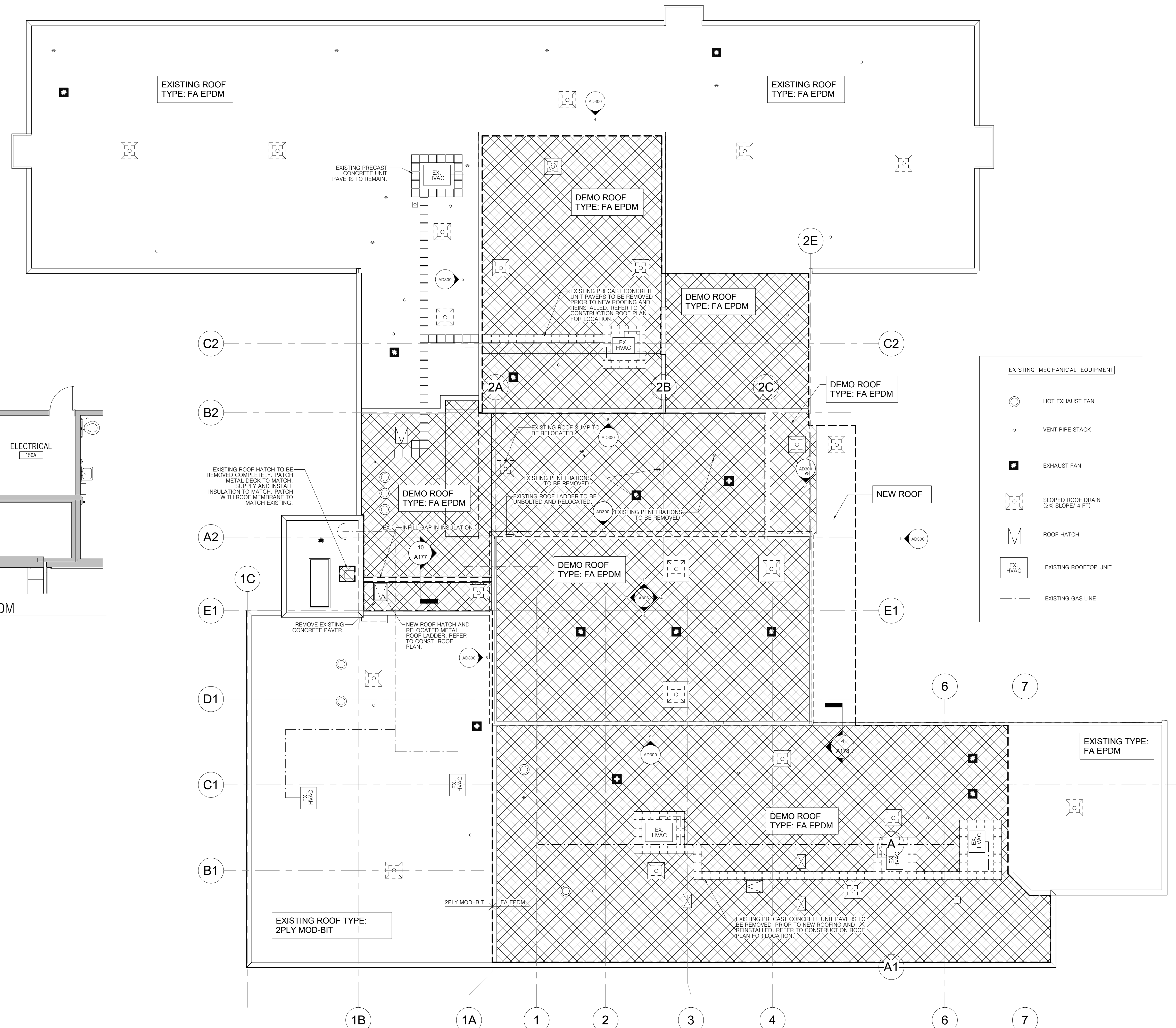
No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	
	MM/DD/YYYY		



PROJECT TITLE  
**OUR LADY OF FATIMA**

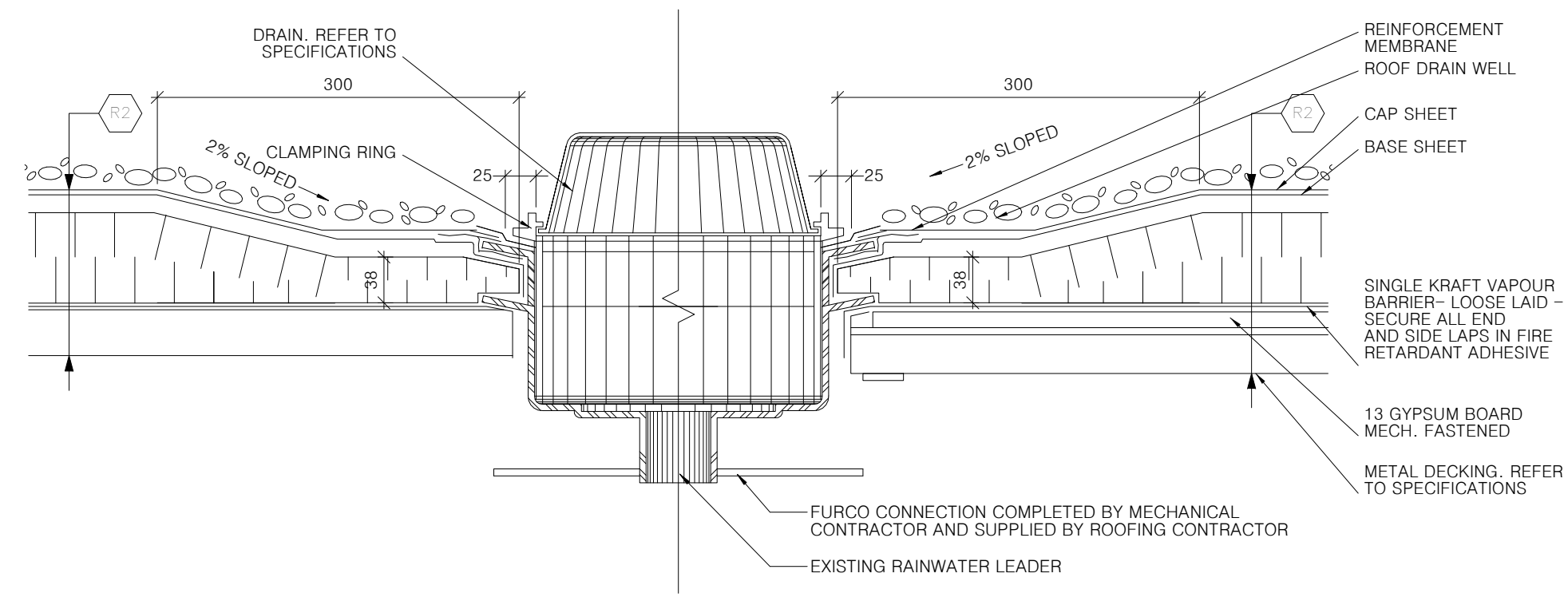
DRAWING TITLE  
**DEMOLITION ROOF PLAN**

DATE PLOTTED 19/02/2020 11:51:58 AM	DRAWN BY PKC	DRAWING No.
SCALE As indicated	CHECKED BY RW	<b>A176</b>
PROJECT No. 1901		

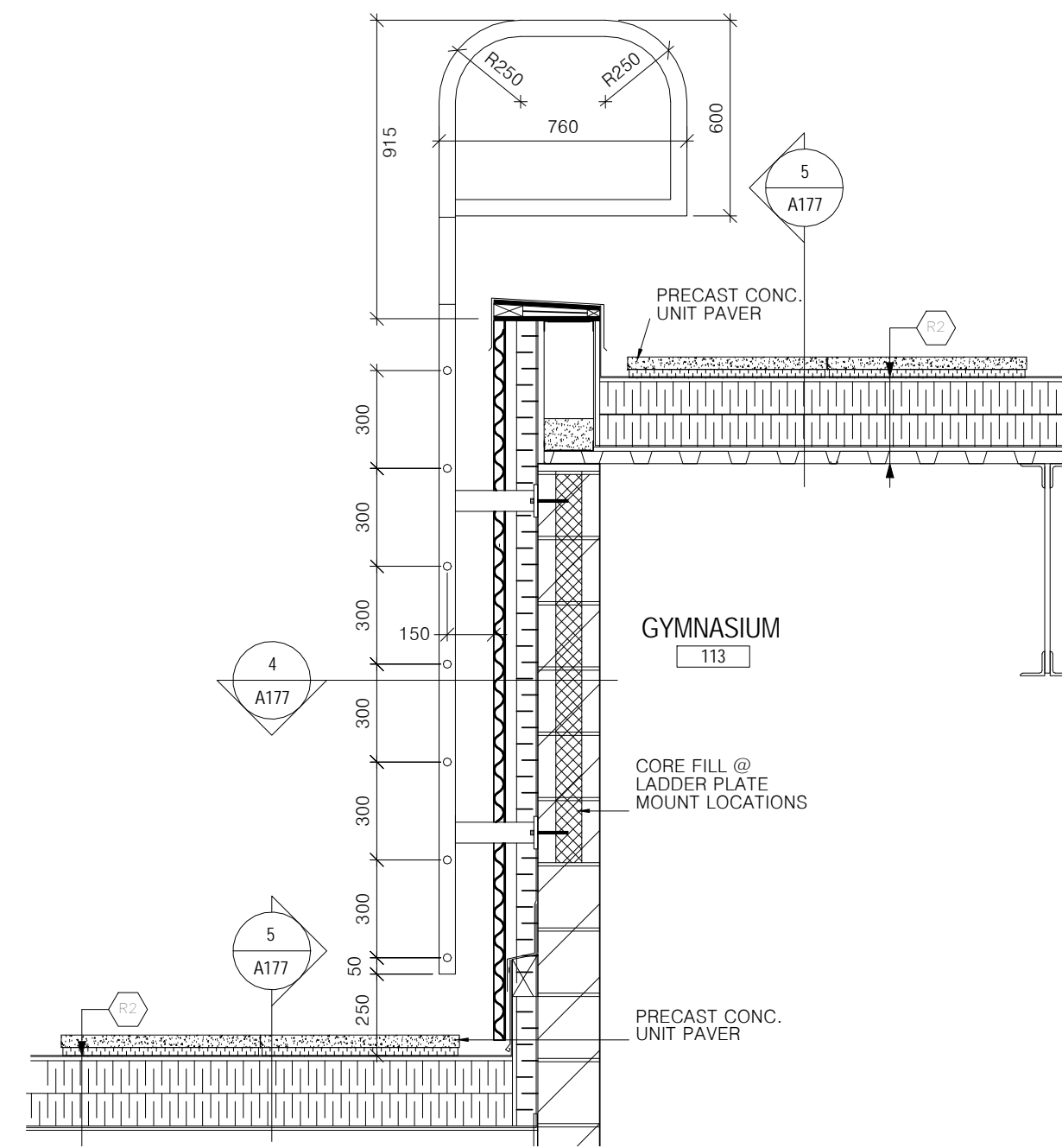


**2** DEMOLITION ROOF PLAN - MECH. ROOM  
 SCALE 1 : 75

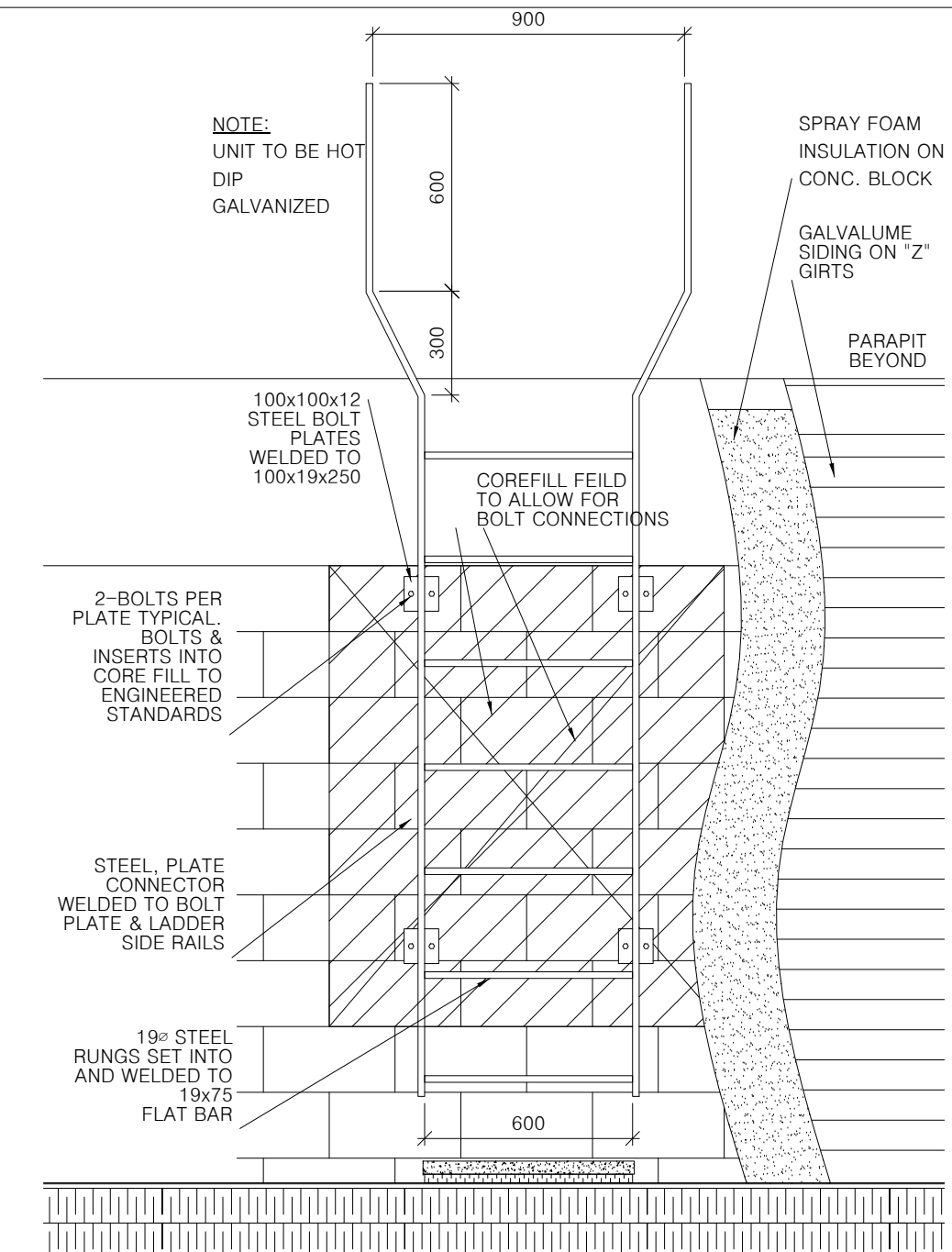
**1** DEMOLITION ROOF PLAN  
 SCALE 1 : 150



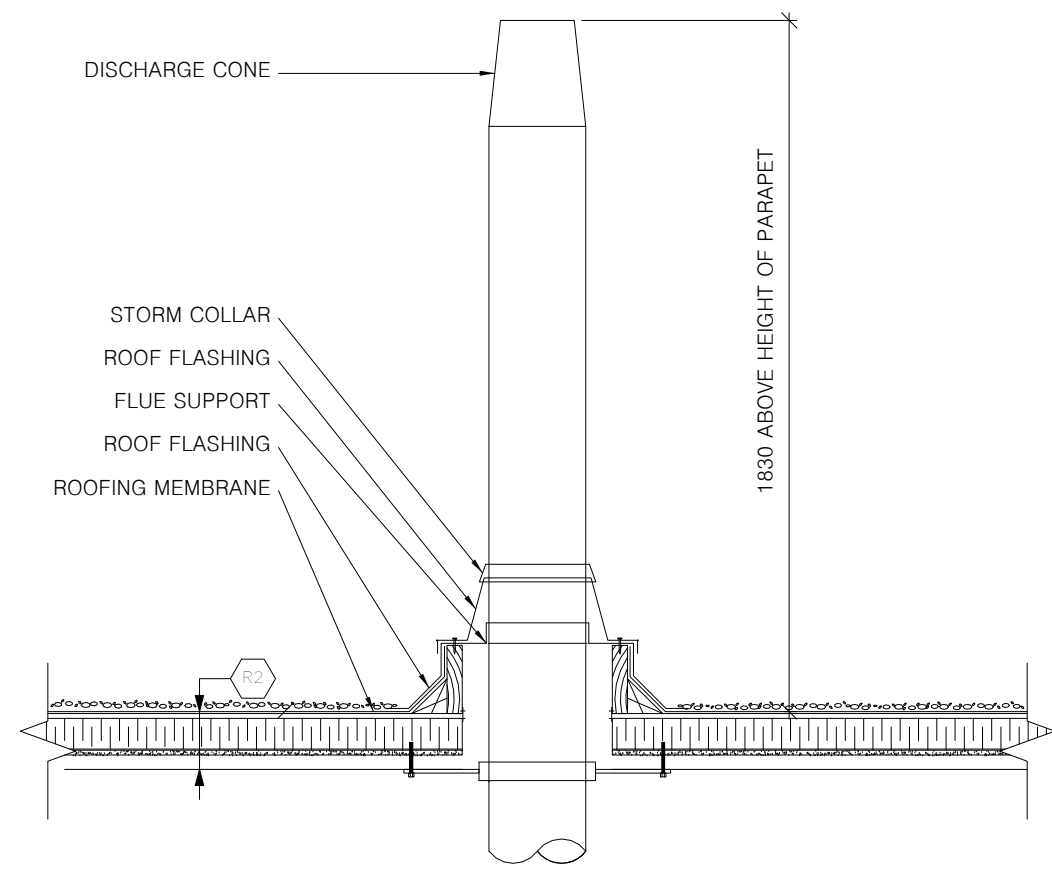
3 ROOF DRAIN FLASHING DETAIL  
SCALE 1:5



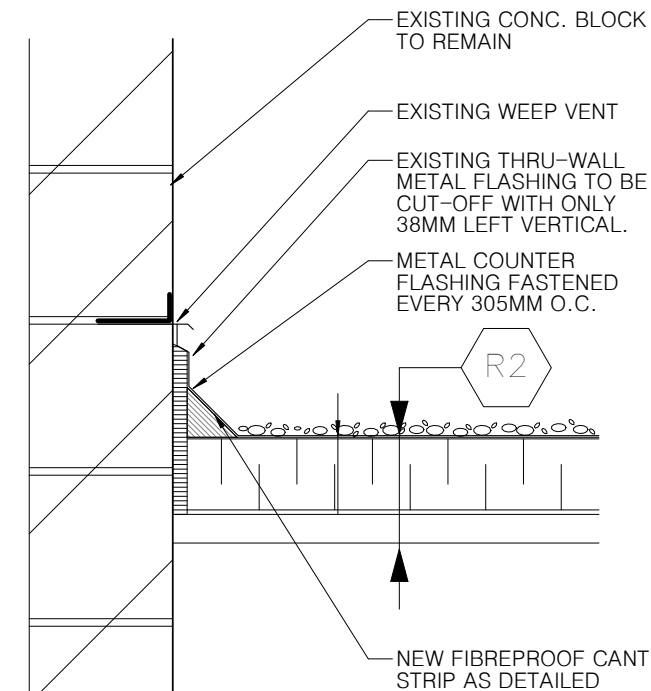
2 ACCESS LADDER SECTION DETAIL  
SCALE 1:20



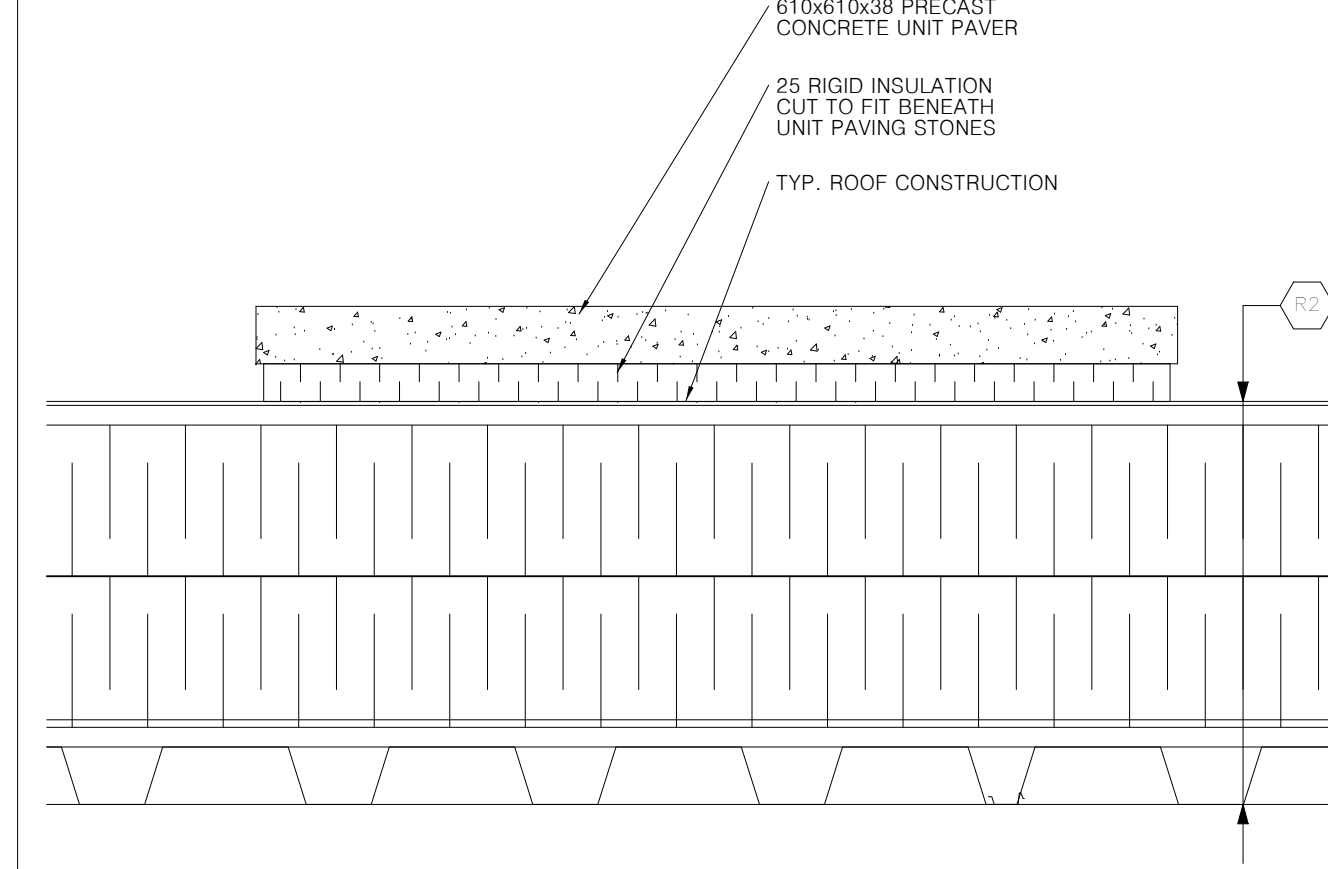
1 ACCESS LADDER ELEVATION  
SCALE 1:20



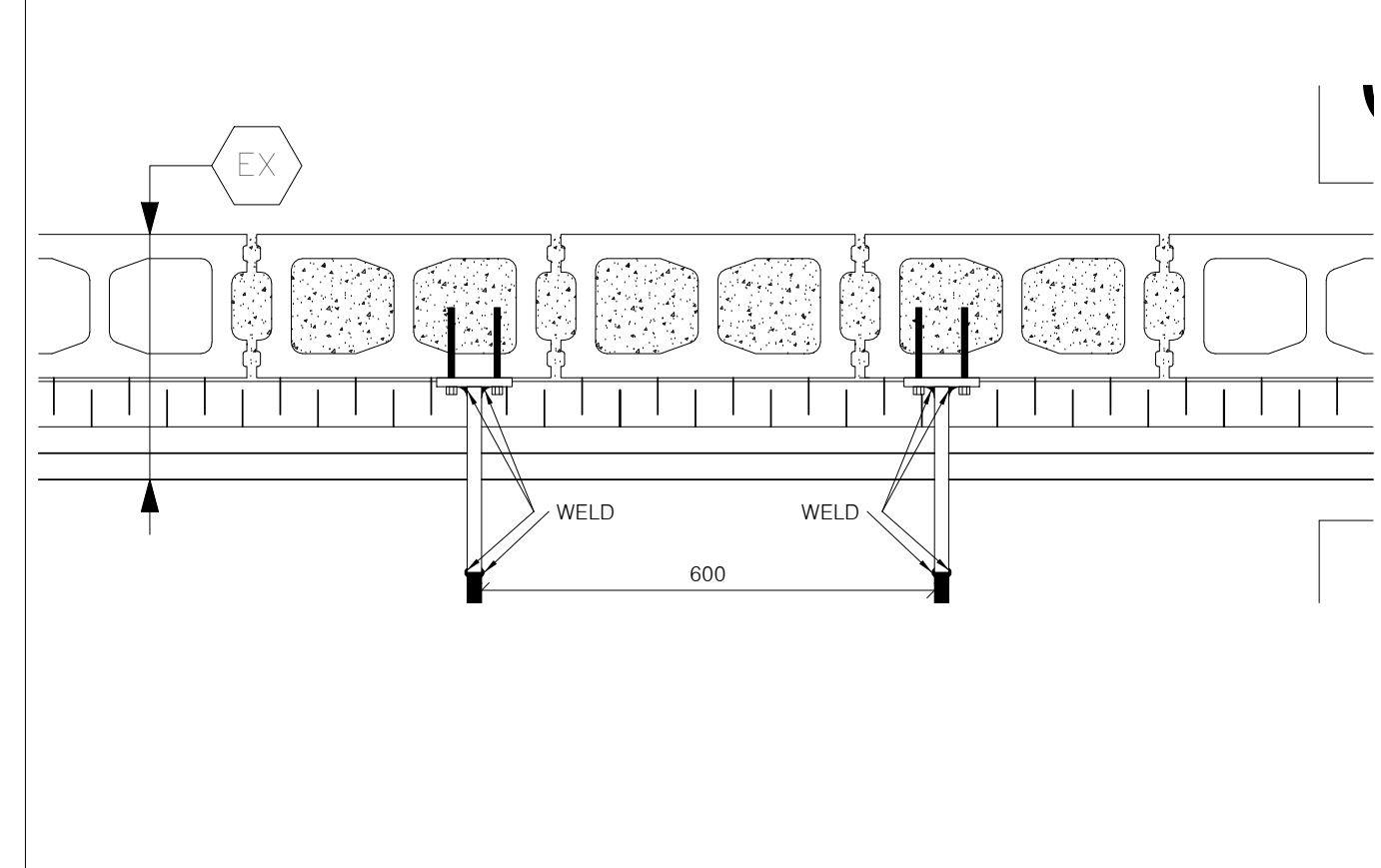
7 CHIMNEY FLUE DETAIL  
SCALE 1:20



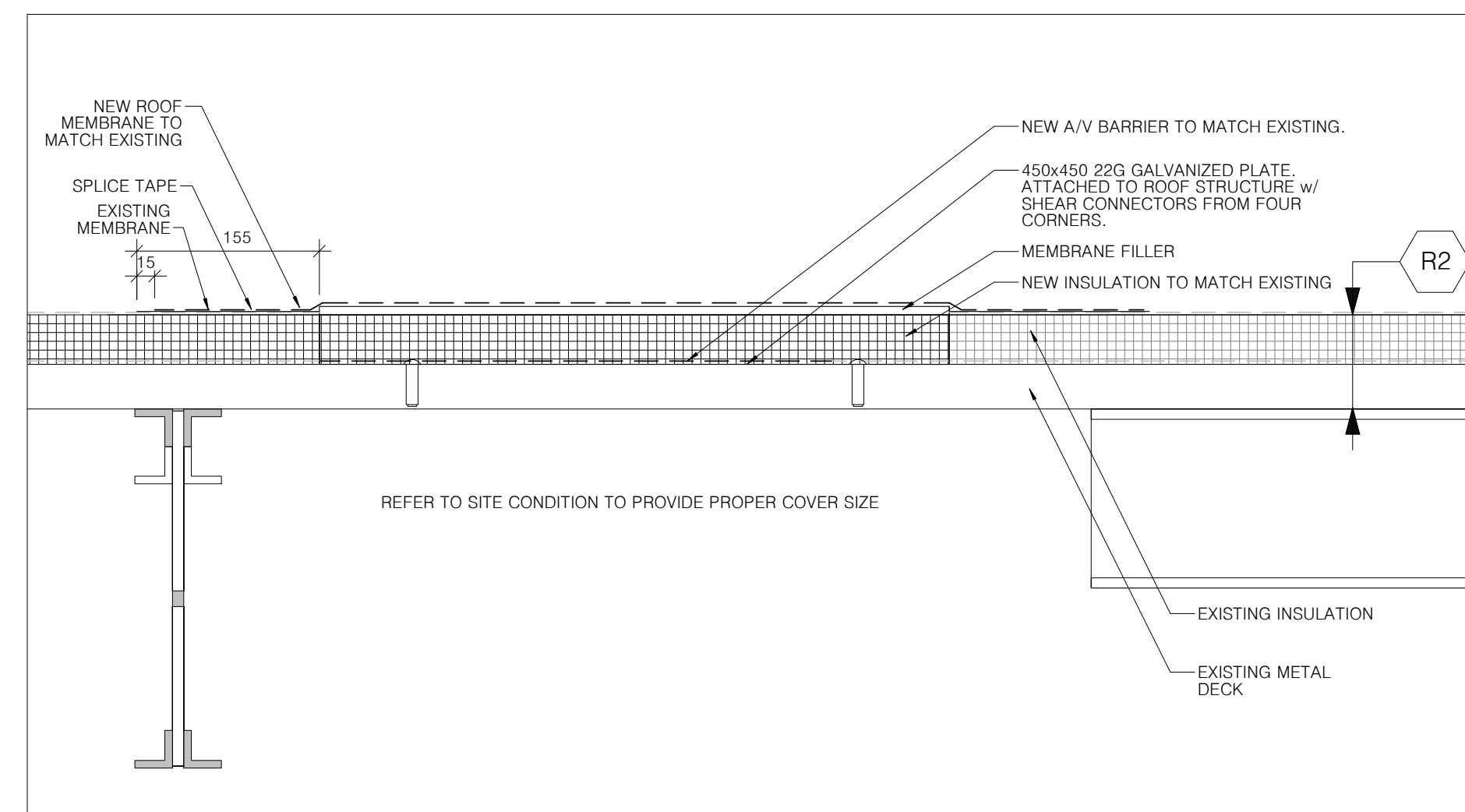
6 ROOF DETAIL AT EXISTING WALL  
SCALE 1:10



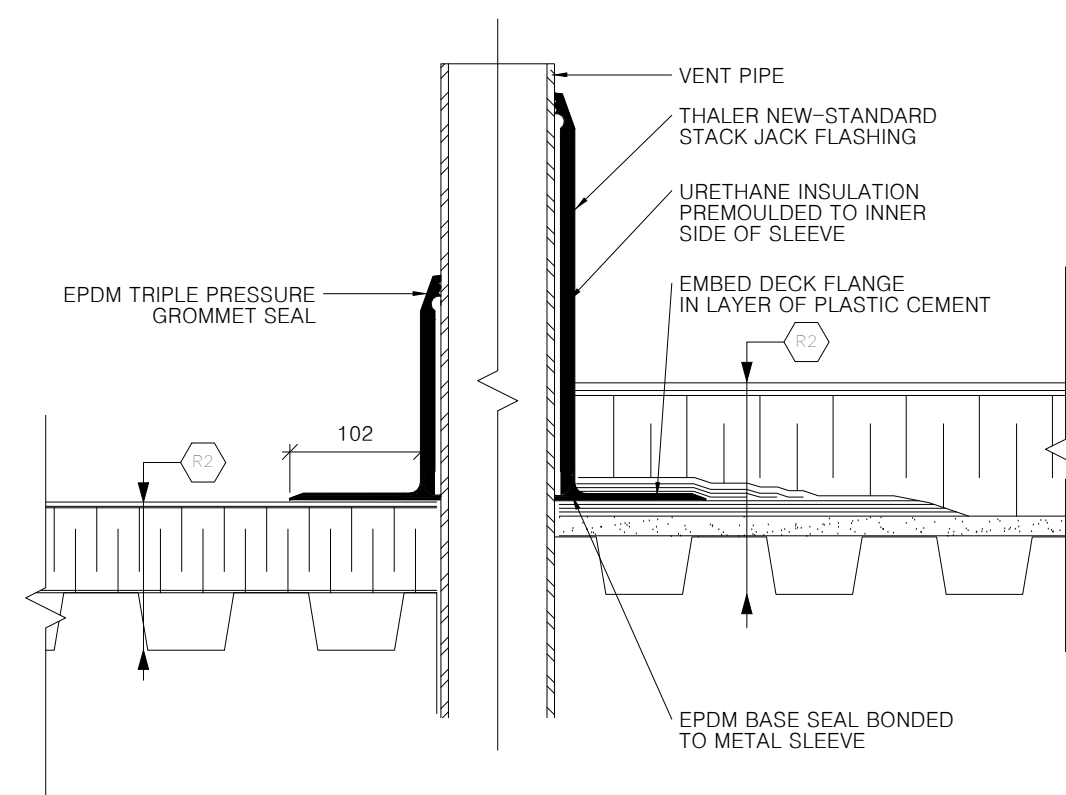
5 CONCRETE PAVERS ON ROOF DETAIL  
SCALE 1:5



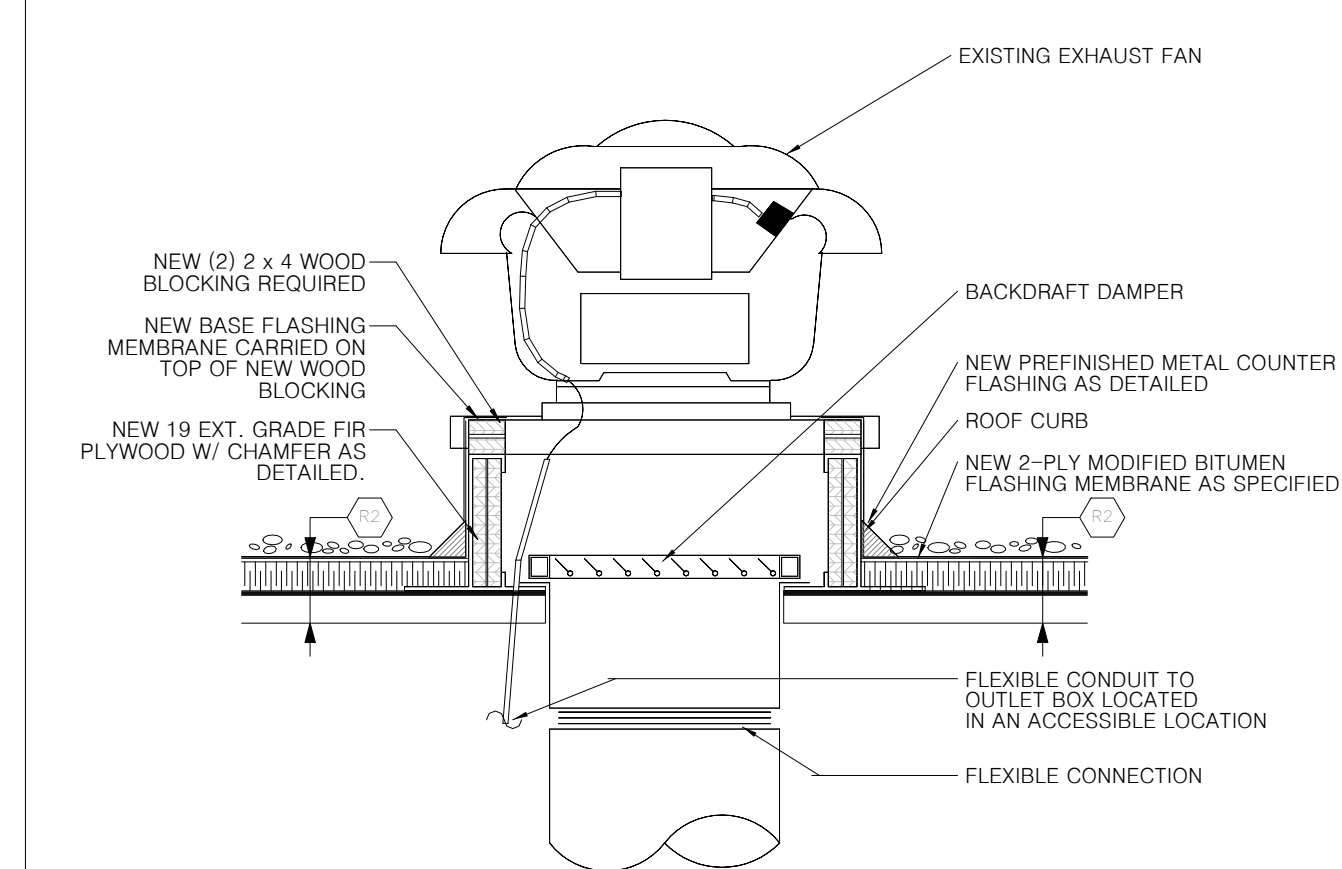
4 ACCESS LADDER PLAN DETAIL  
SCALE 1:10



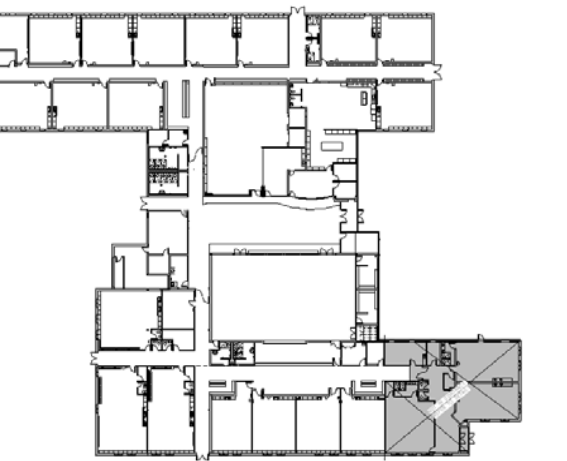
10 ROOF PENETRATION INFILL DETAIL  
SCALE 1:5



9 VENT STACK DETAIL  
SCALE 1:5



8 EXHAUST FAN DETAIL  
SCALE 1:5

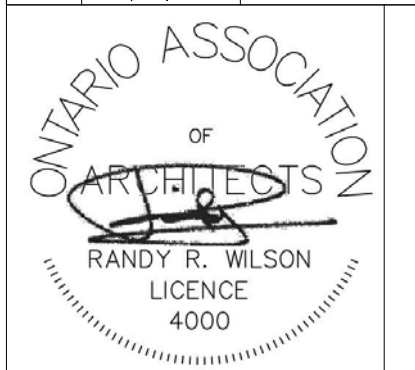


KEY PLAN

NOTES

LEGEND

No.	DATE	ISSUED FOR TENDER & PERMIT	DESCRIPTION	REV. No.
1	02/19/2020			



PROJECT TITLE

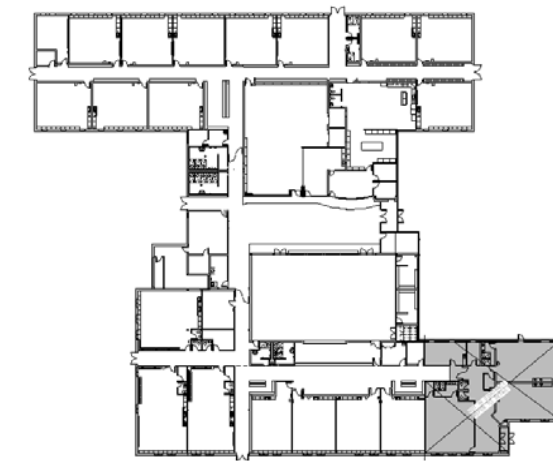
OUR LADY OF FATIMA

DRAWING TITLE

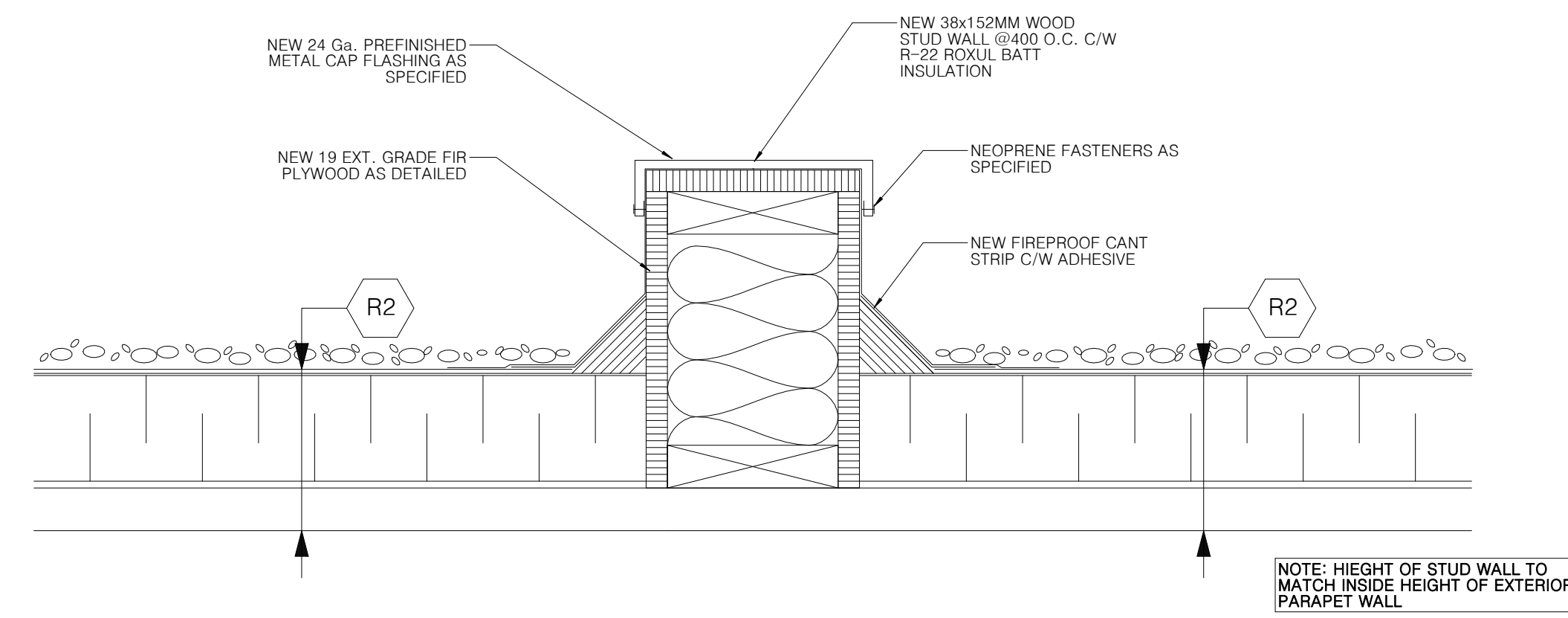
ROOFING DETAILS

DATE PLOTTED 19/02/2020 11:52:02 AM	DRAWN BY PC	DRAWING No. A177
SCALE As indicated	CHECKED BY RRW	
PROJECT No. 1901		



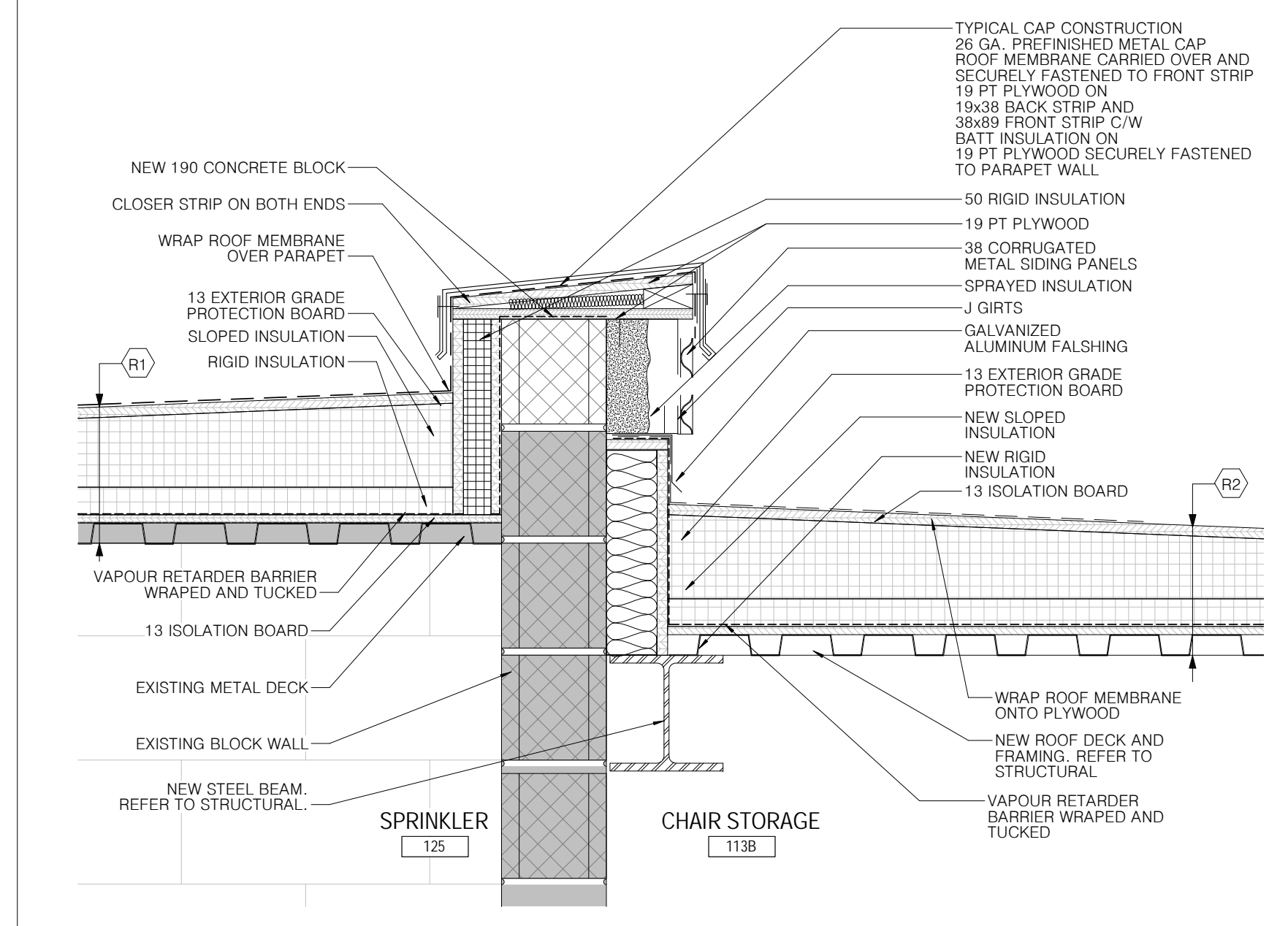


KEY PLAN



NOTE: HEIGHT OF STUD WALL TO MATCH INSIDE HEIGHT OF EXTERIOR PARAPET WALL

1 ROOF SECTION DETAIL - CONTROL JOINT  
 SCALE 1:5

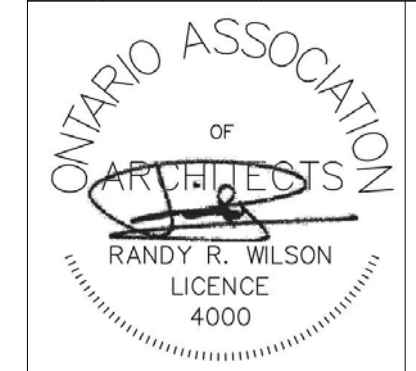


4 SECTION DETAIL AT ROOF  
 SCALE 1:10

NOTES

LEGEND

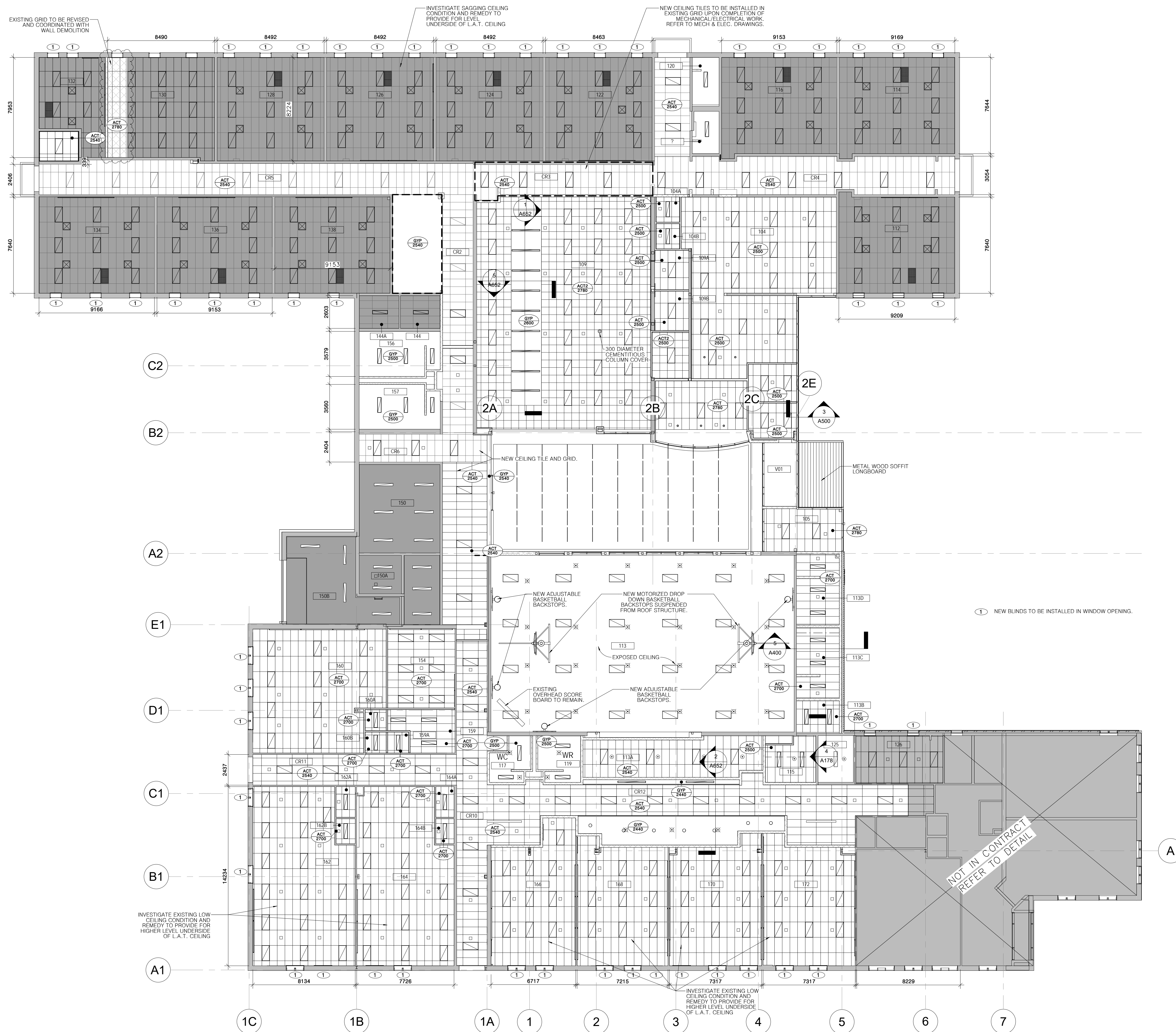
No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



PROJECT TITLE  
 OUR LADY OF FATIMA

DRAWING TITLE  
 ROOFING DETAILS

DATE PLOTTED 19/02/2020 11:52:05 AM	DRAWN BY PC	DRAWING No.
SCALE As indicated	CHECKED BY RRW	A178
PROJECT No. 1901		



WILSON DIAZ ARCHITECTS INCORPORATED

WDA

280 QUEENS AVENUE, SUITE 101  
LONDON, ONTARIO N6B 1X3  
T. 519.439.0611  
F. 519.438.5962  
wda@wilsondiaz.ca  
www.wilsondiaz.co

KEY PLAN

TRUE NORTH CONSTRUCTION NORTH

NOTES

- LEGEND
- CONCEALED SPRINKLER HEAD. REFER TO MECH. DWGS.
  - PENDANT SPRINKLER HEAD. REFER TO MECH. DWGS.
  - UPRIGHT SPRINKLER HEAD. REFER TO MECH. DWGS.
  - DRYPIPE SPRINKLER HEAD. REFER TO MECH. DWGS.
  - ROOMS COMPLETE DURING PHASE 3 OF CONSTRUCTION.

No.	DATE	DESCRIPTION	REV. No.
1	02/19/20	ISSUED FOR TENDER/RFI/RFQ	
	MM/DD/YYYY		

ONTARIO ASSOCIATION OF ARCHITECTS  
RANDY R. WILSON  
LICENCE 4000

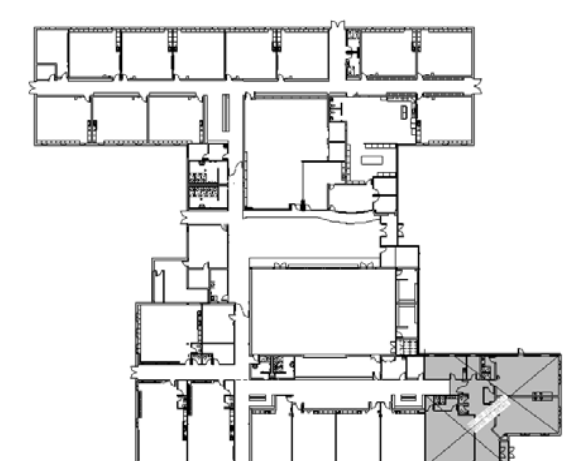
PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**CONSTRUCTION REFLECTED CEILING PLAN**

DATE PLOTTED 19/02/2020 11:52:14 AM	DRAWN BY TJV	DRAWING No.
SCALE 1 : 150	CHECKED BY RRW	<b>A200</b>
PROJECT No. 1901		



280 QUEENS AVENUE, SUITE 102  
LONDON, ONTARIO N6B 1X3  
T: 519-439-0611  
F: 519-438-5962  
w@diazwilson.com  
www.wilsondiaz.co

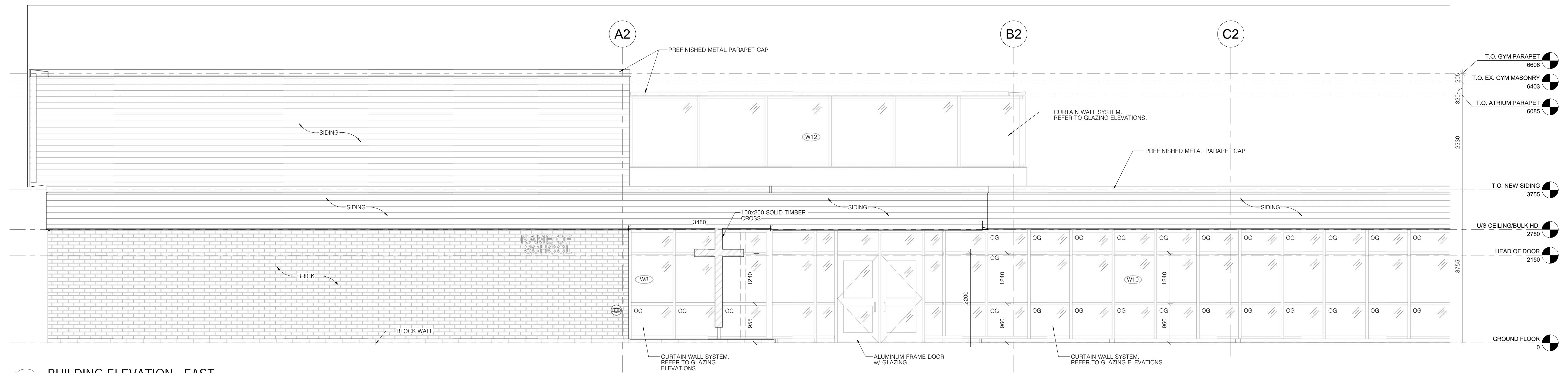


KEY PLAN

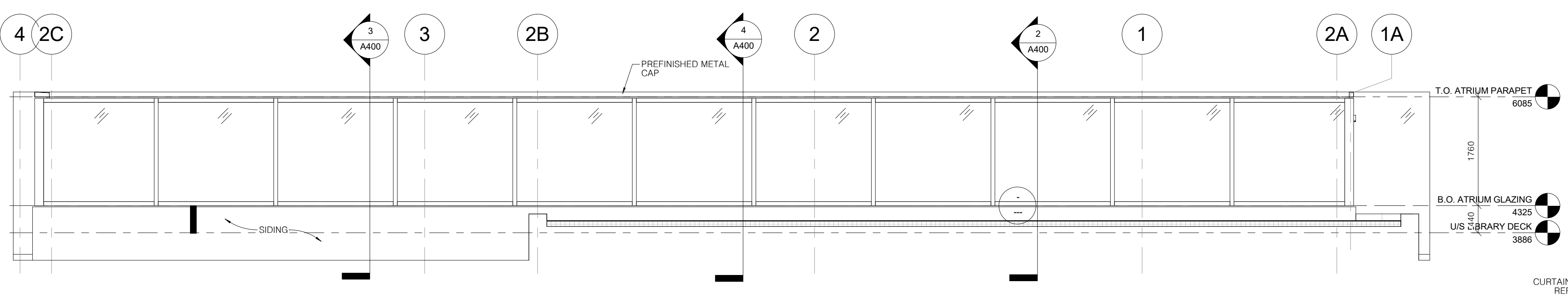
NOTES

LEGEND

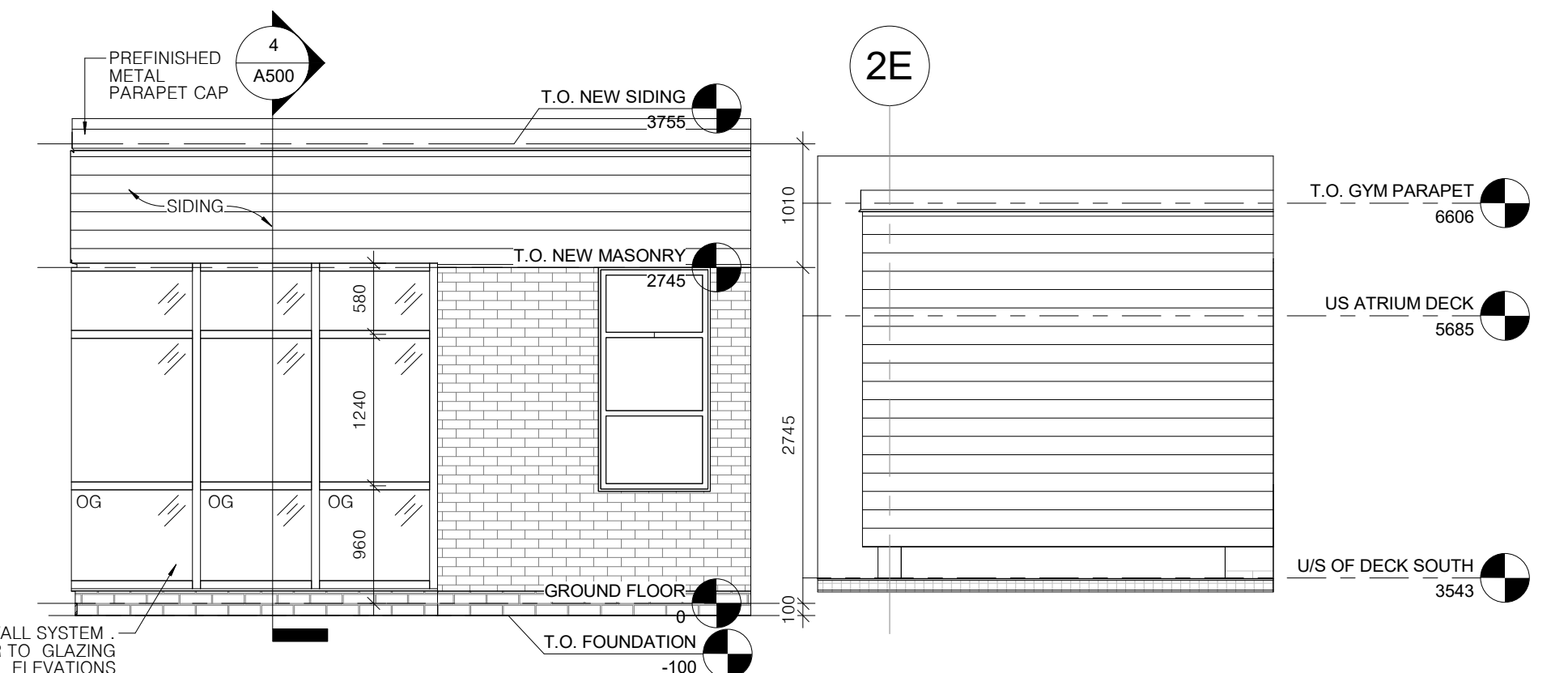
OG - OBSCURE GLAZING SPANDREL PANEL



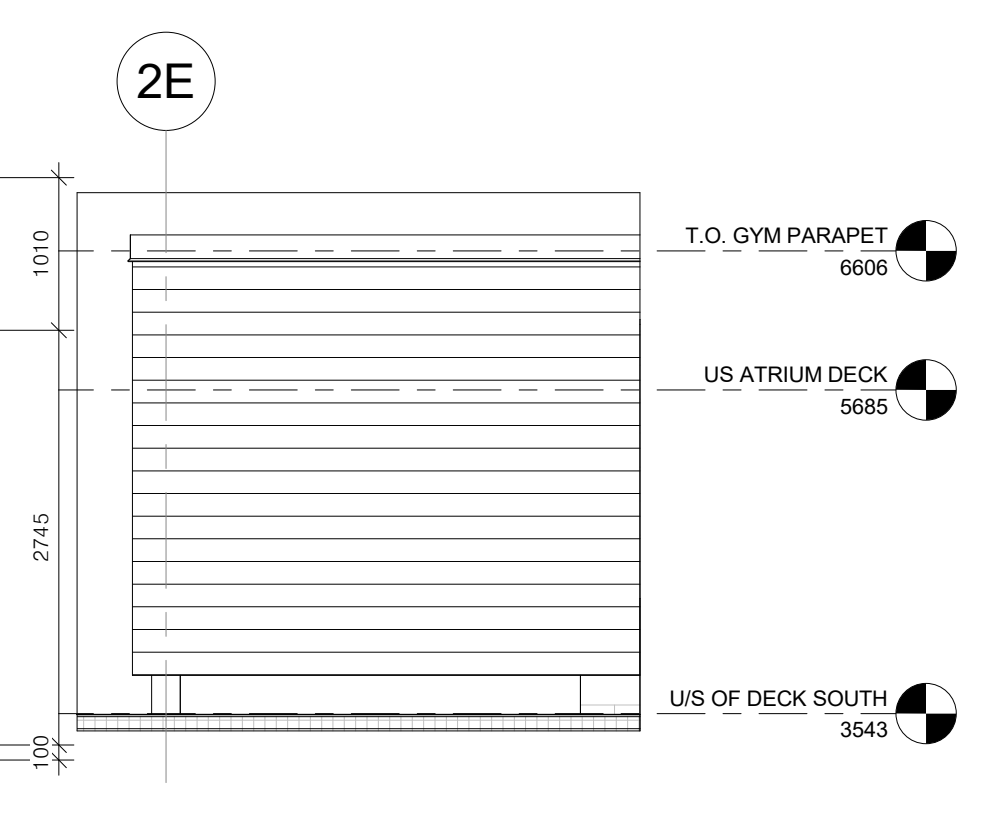
1 BUILDING ELEVATION - EAST  
SCALE 1:50



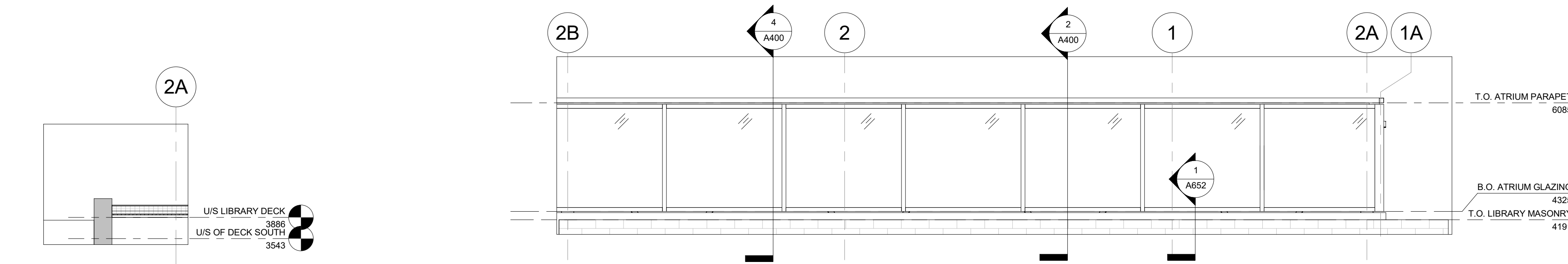
4 NORTH ATRIUM ELEVATION  
SCALE 1:50



3 PART SOUTH ELEVATION  
SCALE 1:50

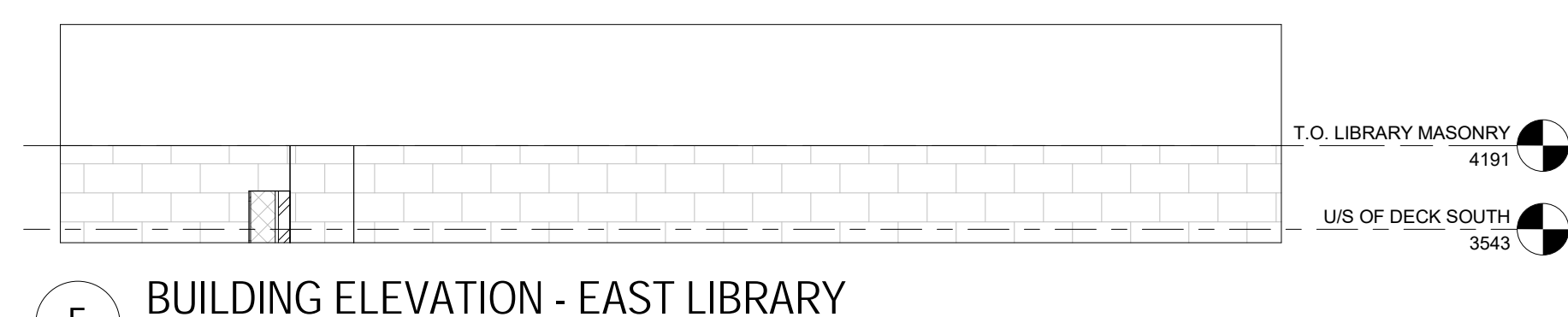


2 PART SOUTH ELEVATION  
SCALE 1:50

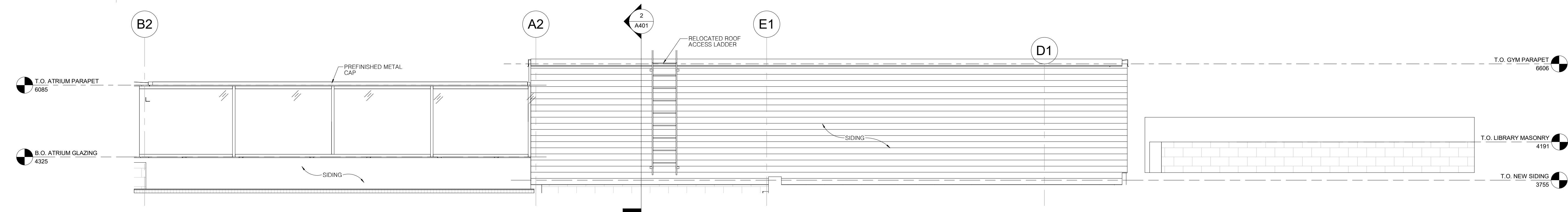


9 NORTH LIBRARY ELEVATION  
SCALE 1:50

6 NORTH ATRIUM ELEVATION  
SCALE 1:50



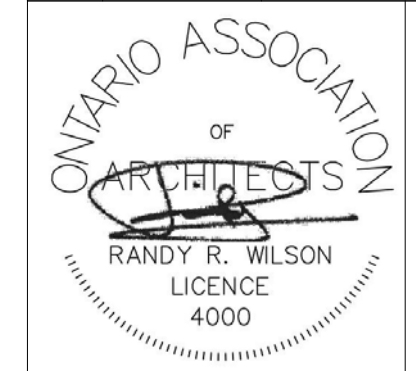
5 BUILDING ELEVATION - EAST LIBRARY  
SCALE 1:50



8 WEST ATRIUM ELEVATION  
SCALE 1:50

7 BUILDING ELEVATION - WEST LIBRARY  
SCALE 1:50

No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	
	MM/DD/YYYY		



RANDY R. WILSON  
LICENCE 4000

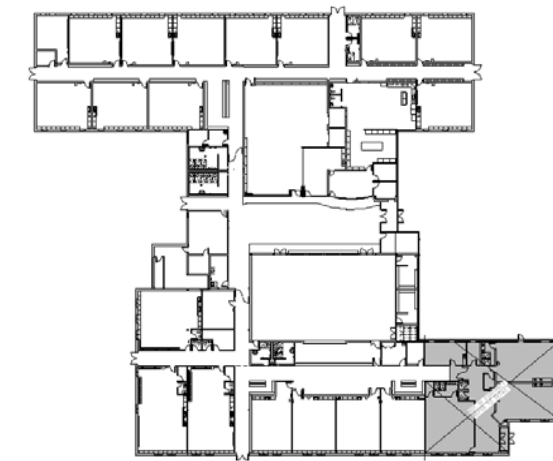
PROJECT TITLE

OUR LADY OF FATIMA

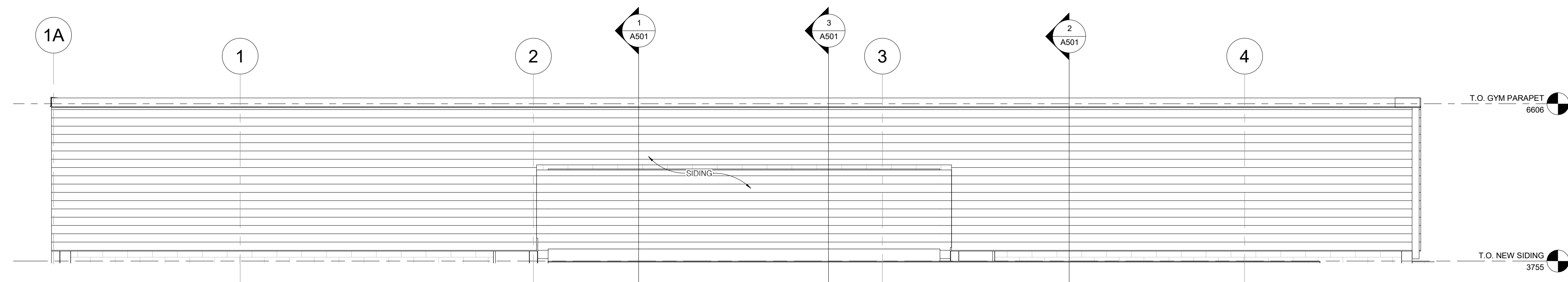
DRAWING TITLE

CONSTRUCTION EXTERIOR ELEVATIONS

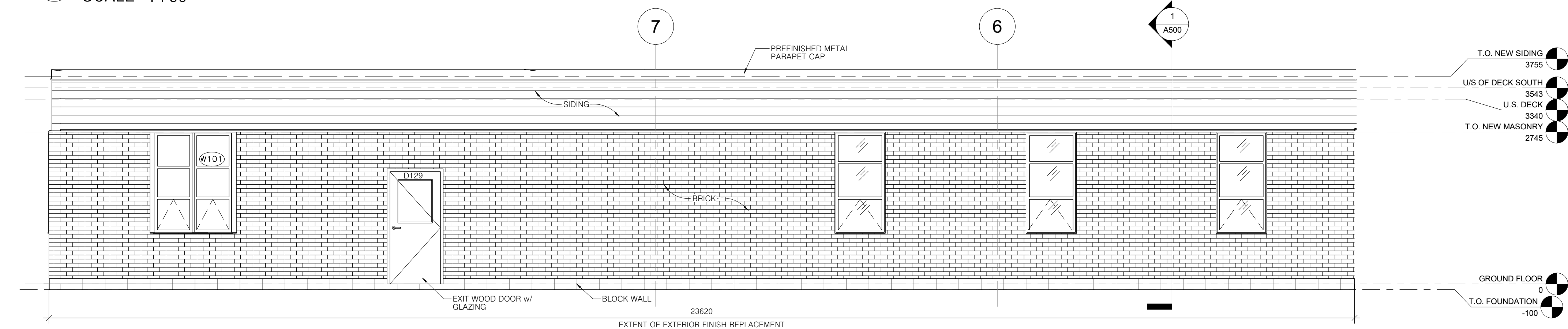
DATE PLOTTED 19/02/2020 11:52:47 AM	DRAWN BY PCT/JV	DRAWING No.
SCALE 1:50	CHECKED BY RRW	A300
PROJECT No.	1901	



KEY PLAN



2 BUILDING ELEVATION - SOUTH GYM  
SCALE 1 : 50

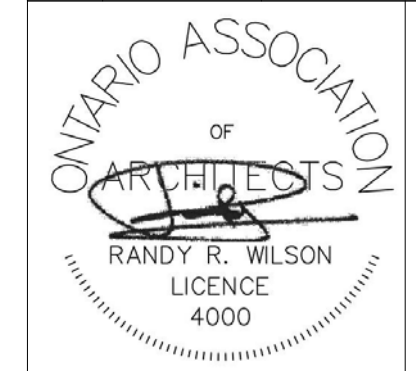


3 BUILDING ELEVATION - NORTH AT CHILDCARE  
SCALE 1 : 50

NOTES

LEGEND

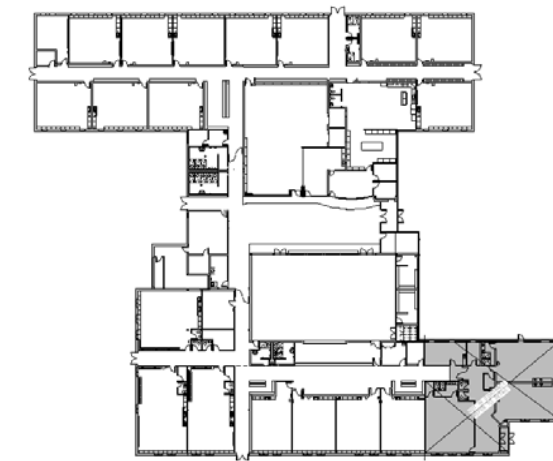
No.	DATE MM/DD/YYYY	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**CONSTRUCTION EXTERIOR ELEVATIONS**

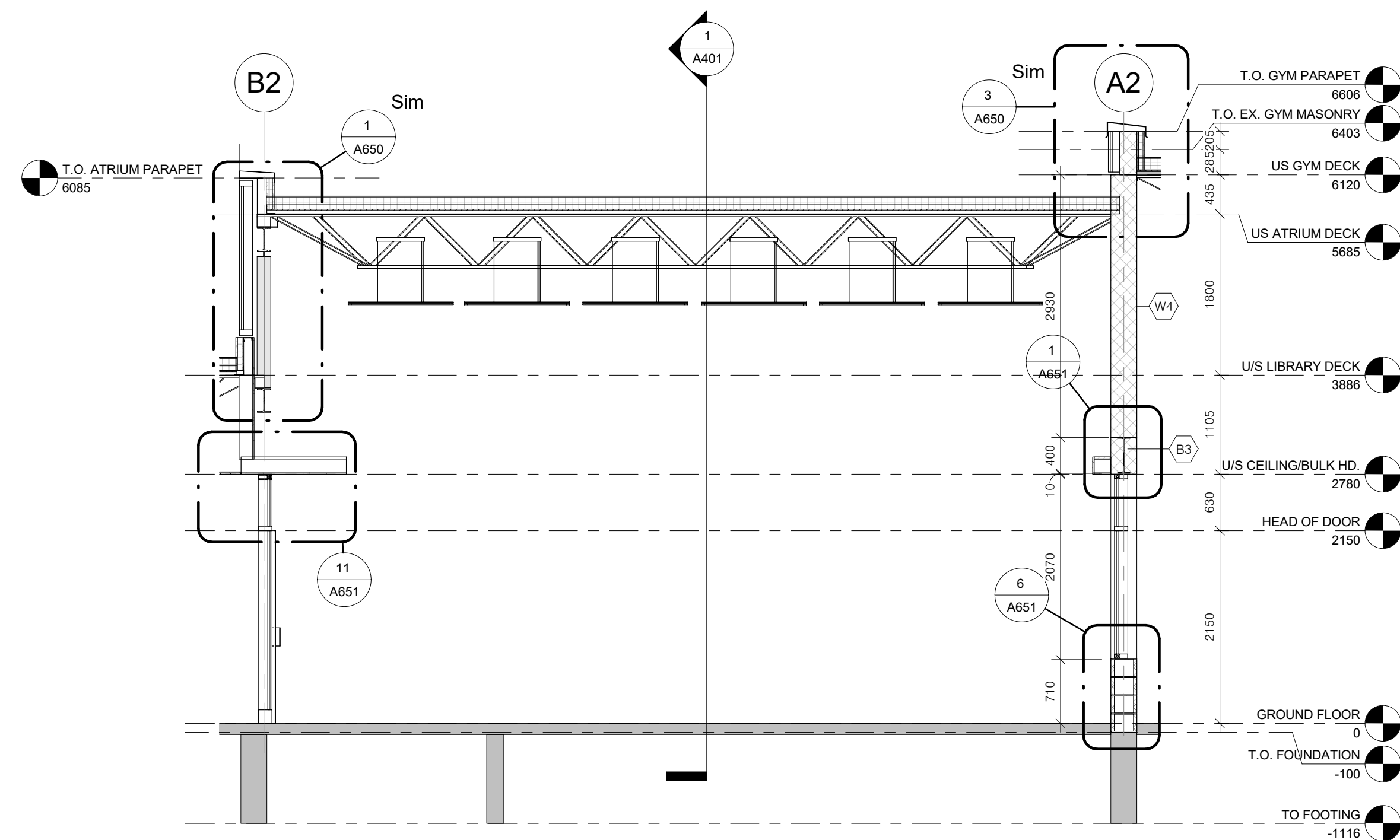
DATE PLOTTED 19/02/2020 11:52:51 AM	DRAWN BY PC	DRAWING No.
SCALE 1 : 50	CHECKED BY RRW	<b>A301</b>
PROJECT No. 1901		



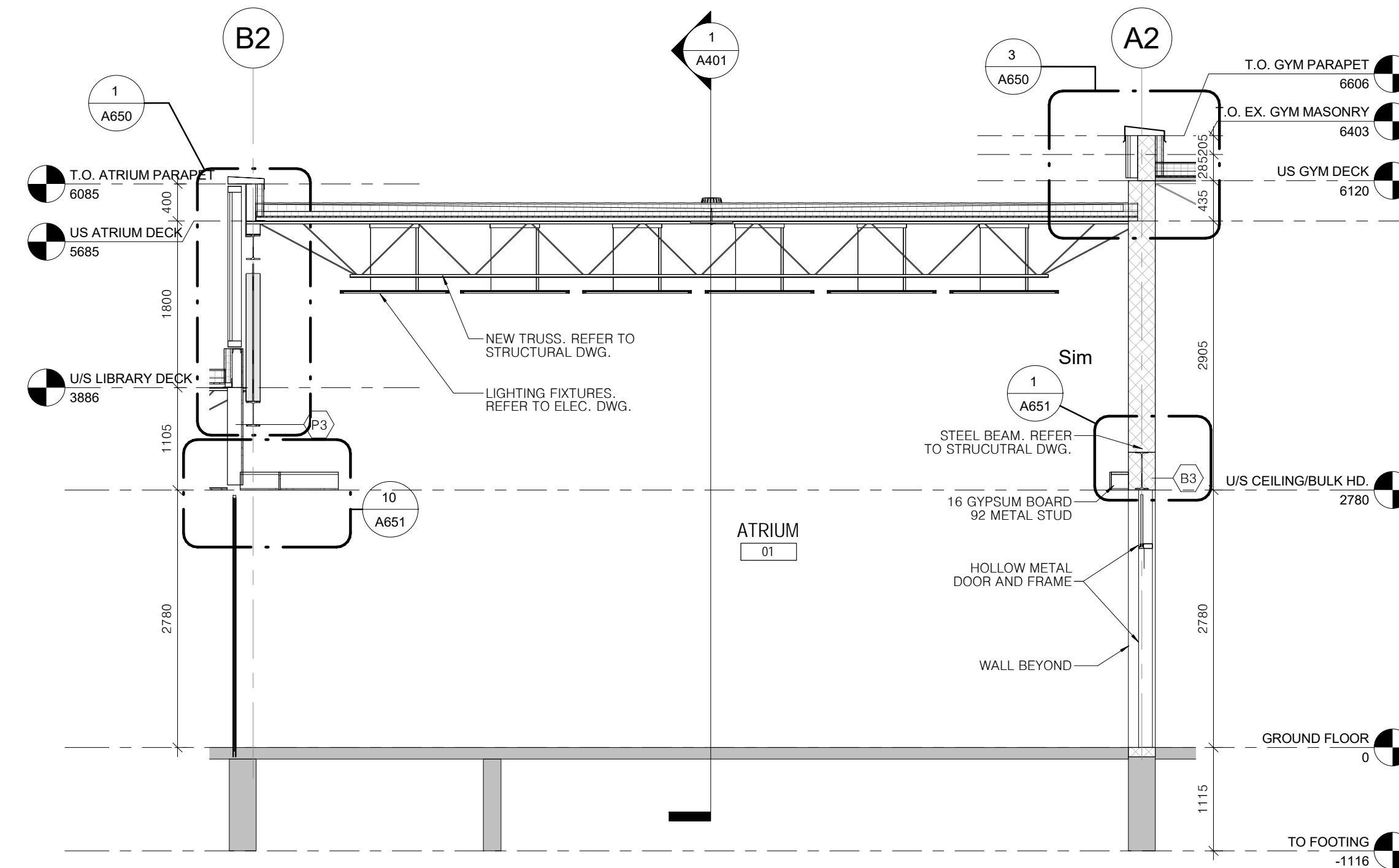
KEY PLAN

NOTES

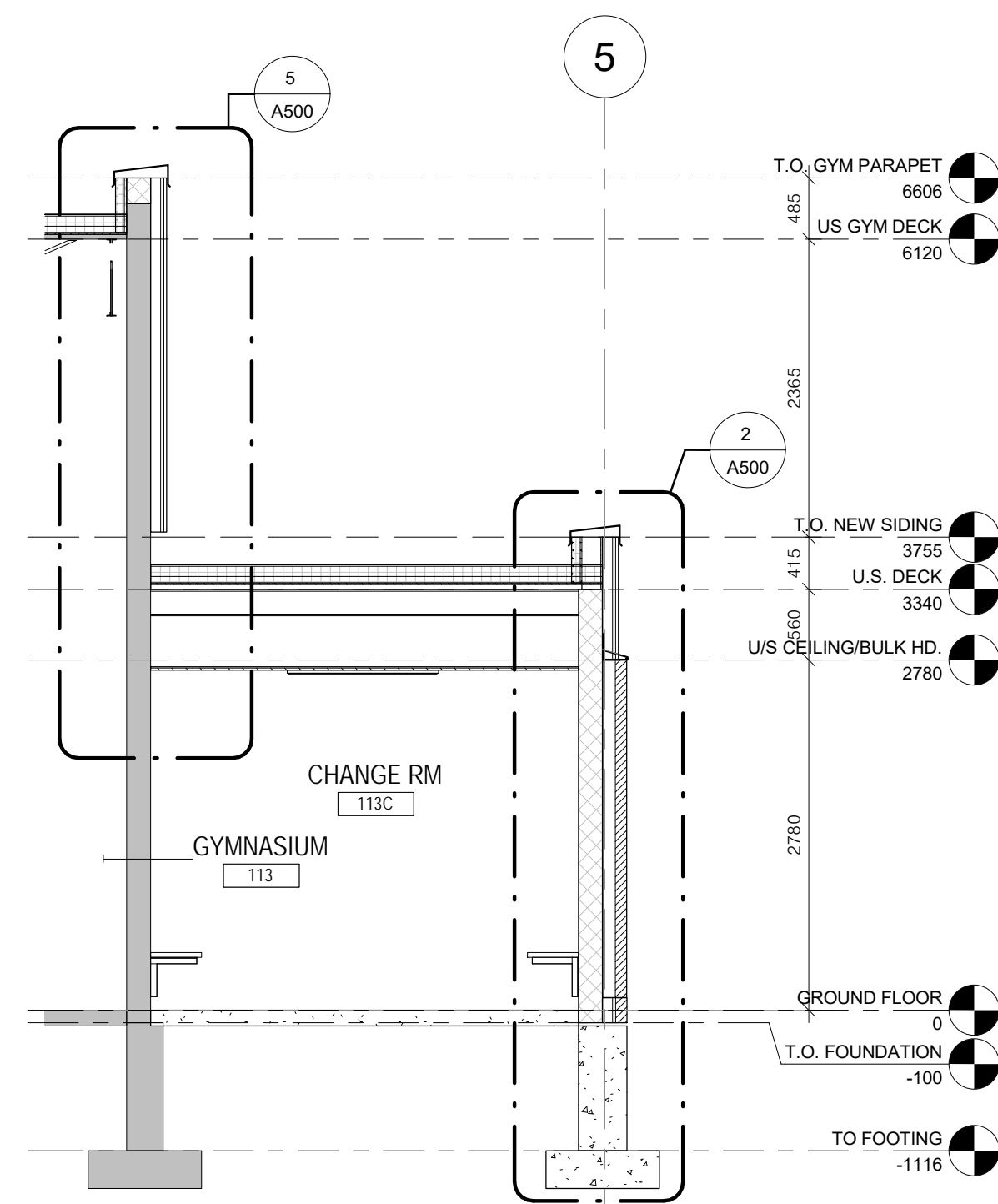
LEGEND



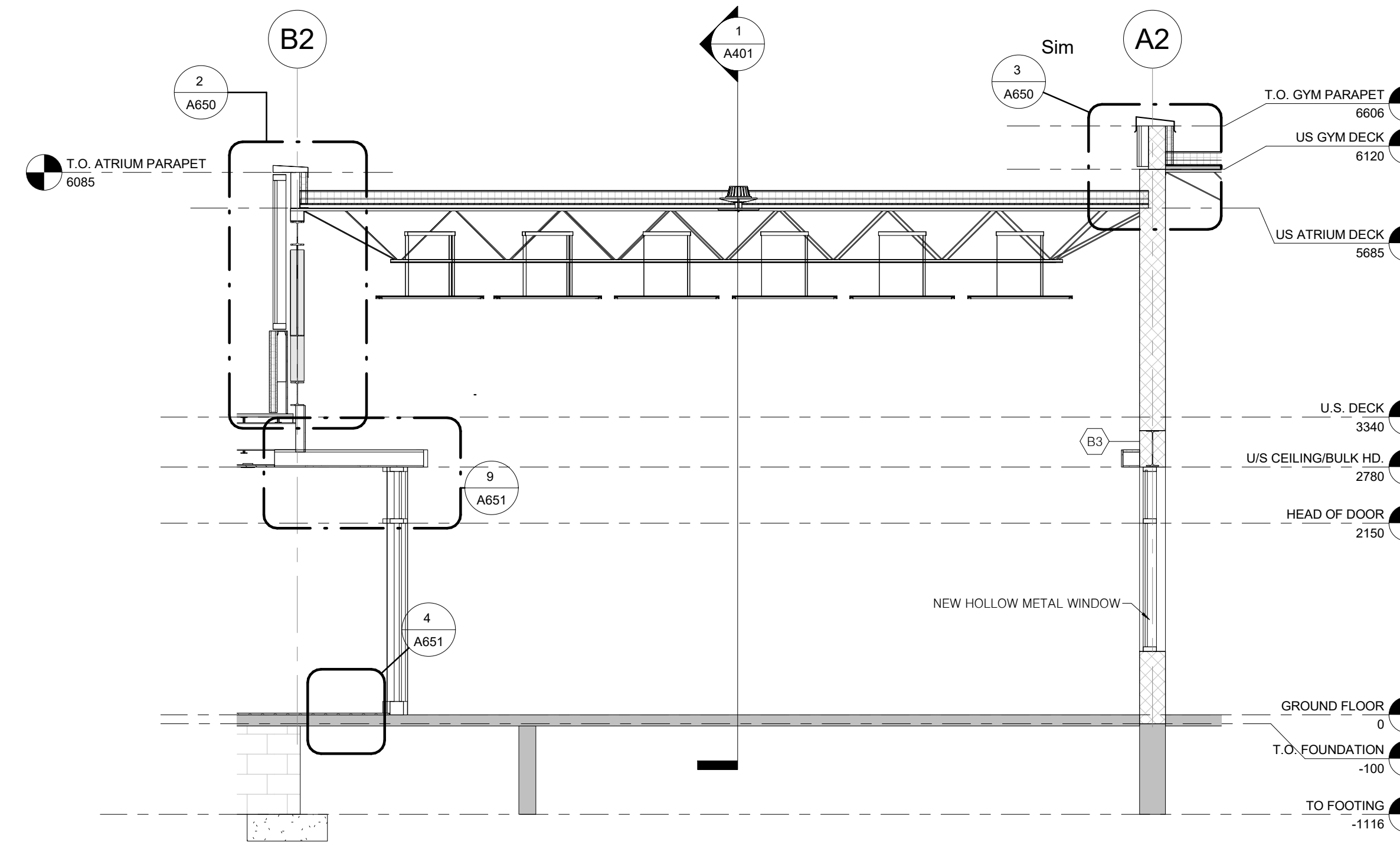
4 ATRIUM SECTION NORTH - SOUTH  
SCALE 1 : 50



2 ATRIUM SECTION NORTH - SOUTH  
SCALE 1 : 50

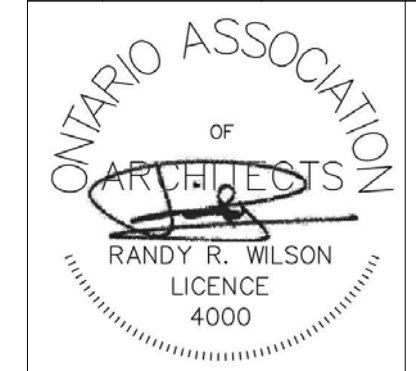


5 SECTION THRU EAST ADDITION  
SCALE 1 : 50



3 ATRIUM SECTION NORTH - SOUTH  
SCALE 1 : 50

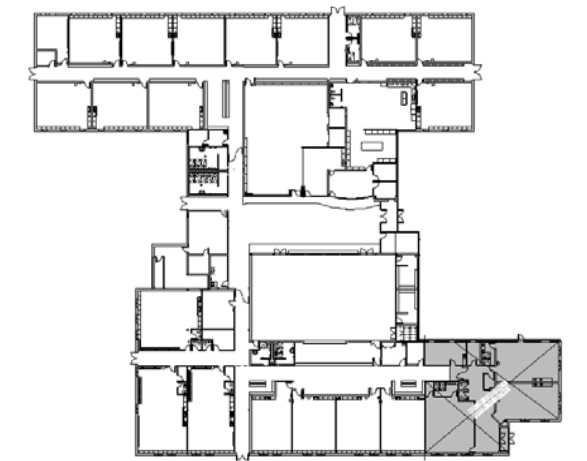
No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**BUILDING SECTIONS**

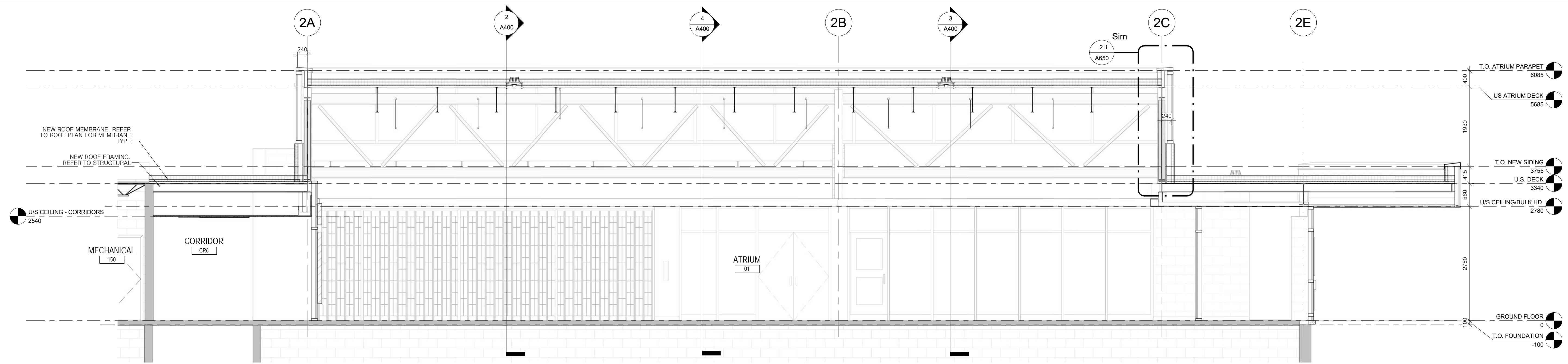
DATE PLOTTED 19/02/2020 11:52:57 AM	DRAWN BY TJV	DRAWING No. A400
SCALE 1 : 50	CHECKED BY RRW	
PROJECT No. 1901		



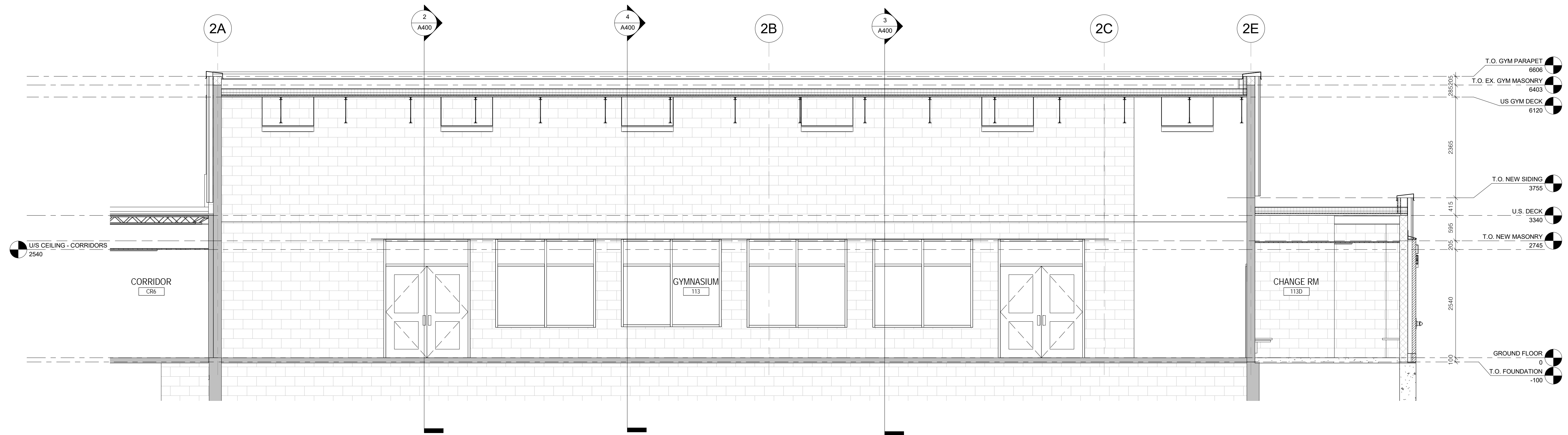
KEY PLAN

NOTES

LEGEND

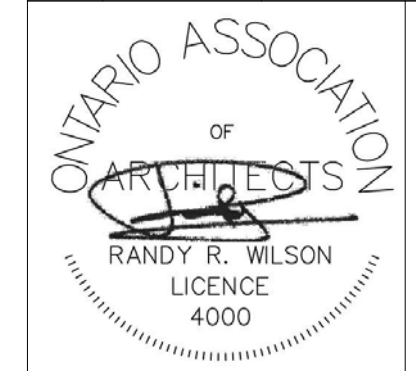


1 BUILDING SECTION - ATRIUM EAST - WEST  
SCALE 1 : 50



2 BUILDING SECTION - GYMNASIUM EAST - WEST  
SCALE 1 : 50

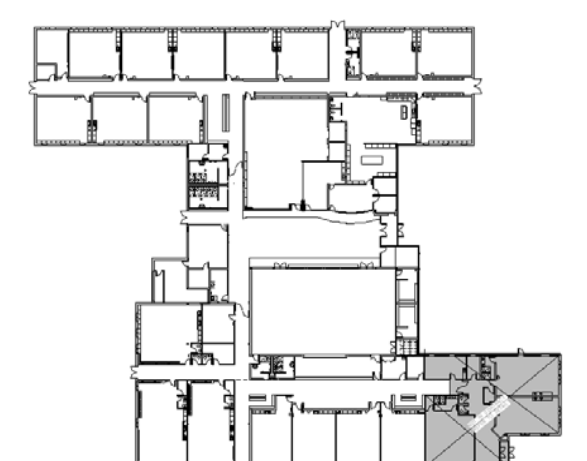
No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**BUILDING SECTIONS**

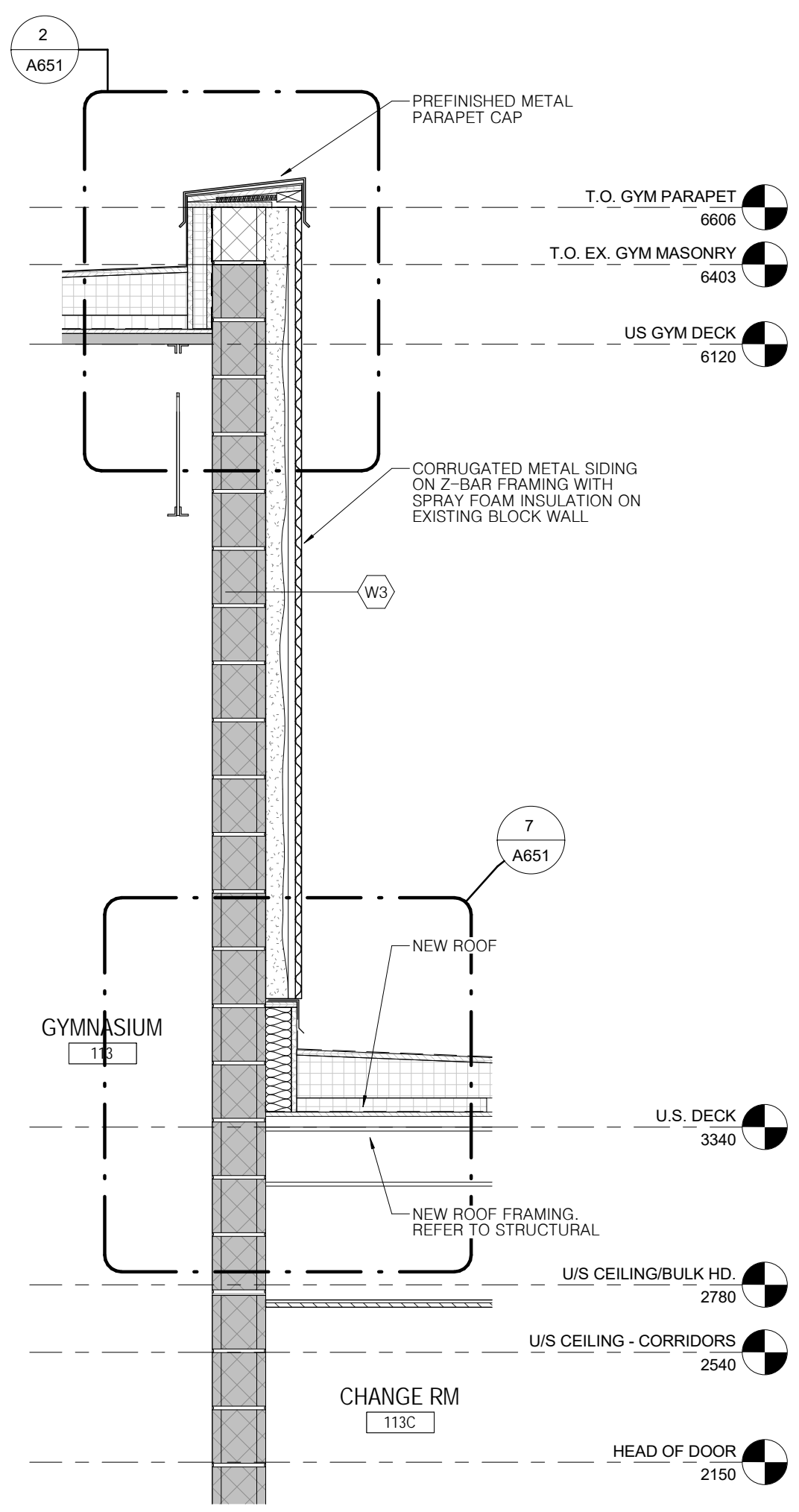
DATE PLOTTED 19/02/2020 11:53:09 AM	DRAWN BY TJV	DRAWING No.
SCALE 1 : 50	CHECKED BY RRW	<b>A401</b>
PROJECT No.	1901	



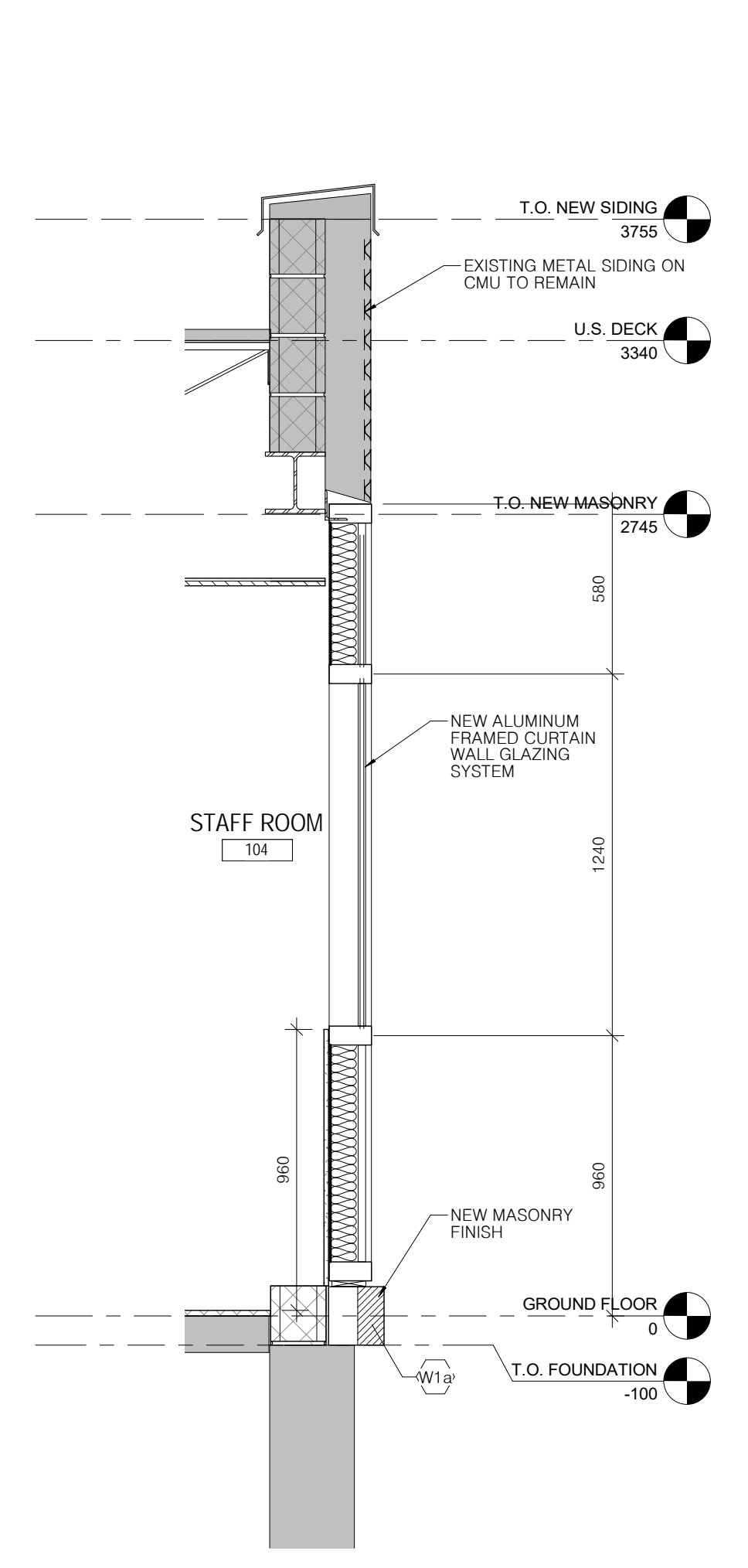
KEY PLAN

NOTES

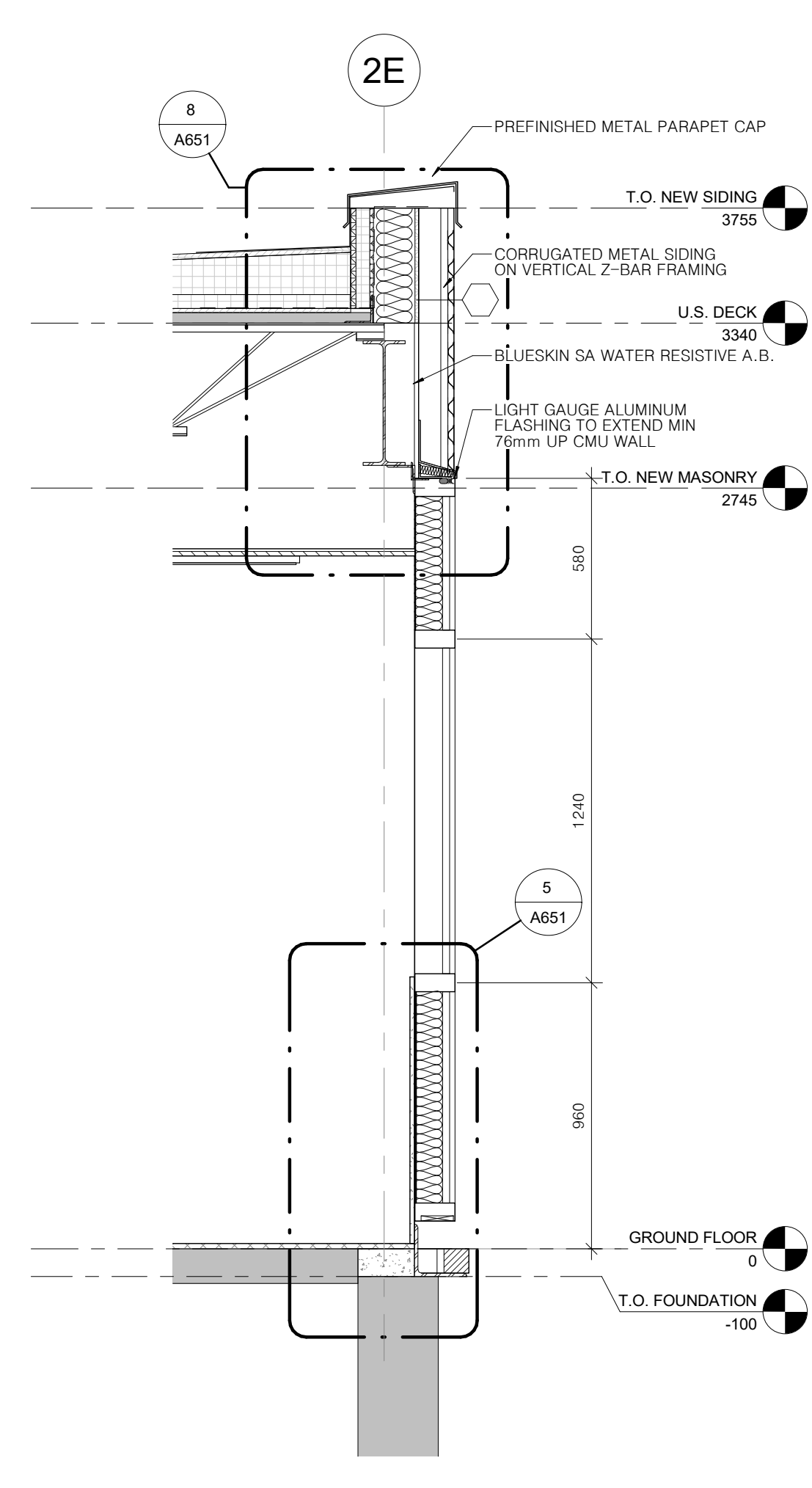
LEGEND



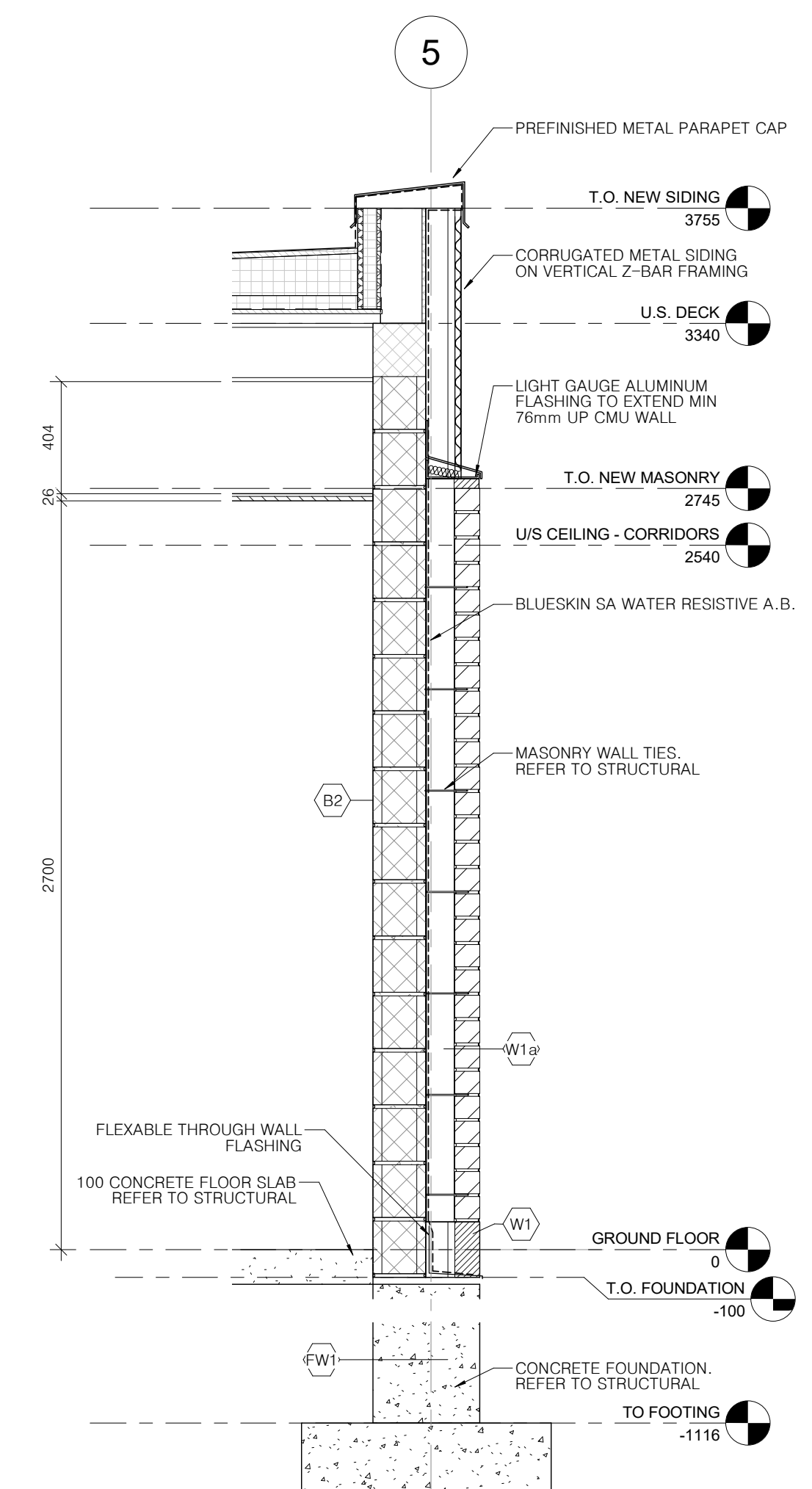
5 WALL SECTION - ABOVE EAST ADDITION  
SCALE 1 : 20



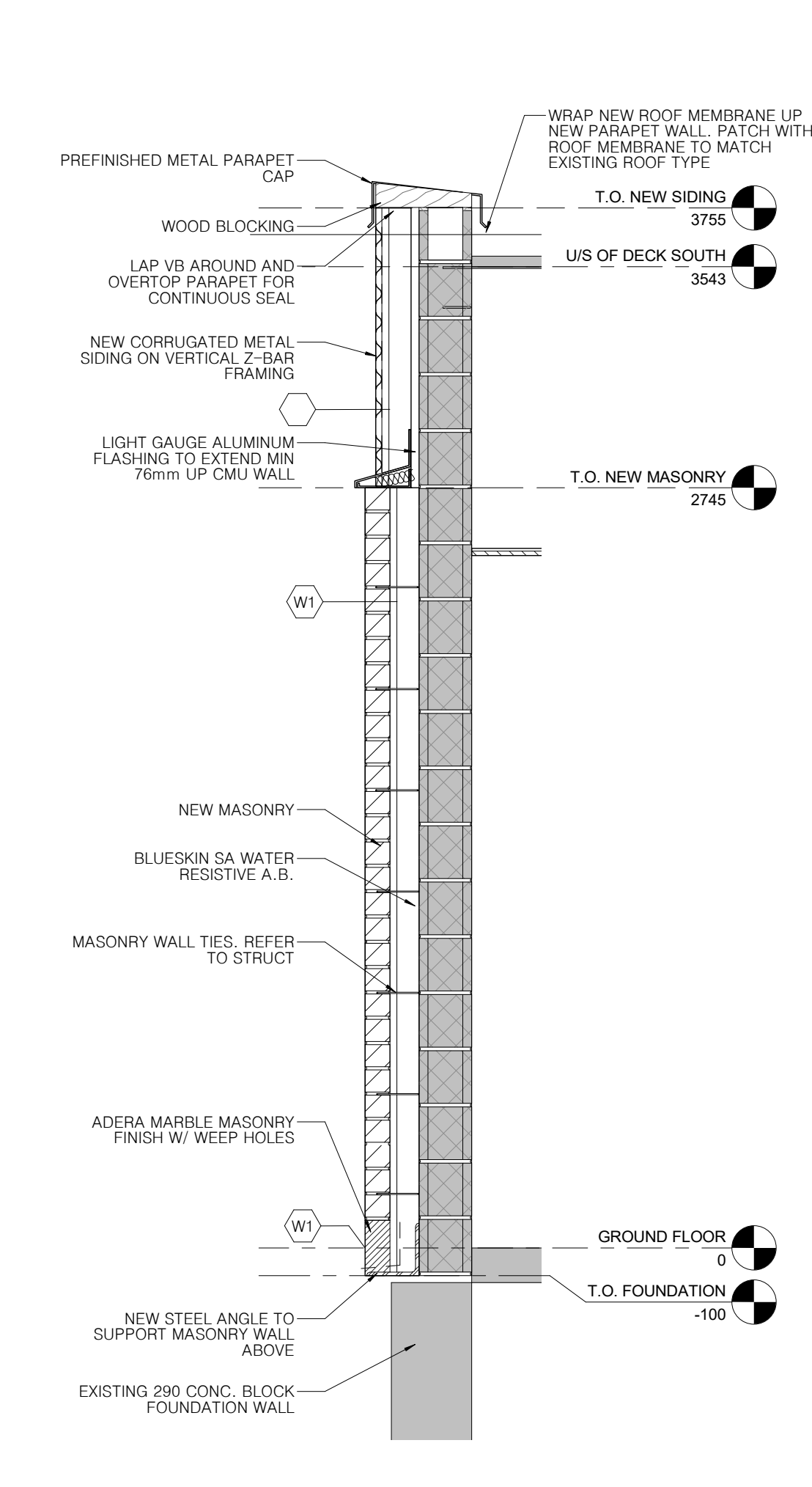
4 SECTION @ CURTAIN WALL - EX. WALL ABOVE  
SCALE 1 : 20



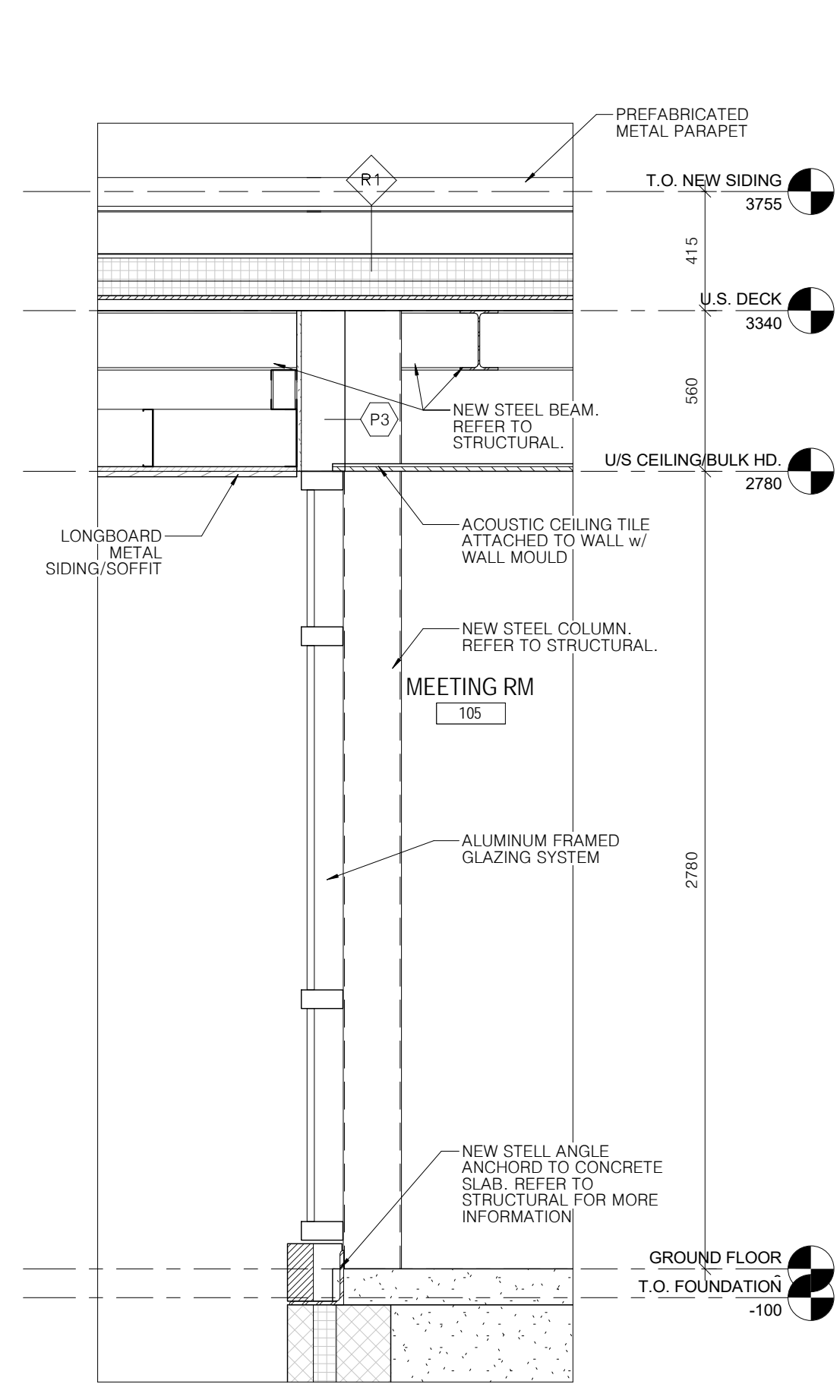
3 SECTION @ CURTAIN WALL  
SCALE 1 : 20



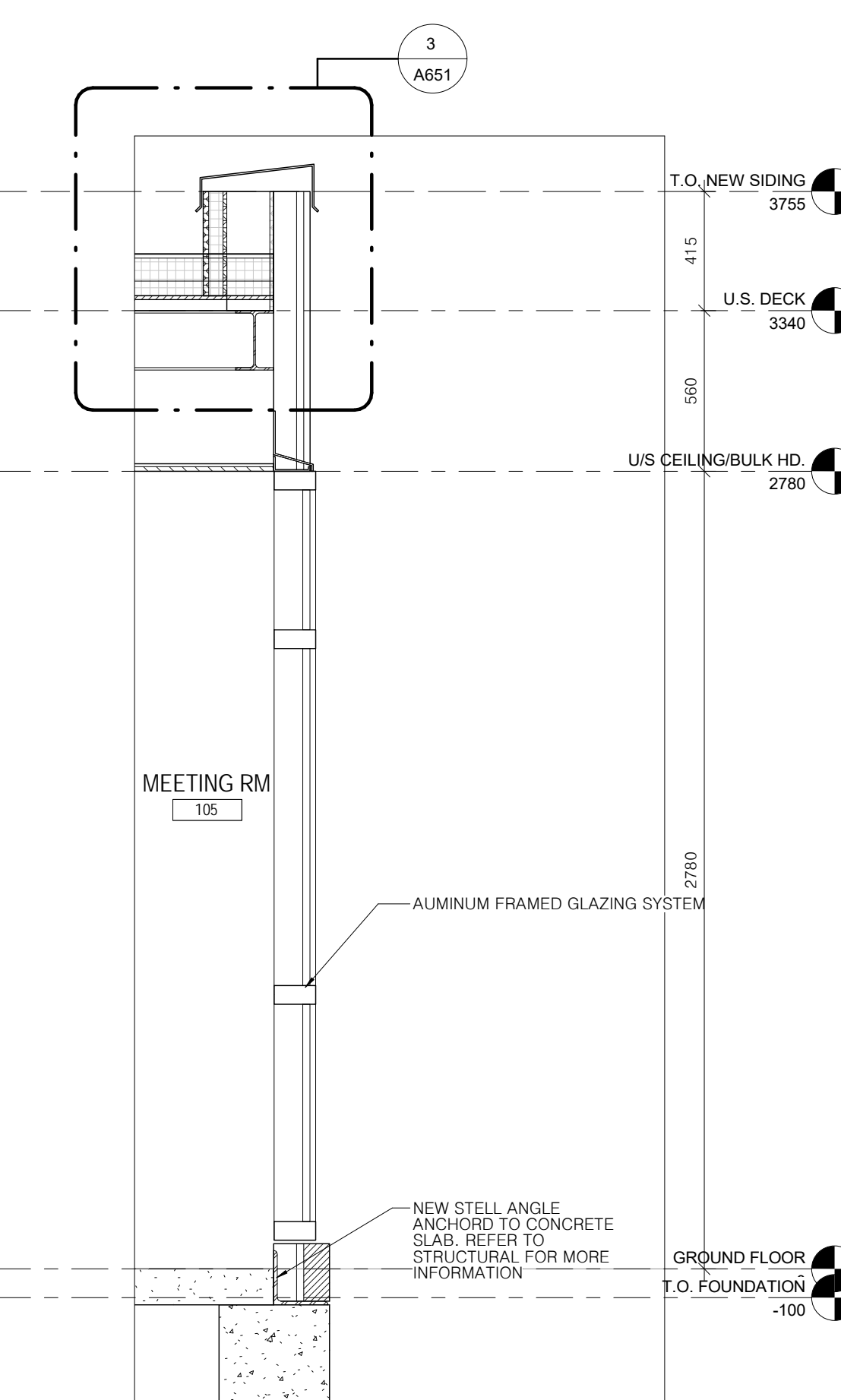
2 SECTION @ EAST ADDITION  
SCALE 1 : 20



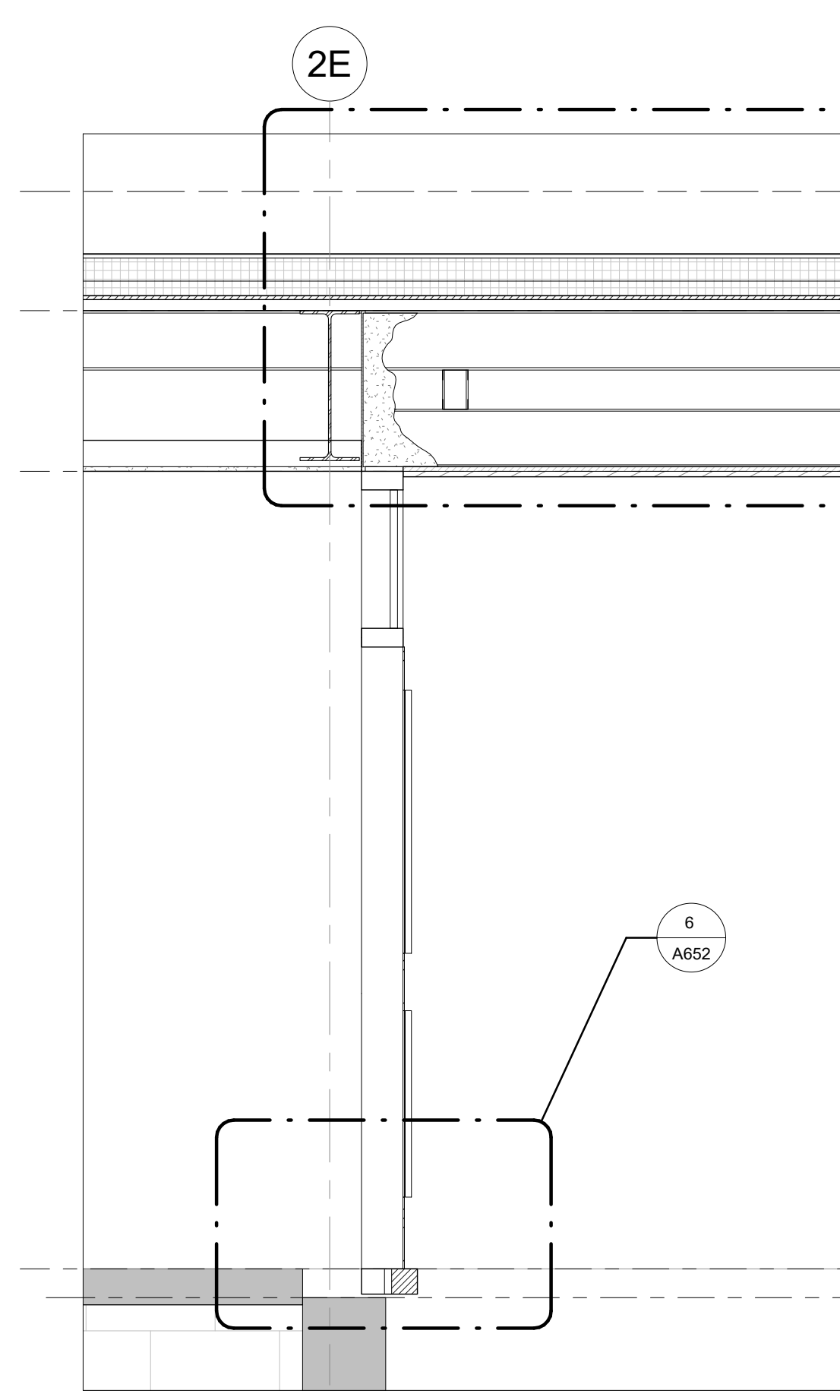
1 TYP. EXTERIOR FINISH REPLACEMENT  
SCALE 1 : 20



8 Section 73  
SCALE 1 : 20



7 Section 72  
SCALE 1 : 20

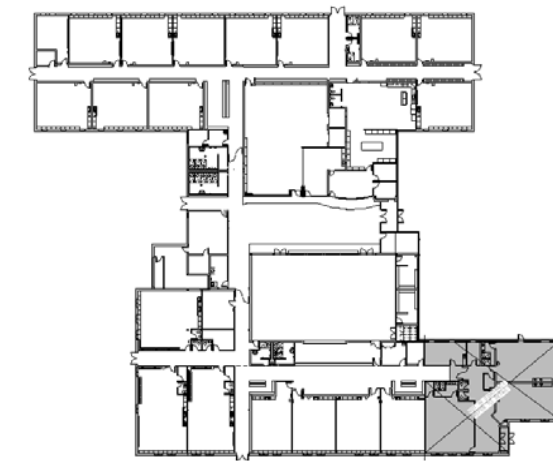


6 WALL SECTION - FRONT VESTIBULE  
SCALE 1 : 20

No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	
	MM/DD/YYYY		

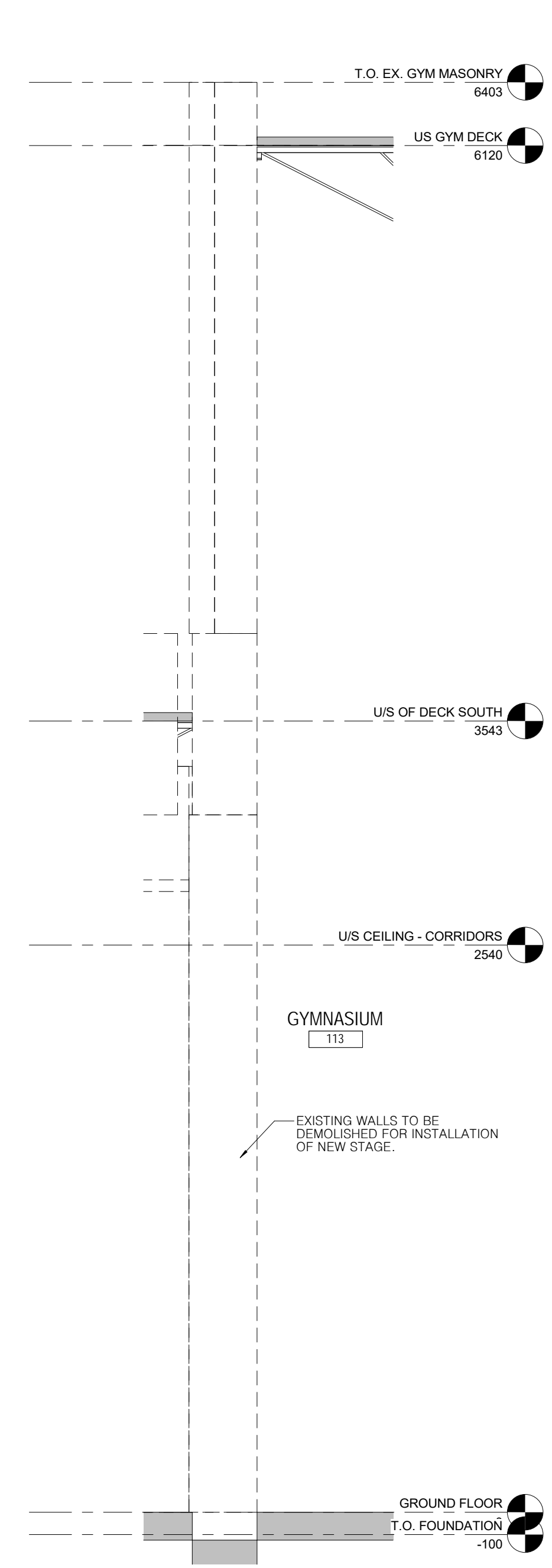
RANDY R. WILSON LICENCE 4000		
PROJECT TITLE		
OUR LADY OF FATIMA		
DRAWING TITLE		
WALL SECTIONS		
DATE PLOTTED	DRAWN BY	DRAWING No.
19/02/2020 11:53:15 AM	TJV	
SCALE	CHECKED BY	
1 : 20	RRW	A500
PROJECT No.	1901	



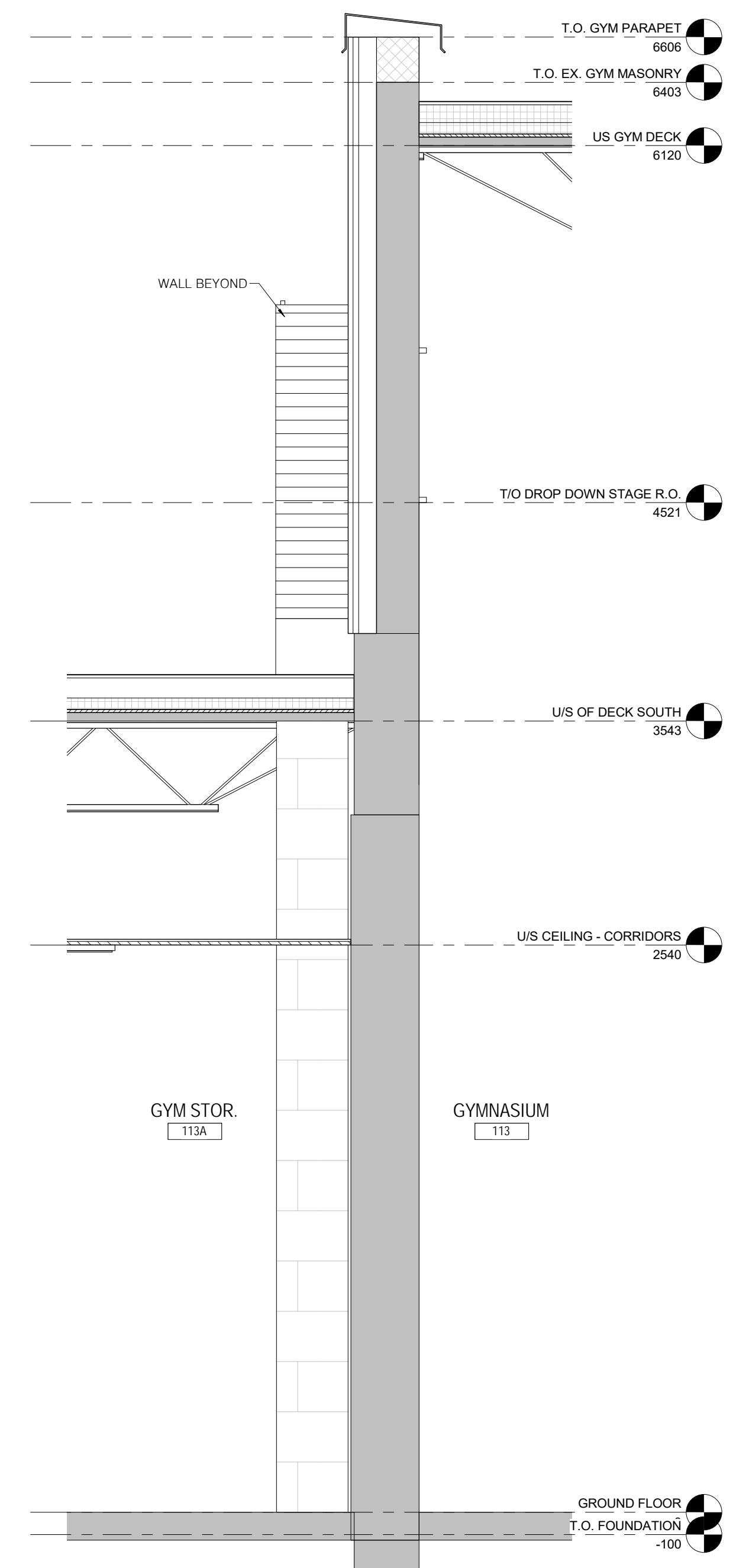
KEY PLAN

NOTES

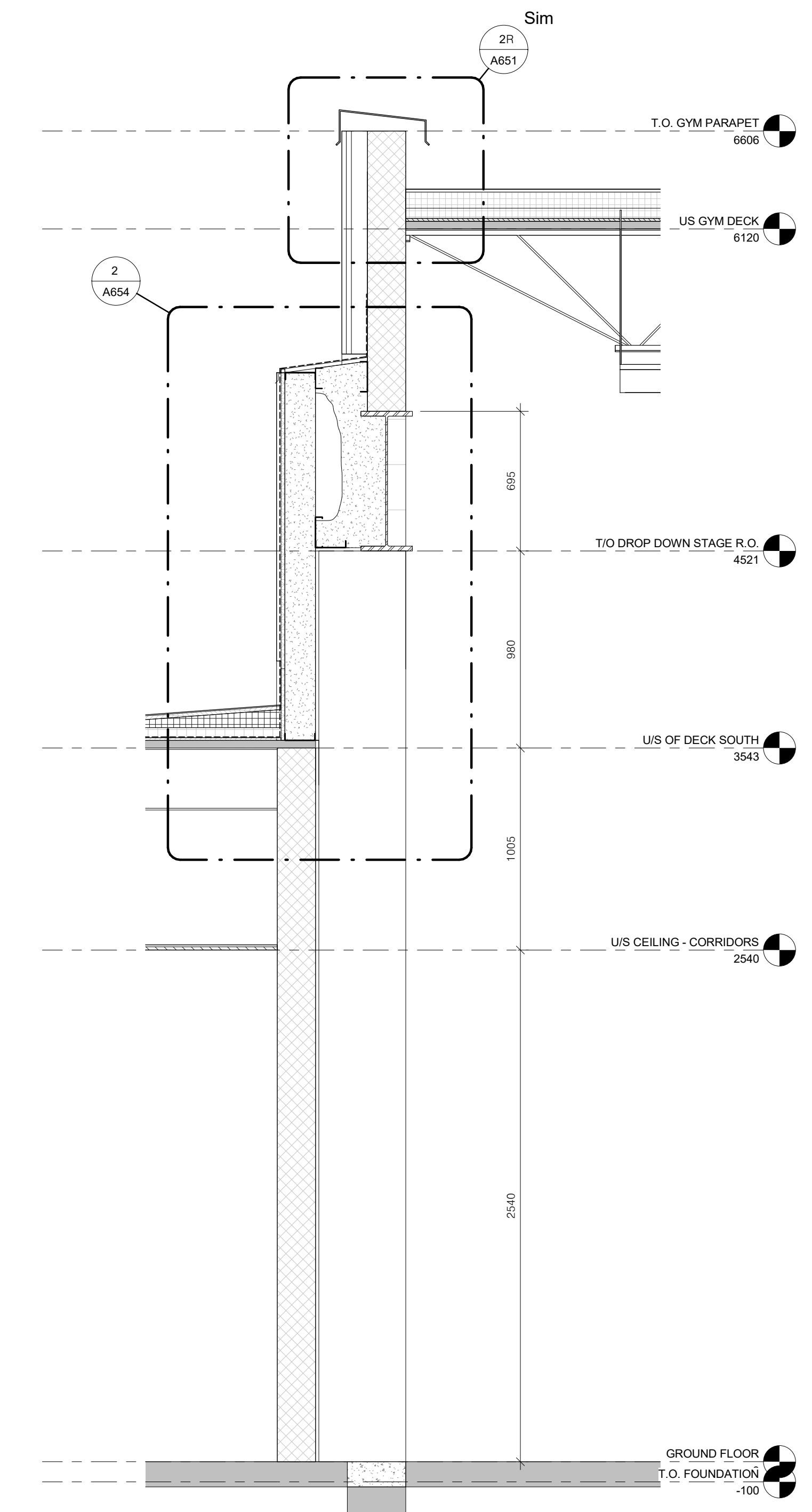
LEGEND



3 SECTION @ DEMOLISHED WALLS GYMNASIUM  
SCALE 1 : 20

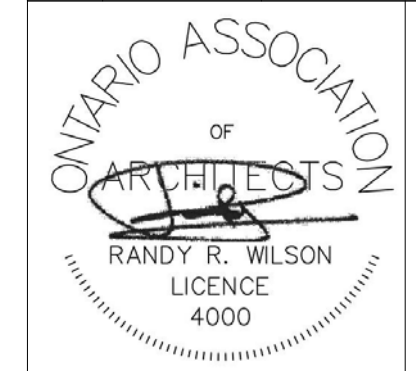


2 SECTION @ EXISTING WALLS TO REMAIN GYMNASIUM  
SCALE 1 : 20



1 SECTION @ RECESSED RETRACTABLE STAGE  
SCALE 1 : 20

No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	

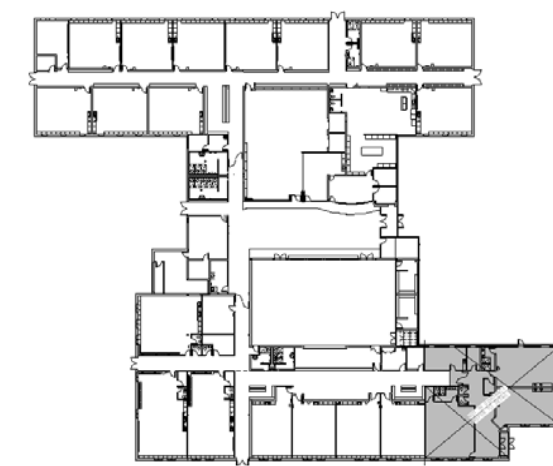


PROJECT TITLE  
**OUR LADY OF FATIMA**

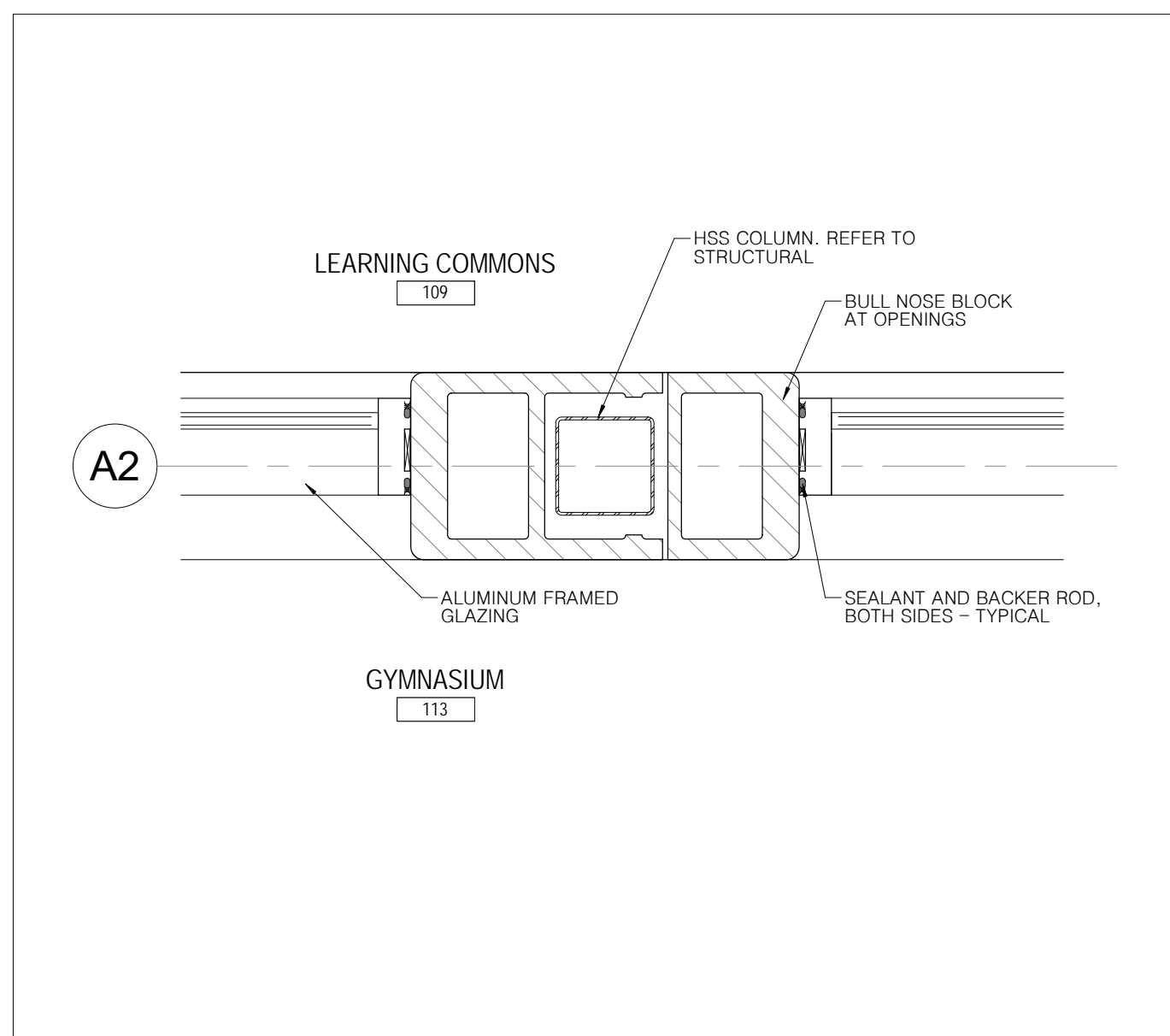
DRAWING TITLE  
**WALL SECTIONS**

DATE PLOTTED 19/02/2020 11:59:06 AM	DRAWN BY TJV	DRAWING No.
SCALE 1 : 20	CHECKED BY RRW	<b>A501</b>
PROJECT No.	1901	

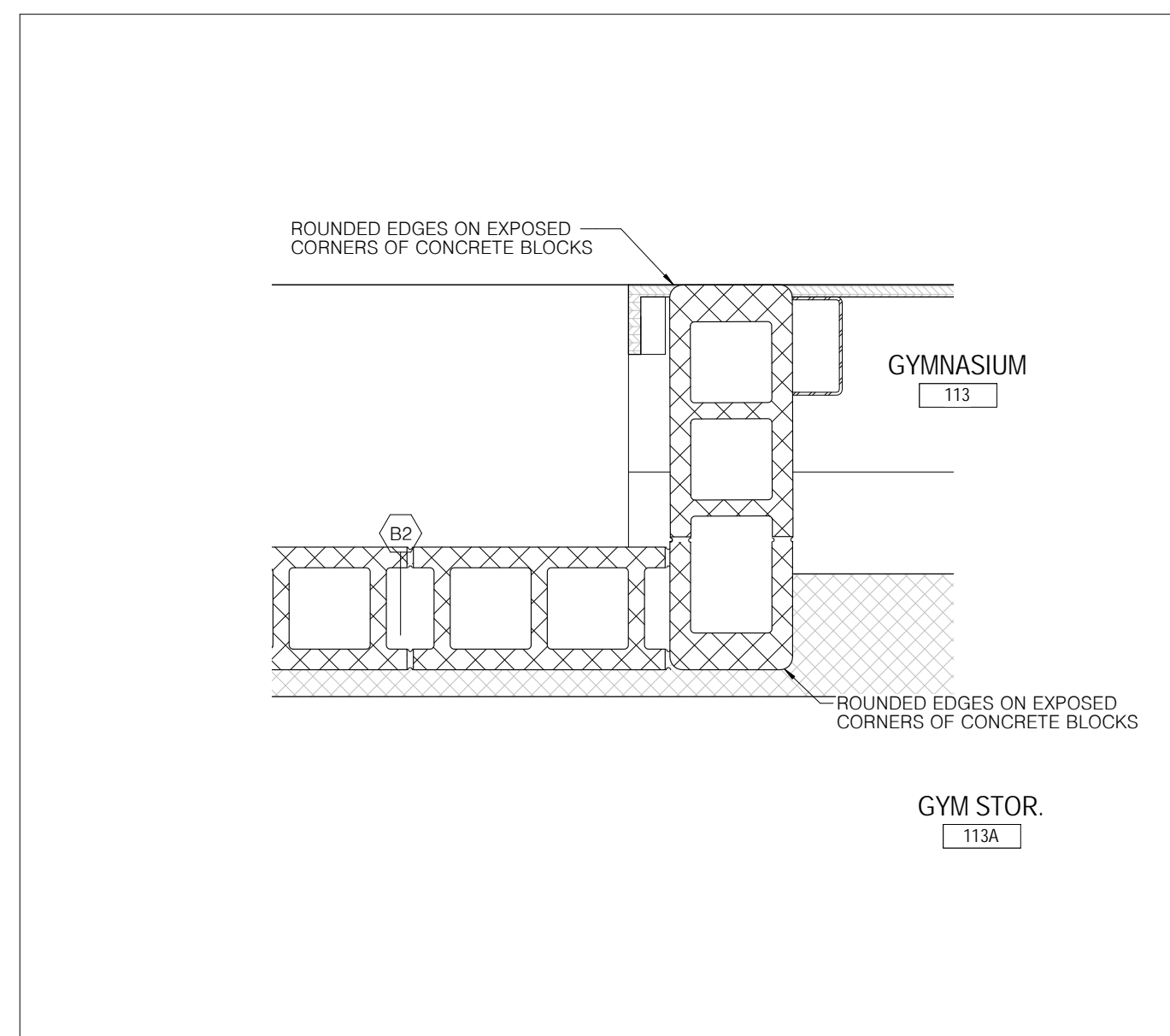




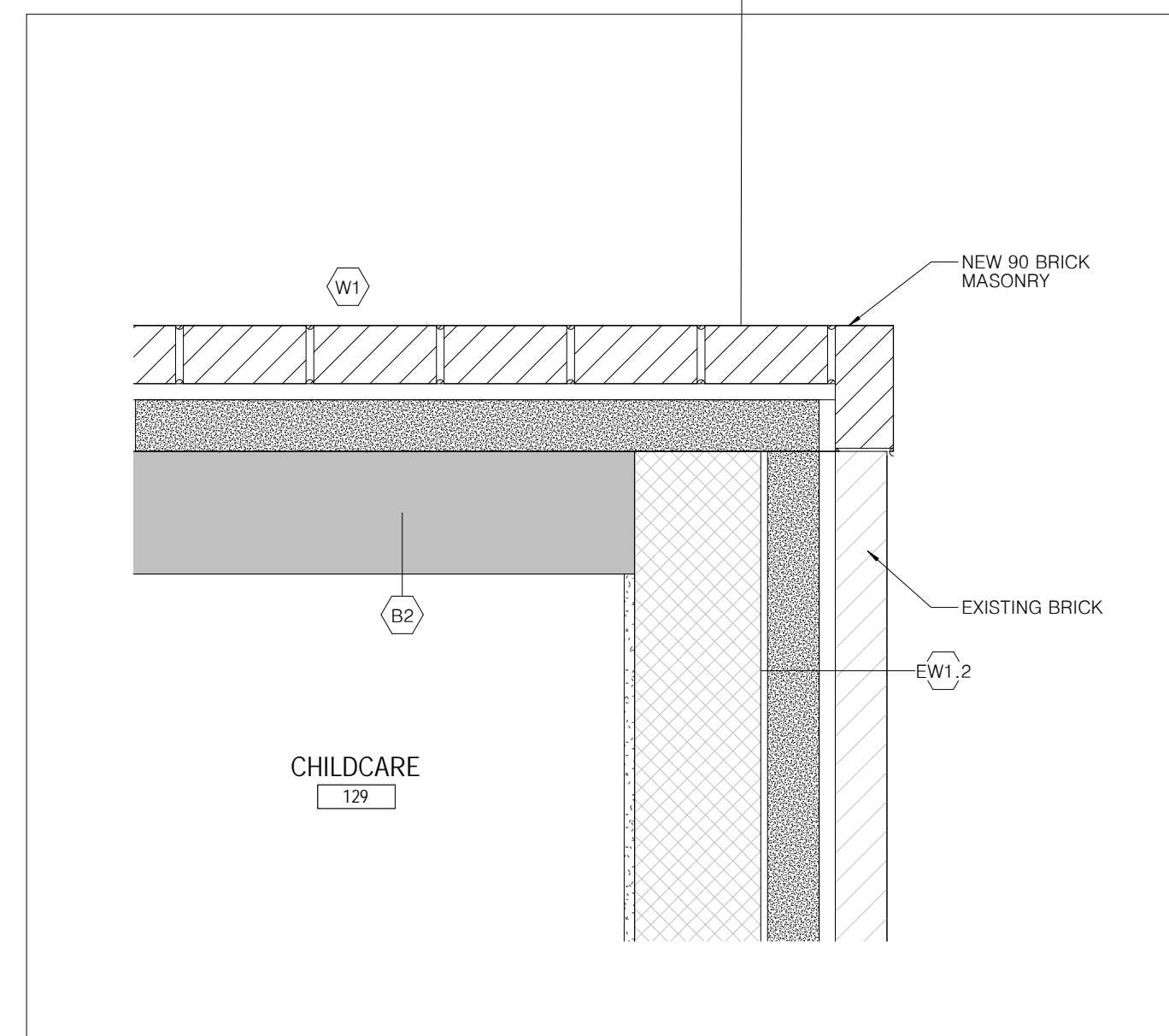
KEY PLAN



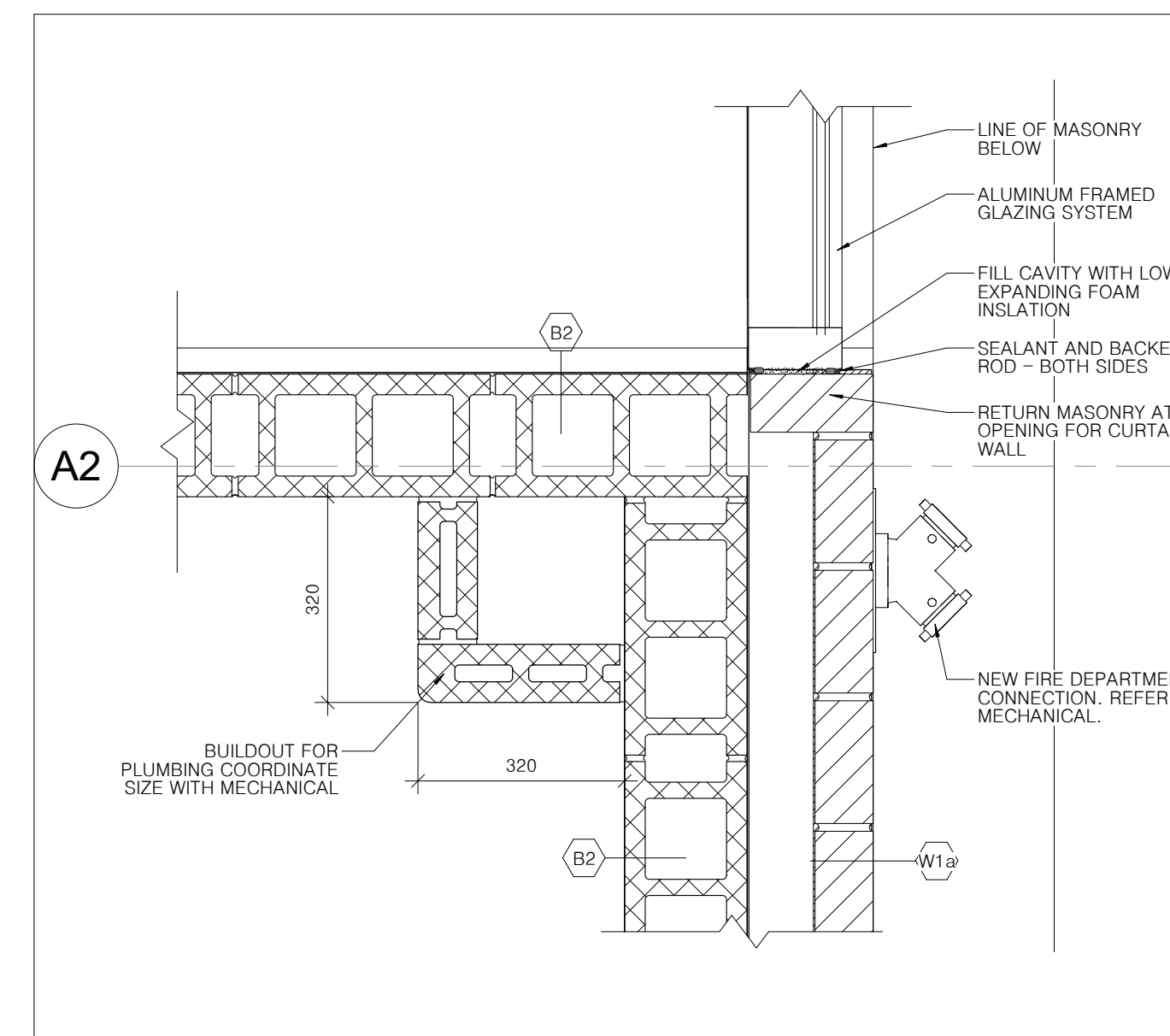
4 PLAN DETAIL  
SCALE 1:10



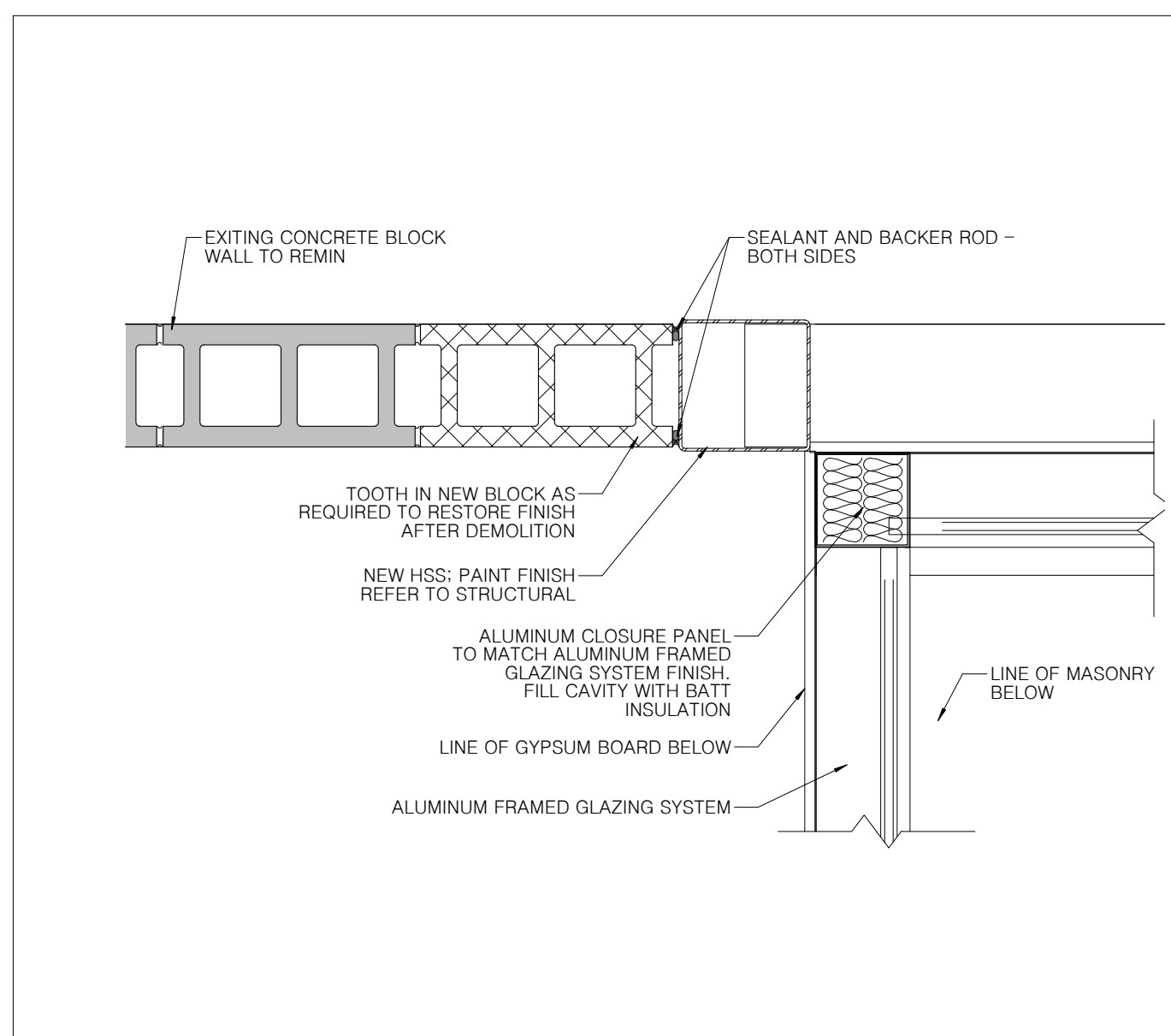
3 PLAN DETAIL  
SCALE 1:10



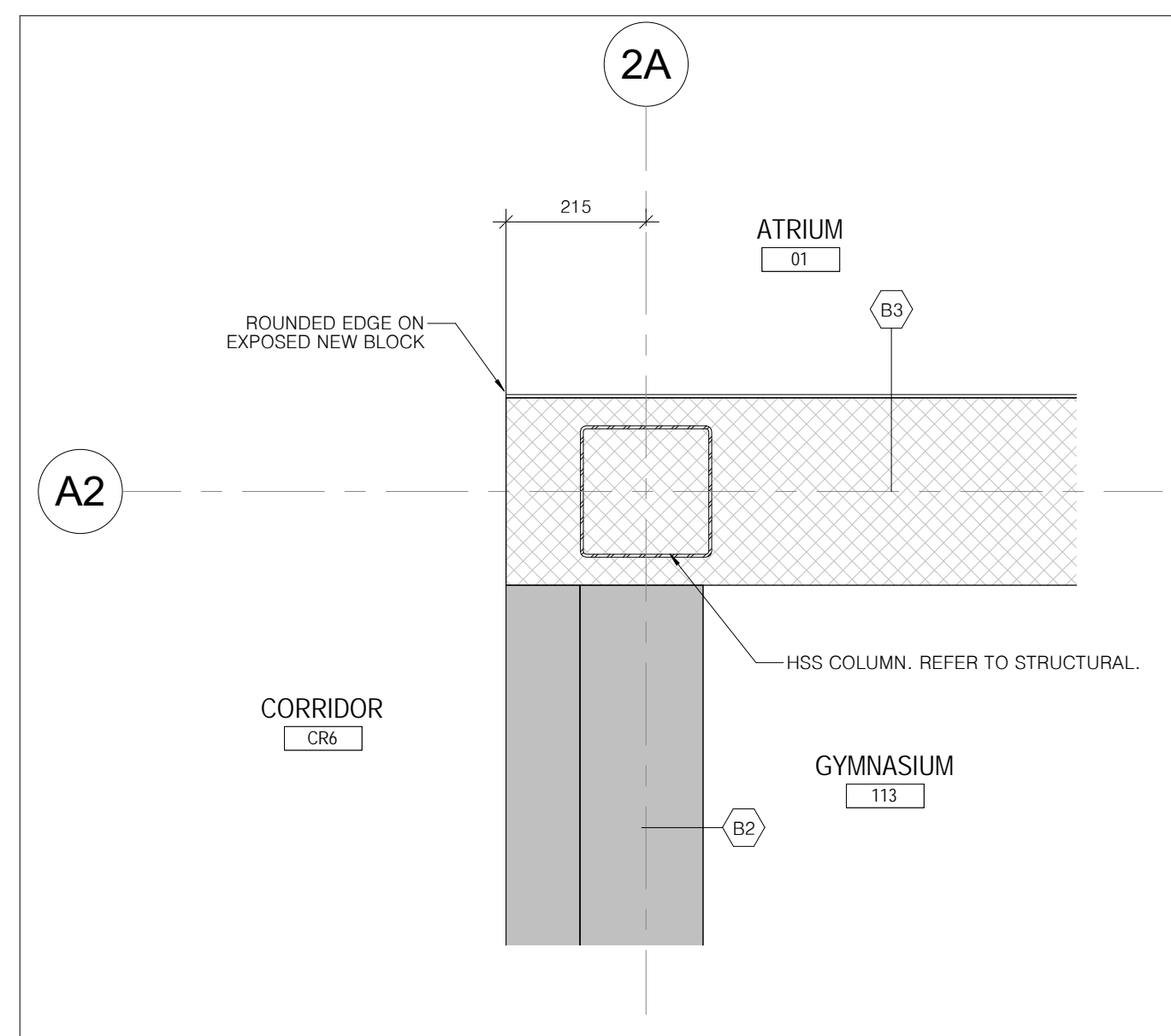
2 PLAN DETAIL  
SCALE 1:10



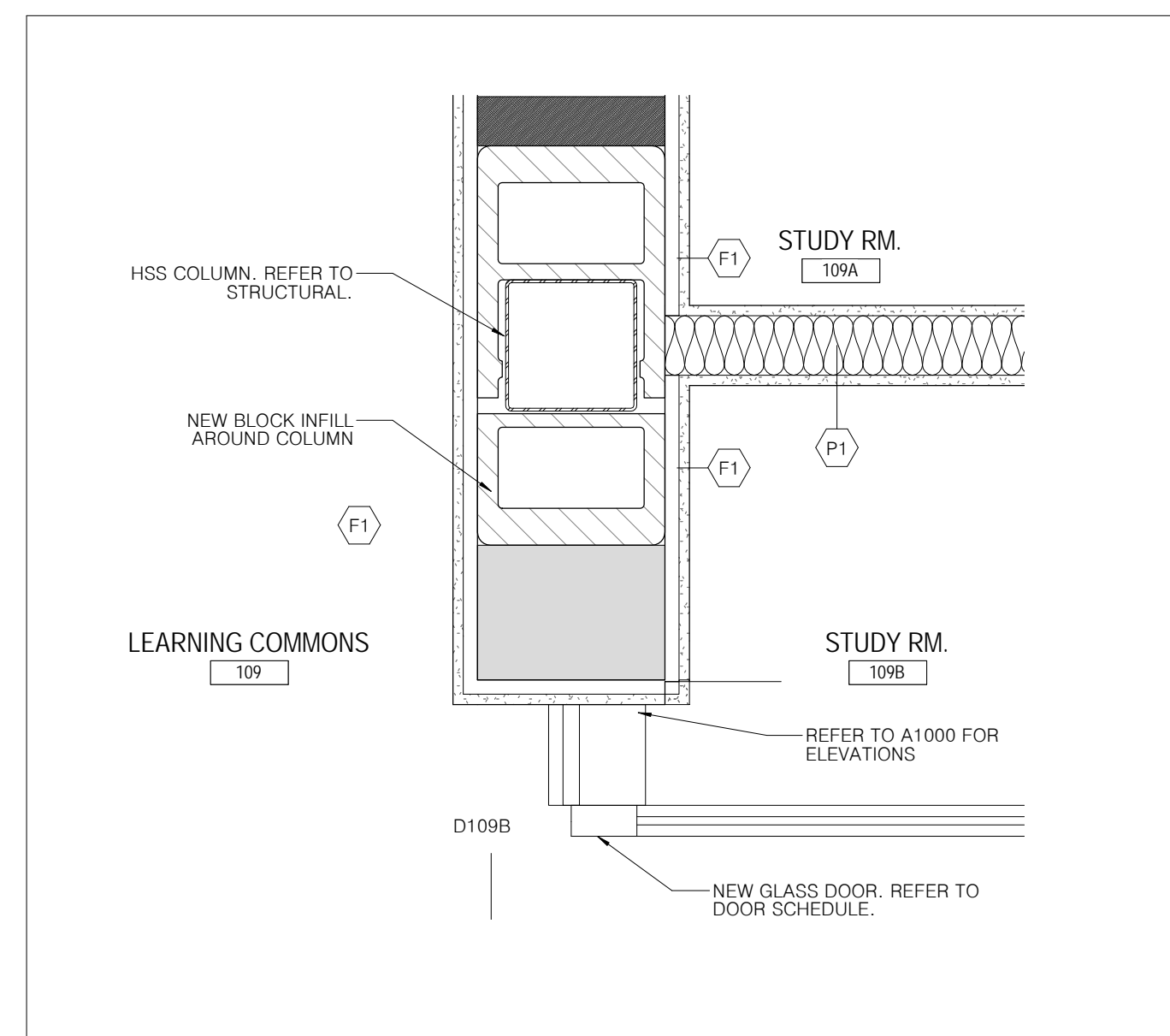
1 PLAN DETAIL  
SCALE 1:10



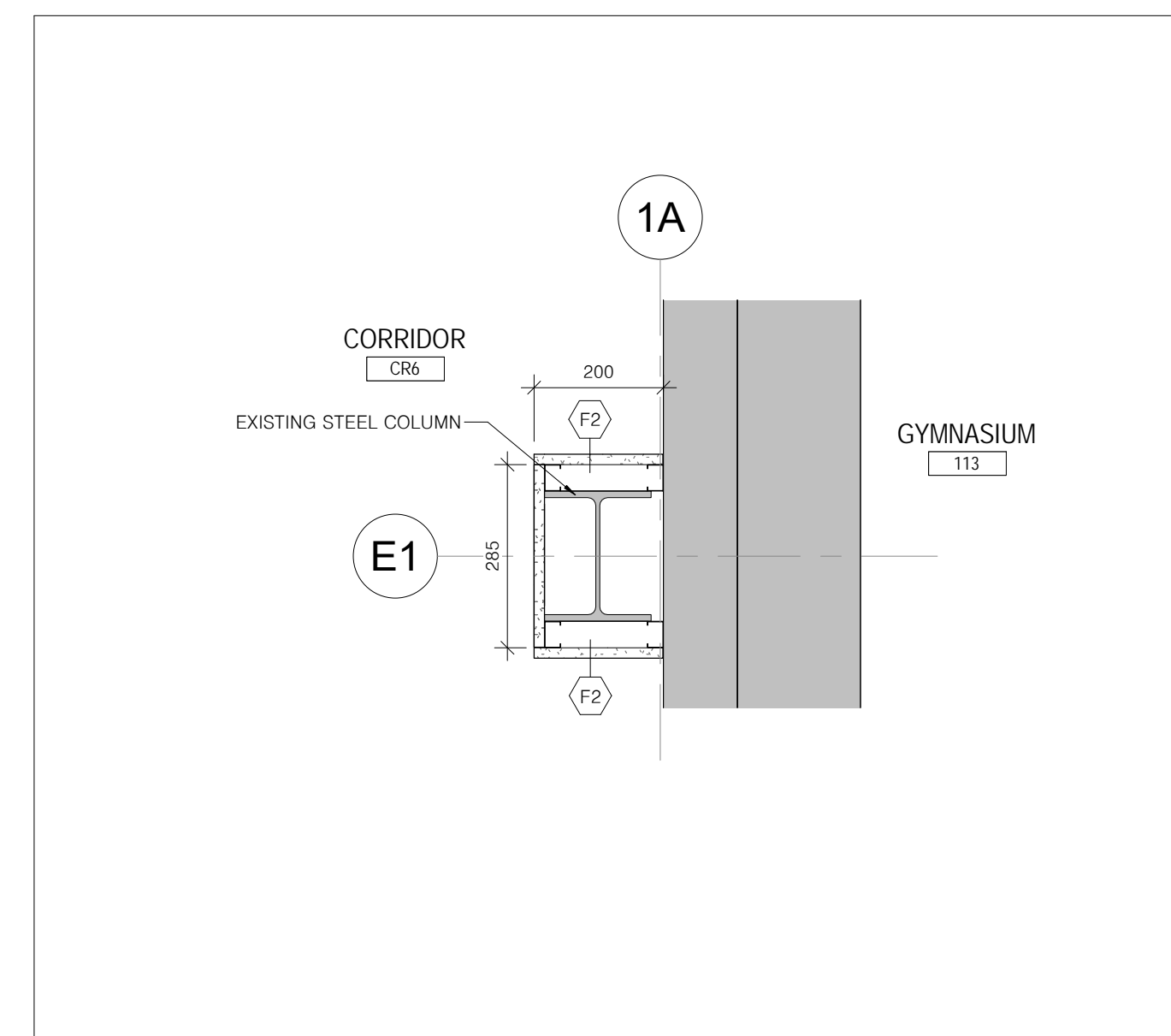
8 PLAN DETAIL  
SCALE 1:10



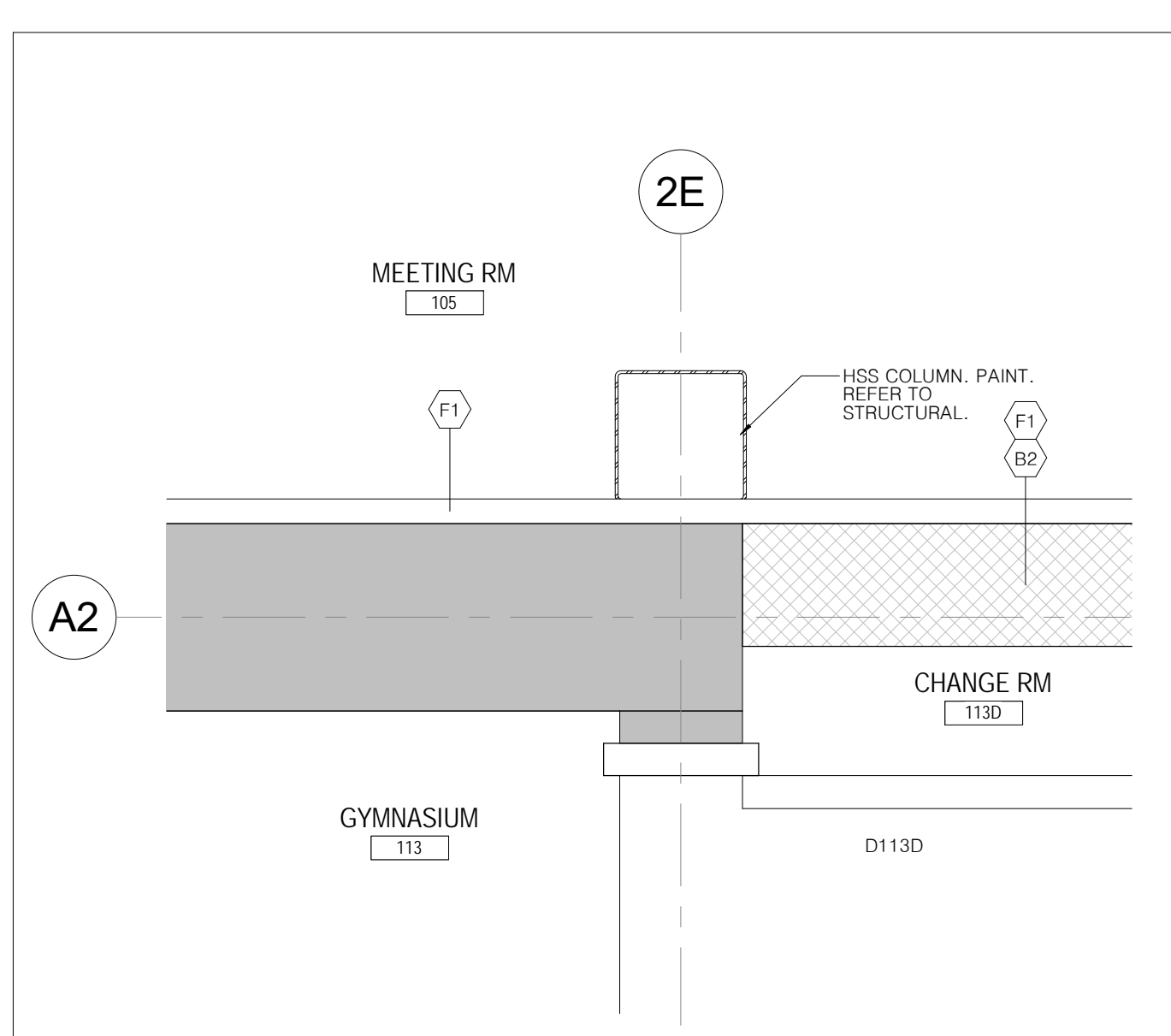
7 PLAN DETAIL  
SCALE 1:10



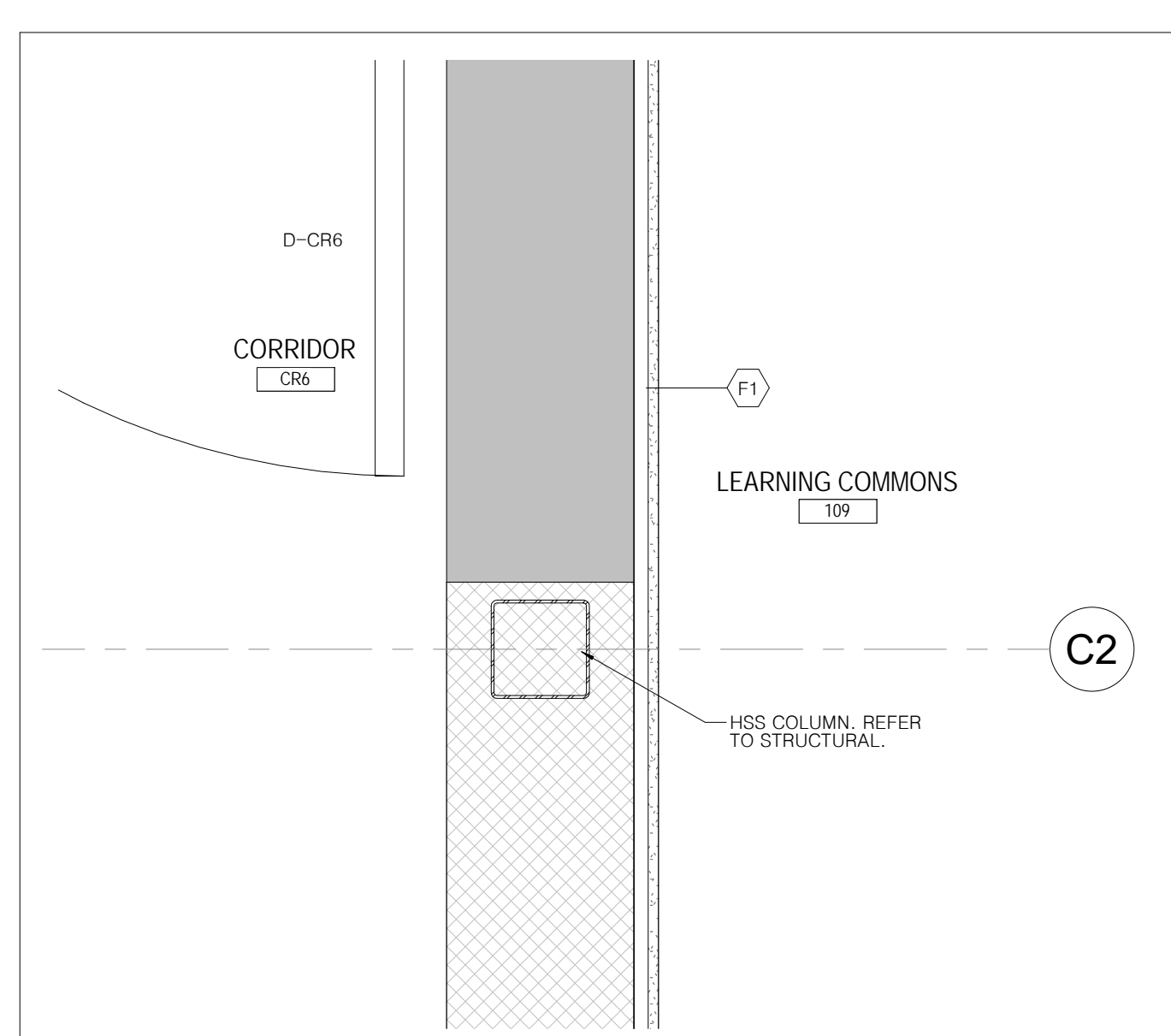
6 PLAN DETAIL  
SCALE 1:10



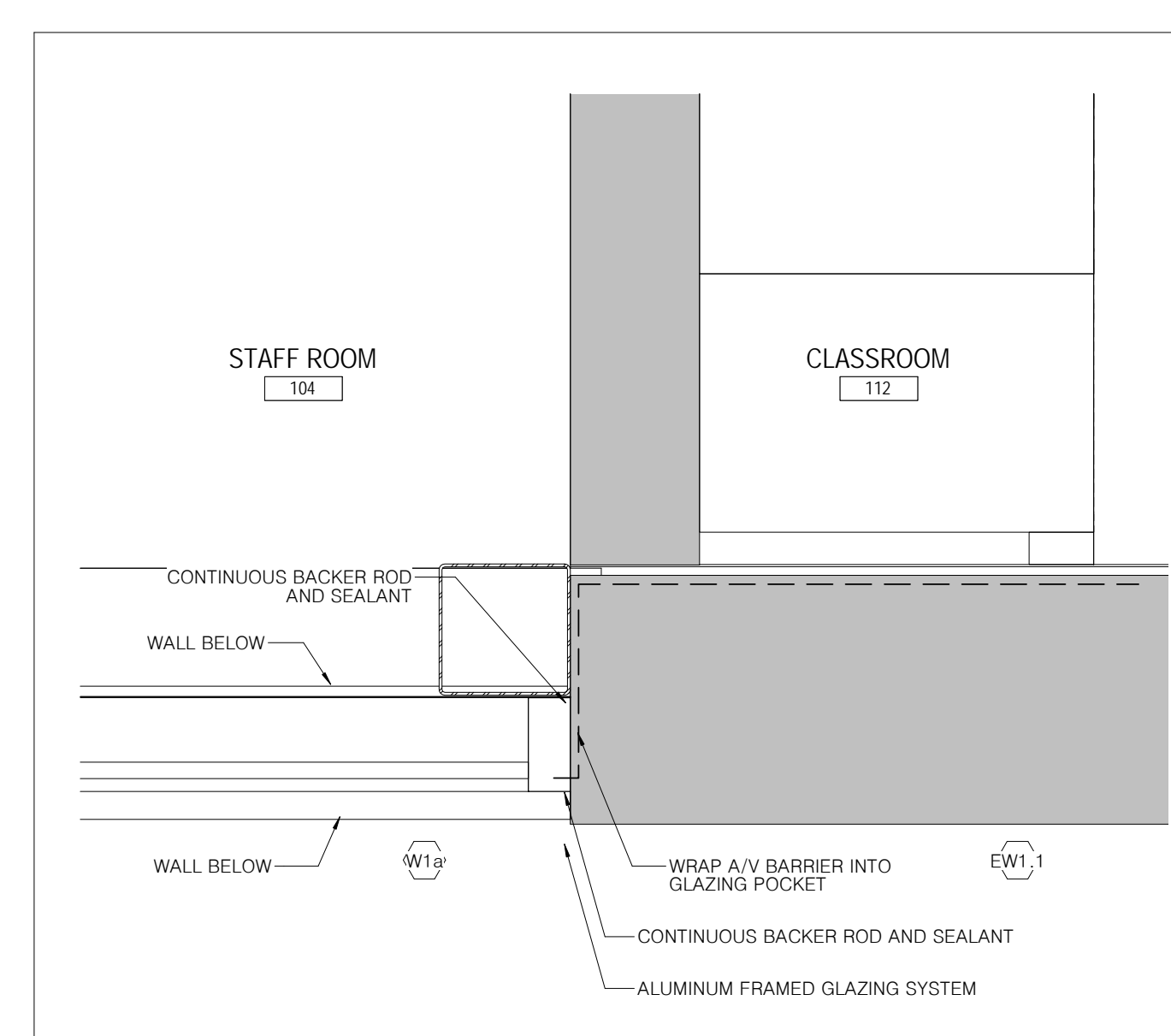
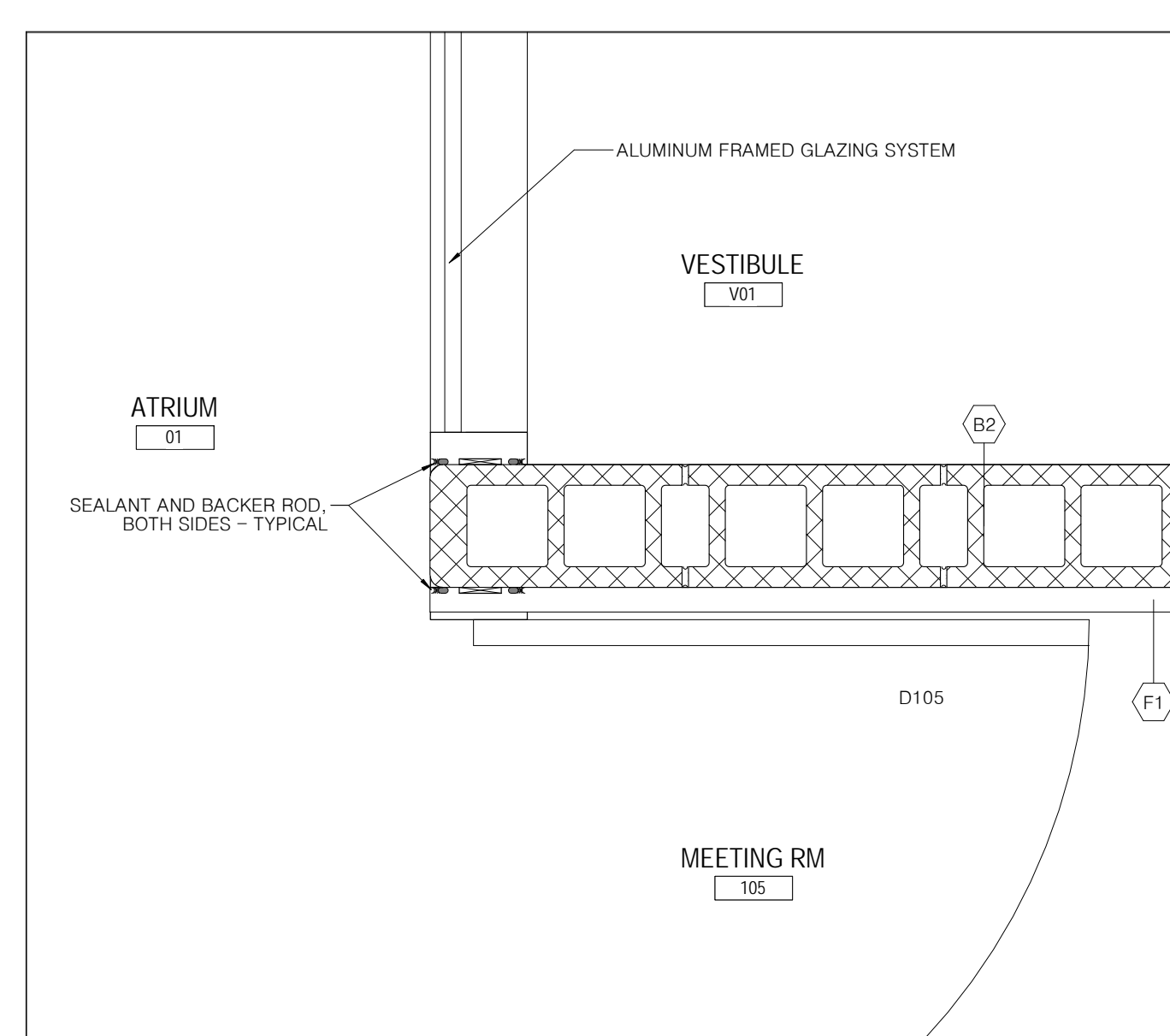
5 PLAN DETAIL  
SCALE 1:10



11 PLAN DETAIL  
SCALE 1:10



10 PLAN DETAIL  
SCALE 1:10

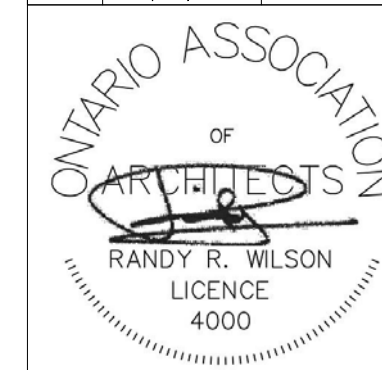


9 PLAN DETAIL  
SCALE 1:10

NOTES

LEGEND

No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



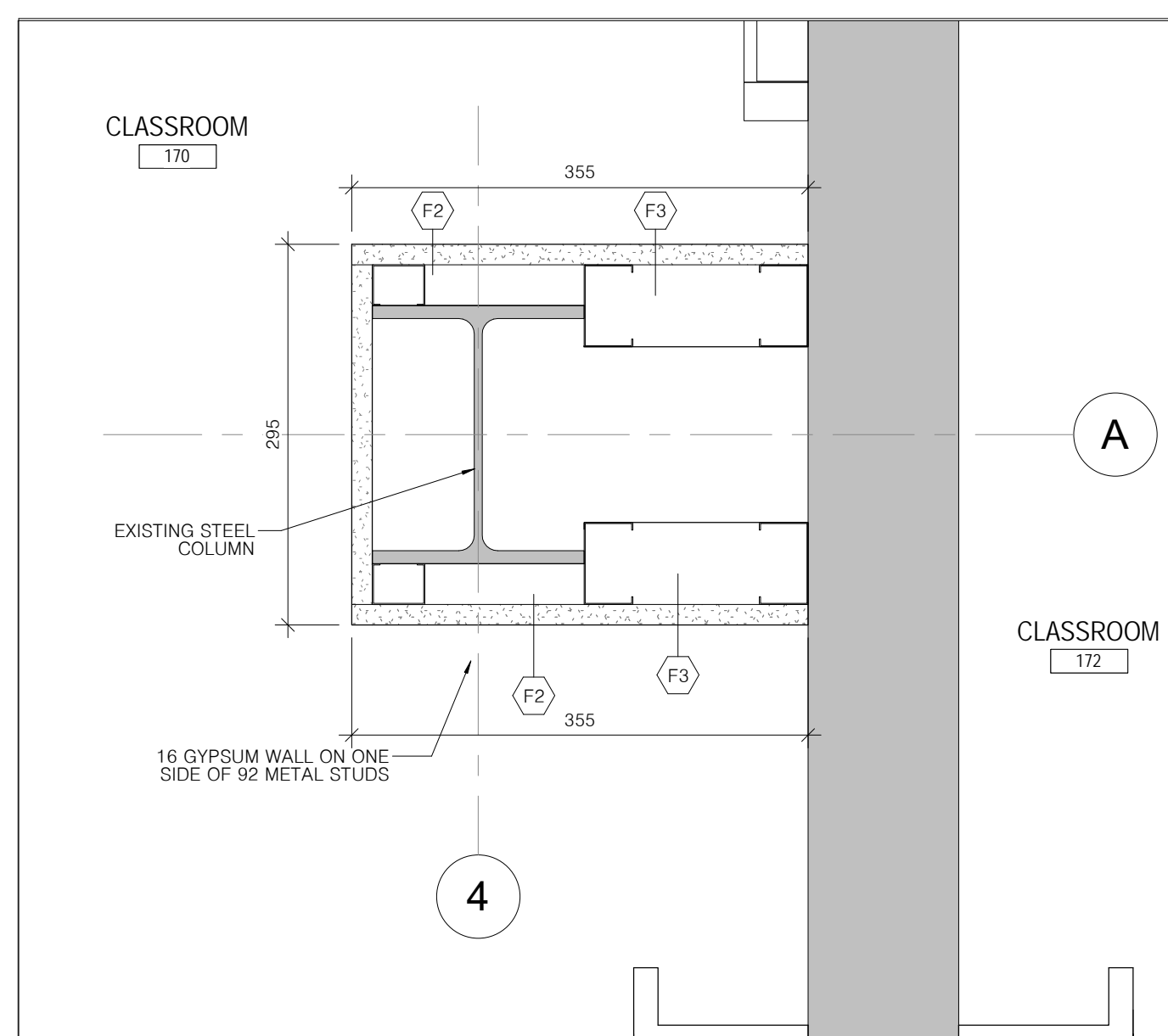
PROJECT TITLE

OUR LADY OF FATIMA

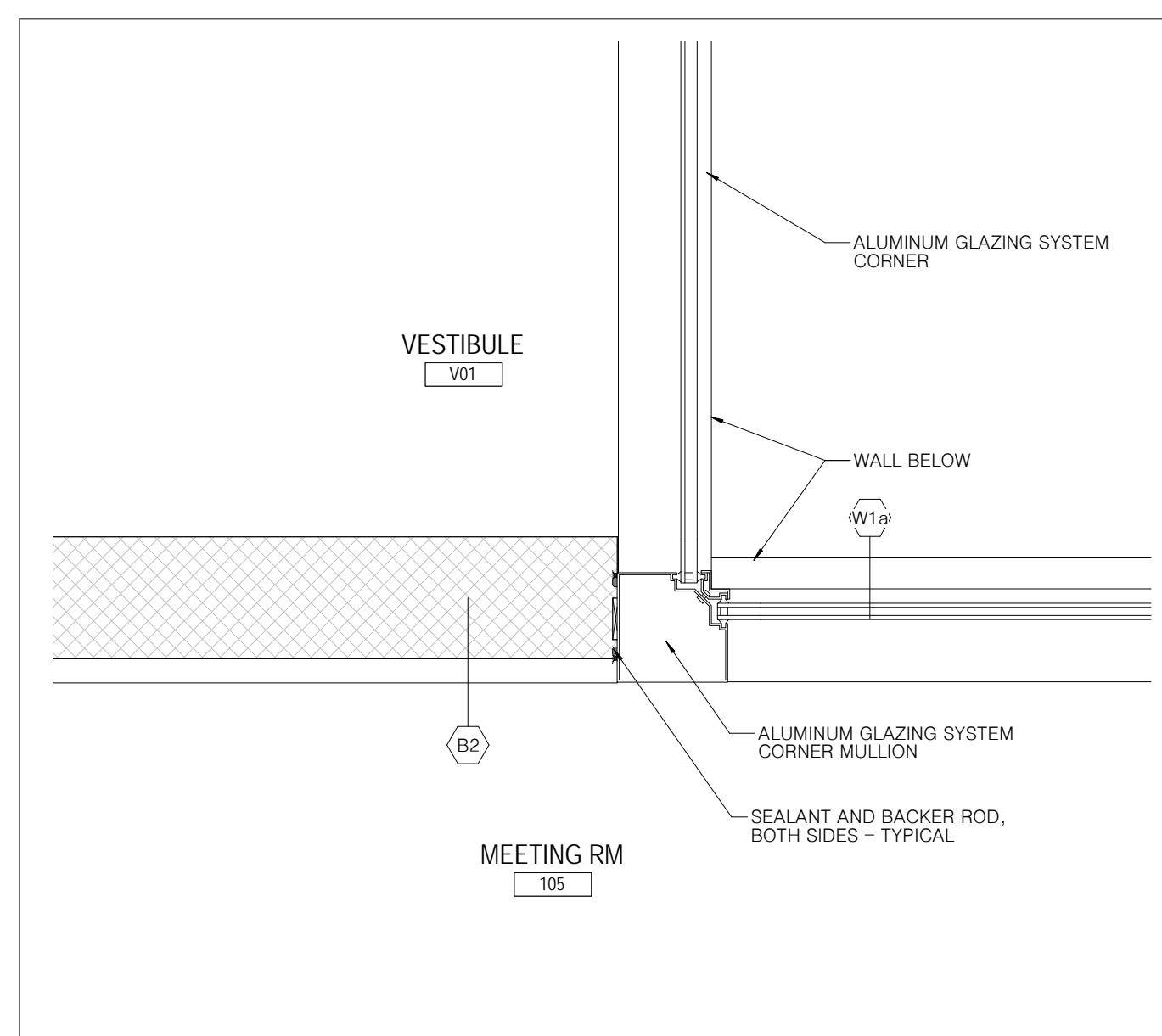
DRAWING TITLE

PLAN DETAILS

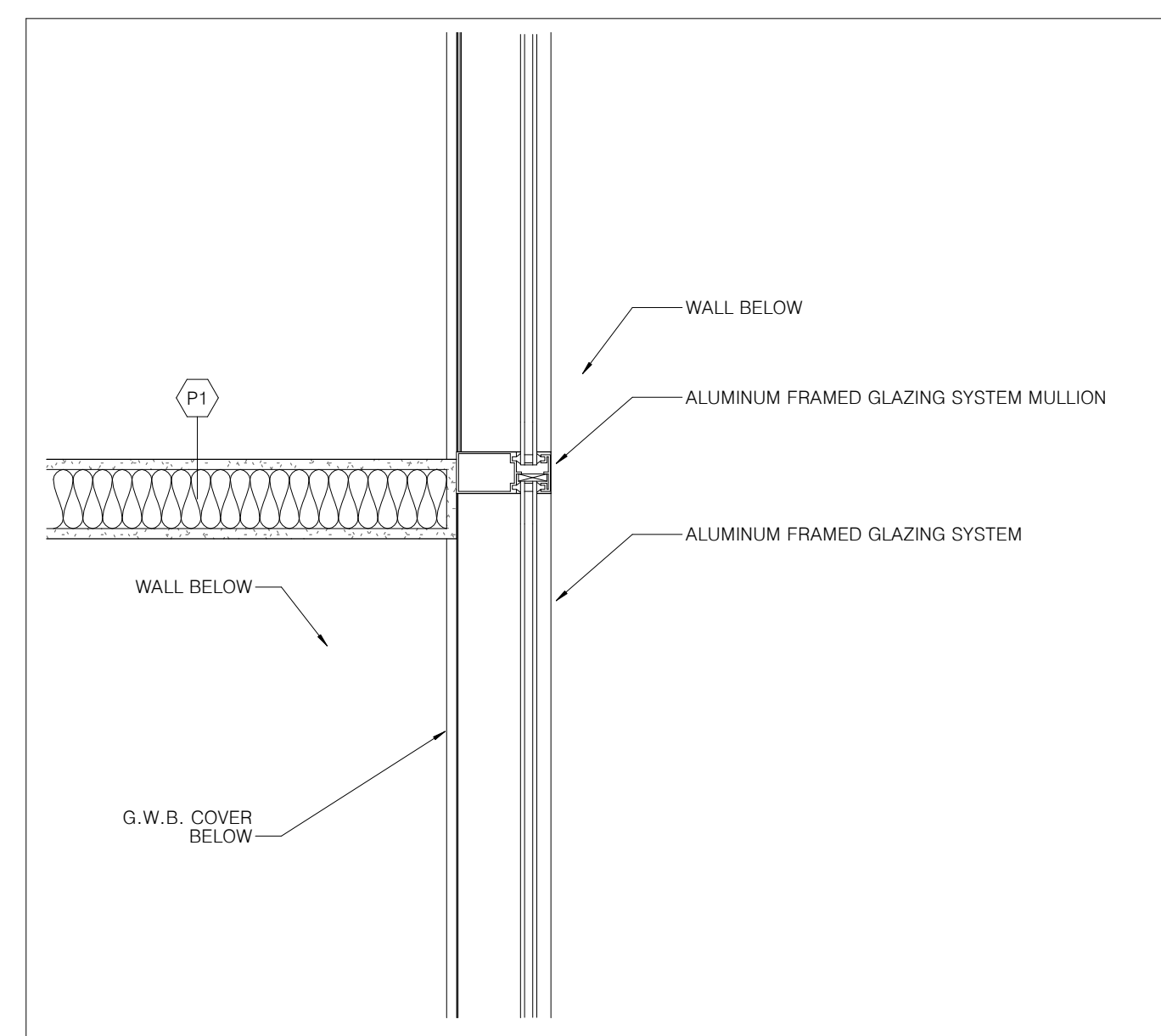
DATE PLOTTED 19/02/2020 11:53:29 AM	DRAWN BY MFP	DRAWING No. A600
SCALE 1:10	CHECKED BY RW	
PROJECT No. 1901		



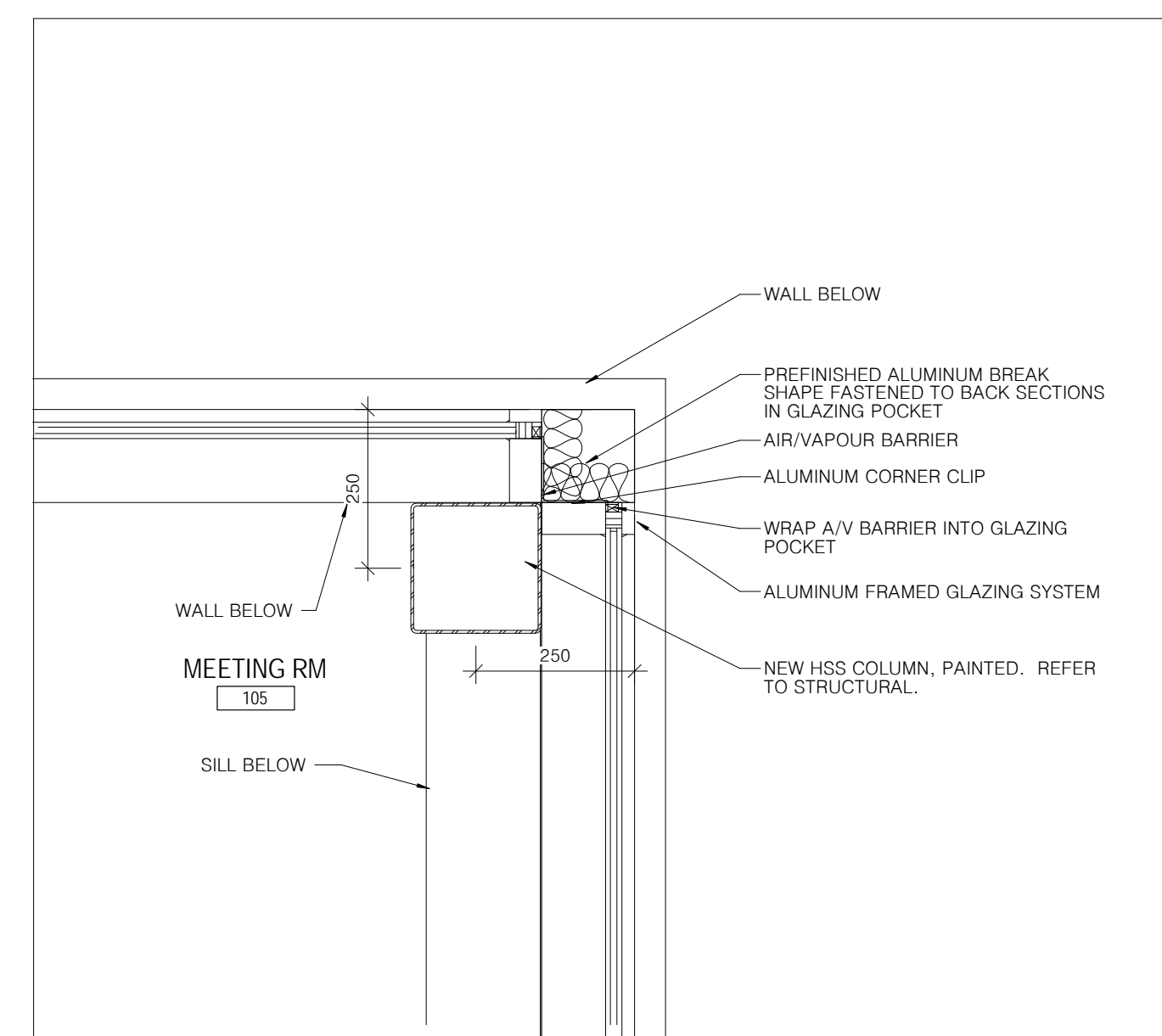
**4** PLAN DETAIL  
SCALE 1:5



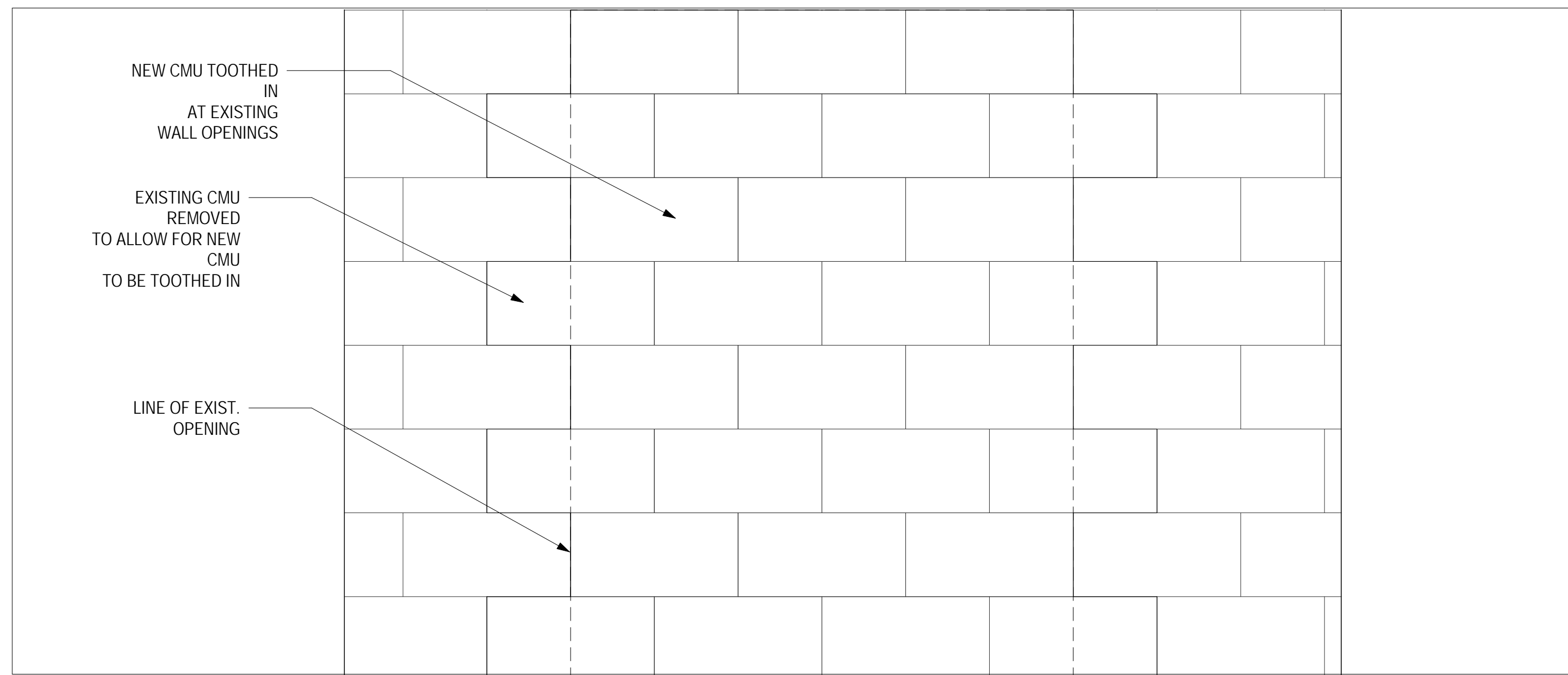
**3** PLAN DETAIL  
SCALE 1:10



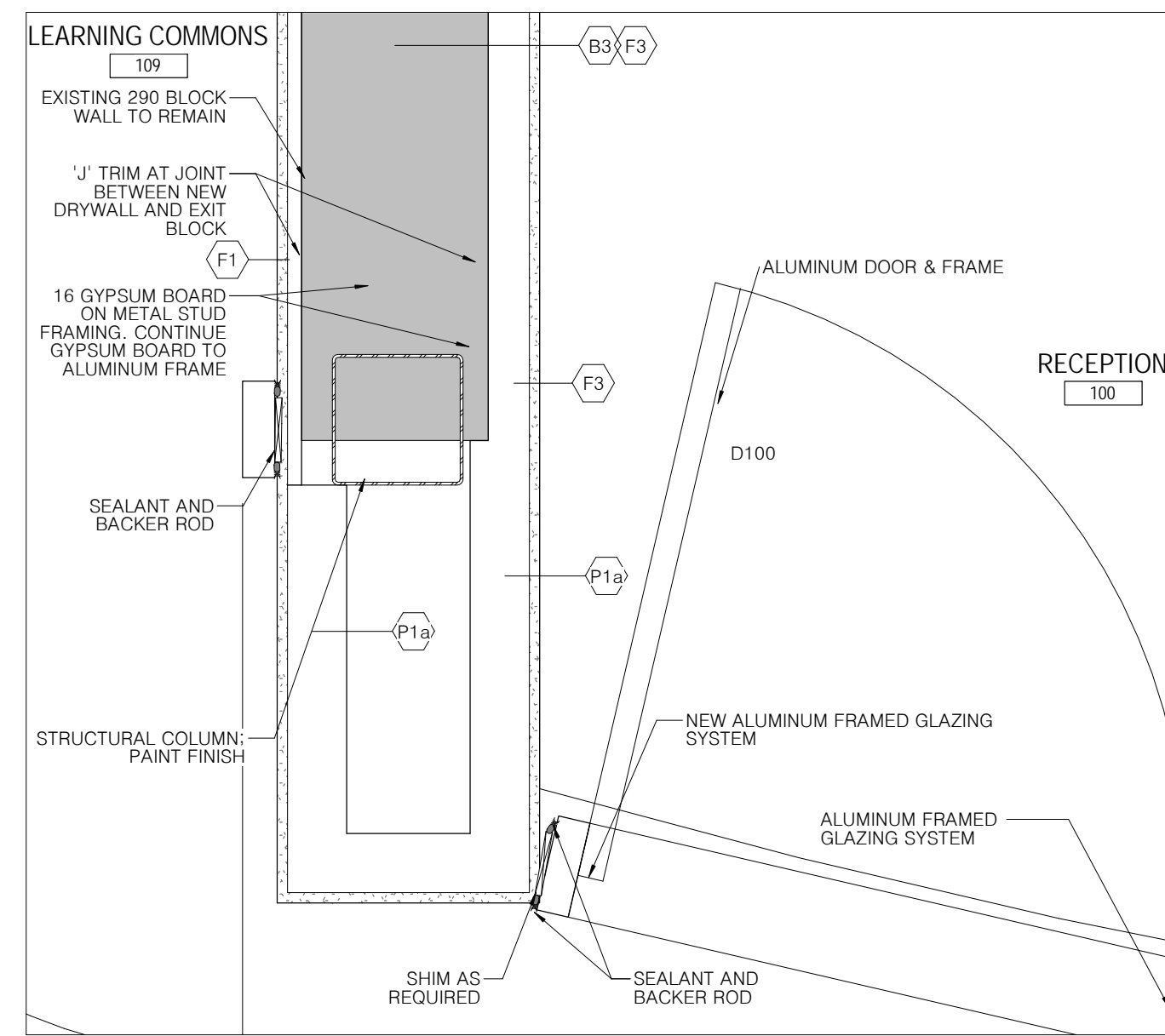
**2** PLAN DETAIL  
SCALE 1:10



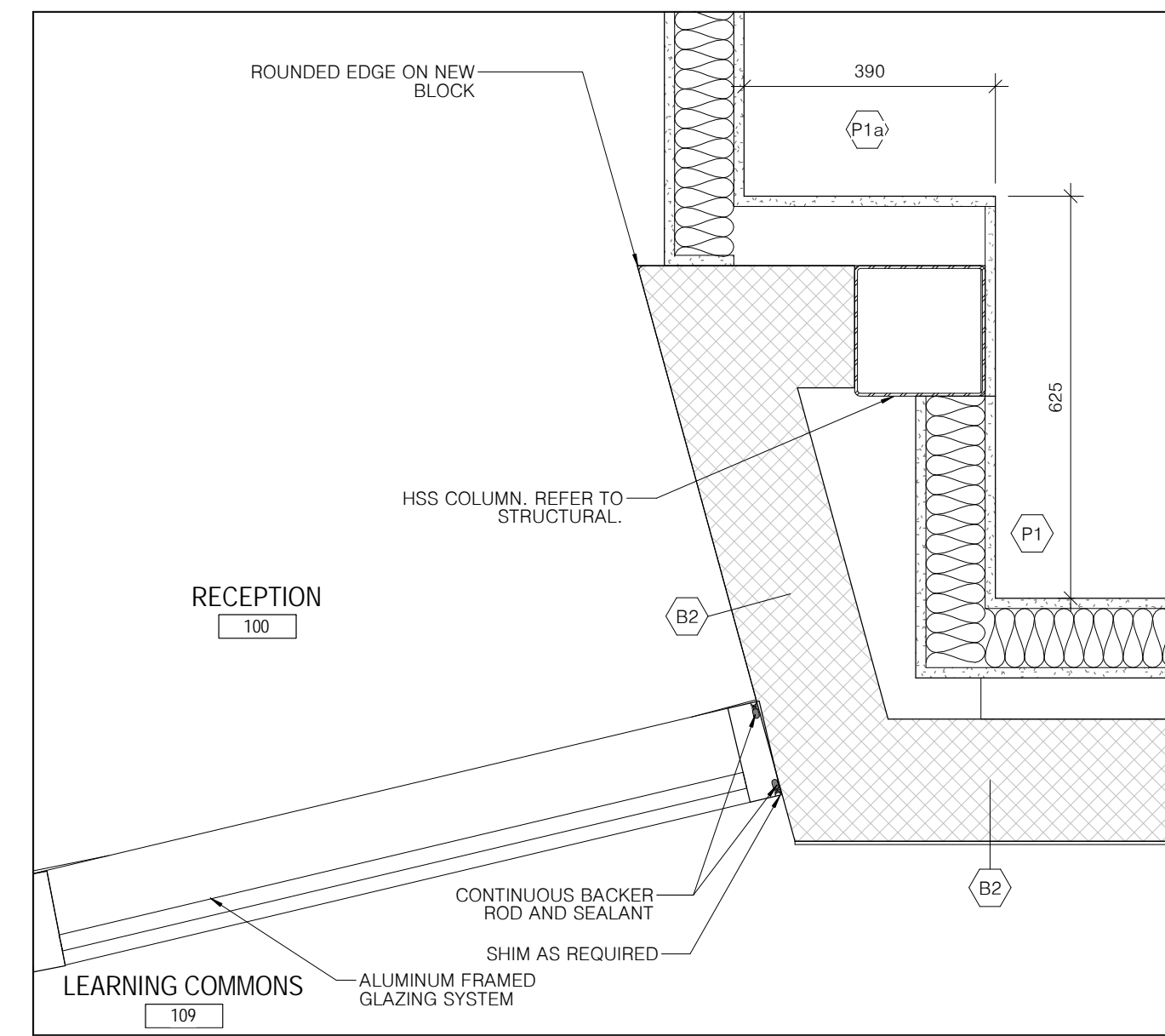
**1** PLAN DETAIL  
SCALE 1:10



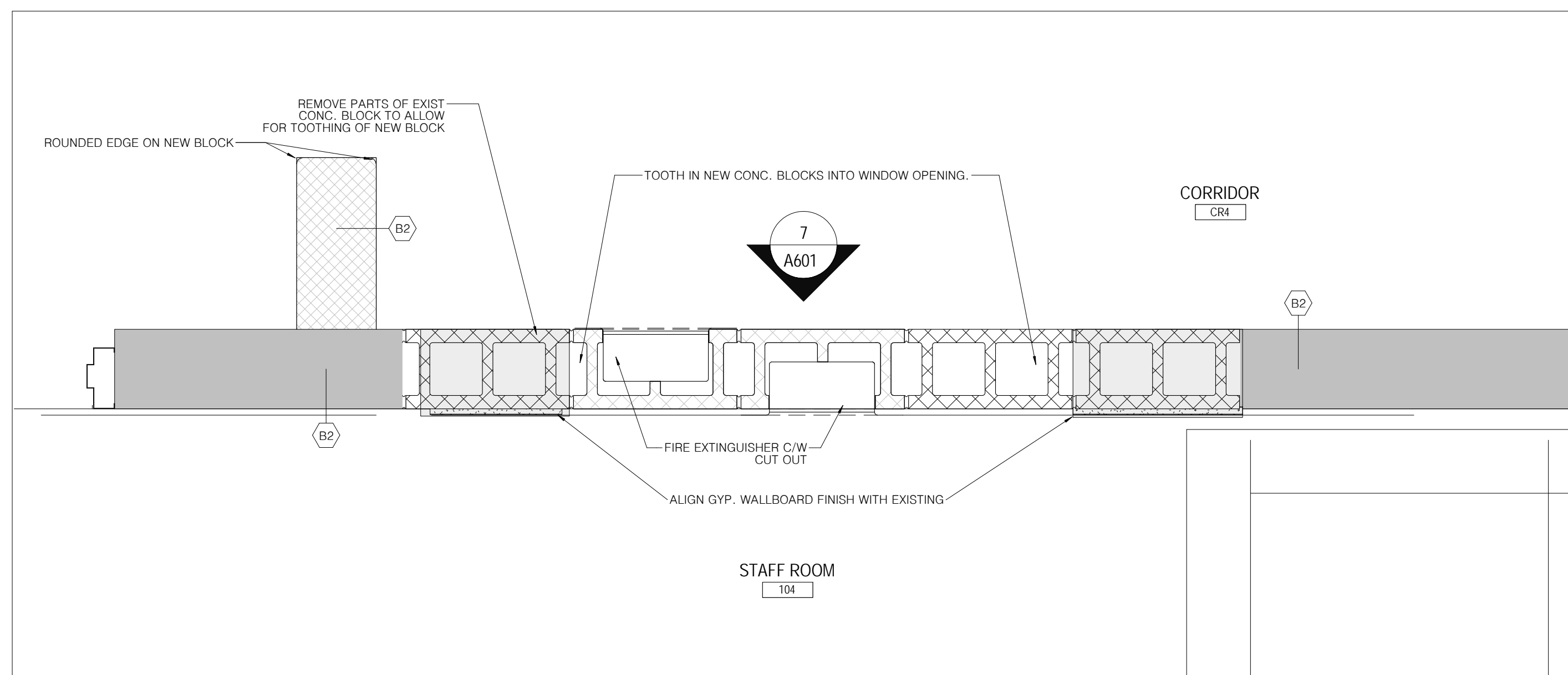
**7** INTERIOR ELEVATION - BLOCK INFILL  
SCALE 1:10



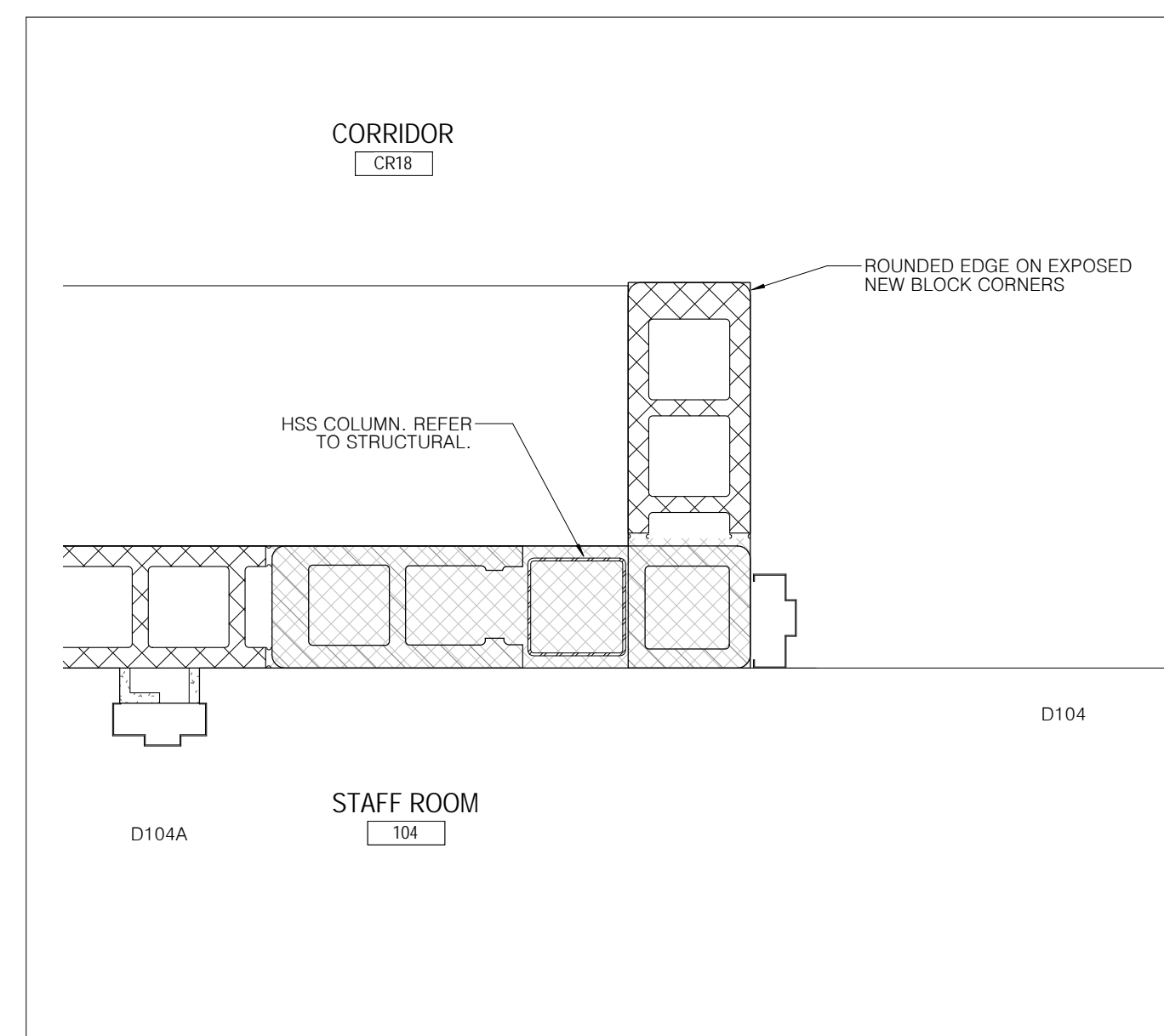
**6** PLAN DETAIL  
SCALE 1:10



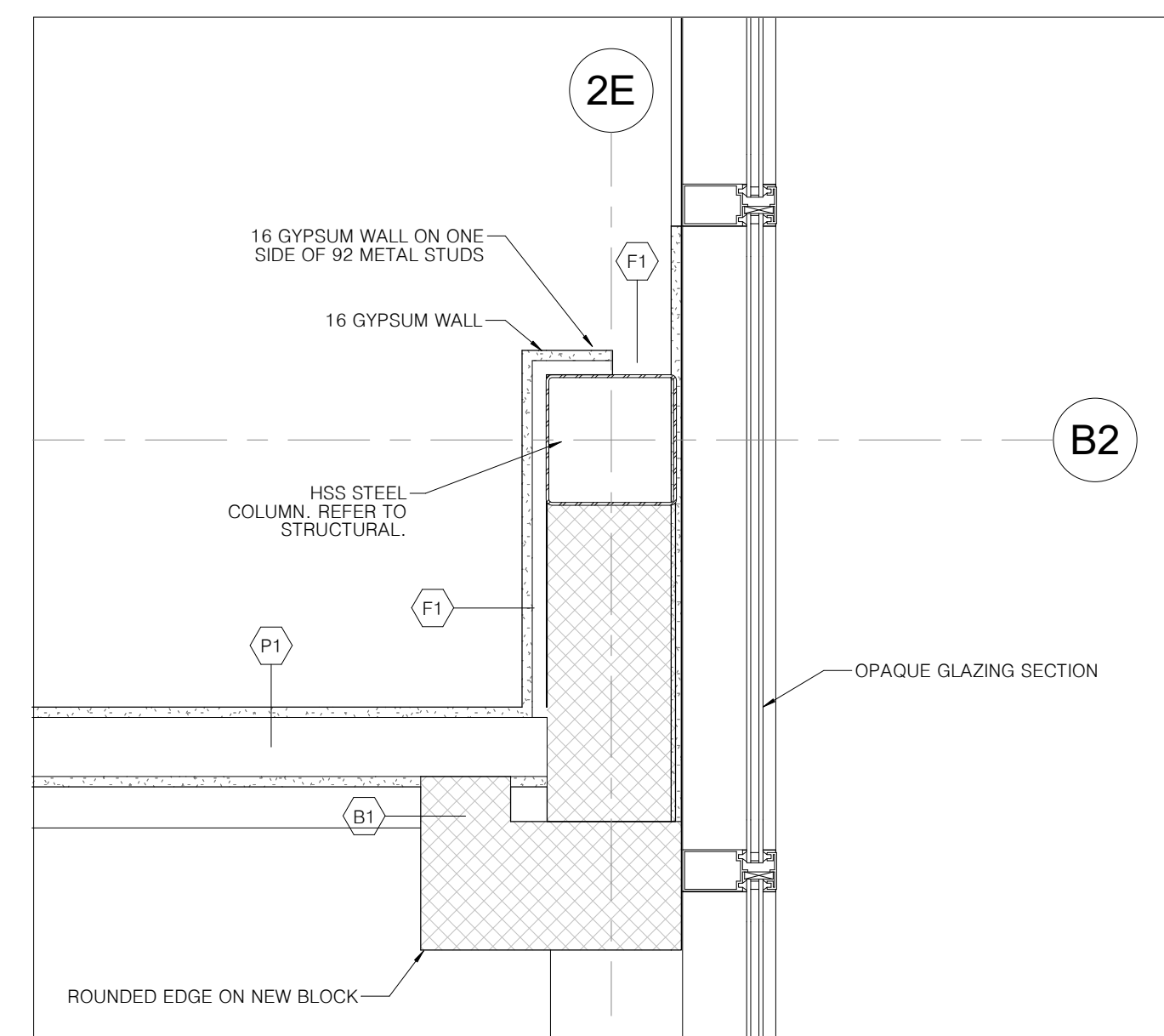
**5** PLAN DETAIL  
SCALE 1:10



**10** INTERIOR ELEVATION - BLOCK INFILL  
SCALE 1:10



**9** PLAN DETAIL  
SCALE 1:10

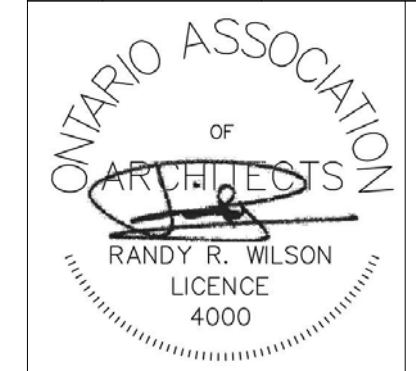


**8** PLAN DETAIL  
SCALE 1:10

**NOTES**

**LEGEND**

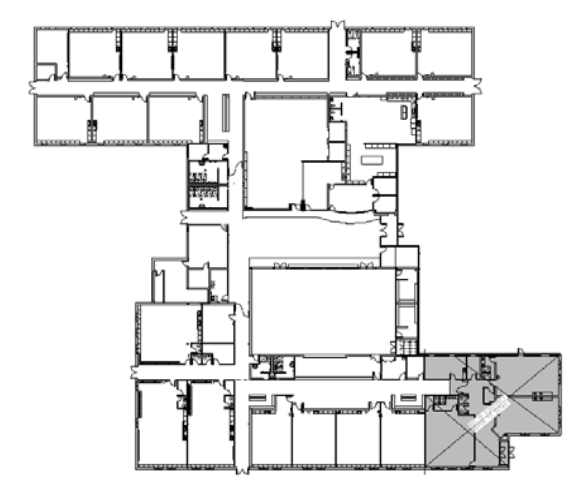
No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



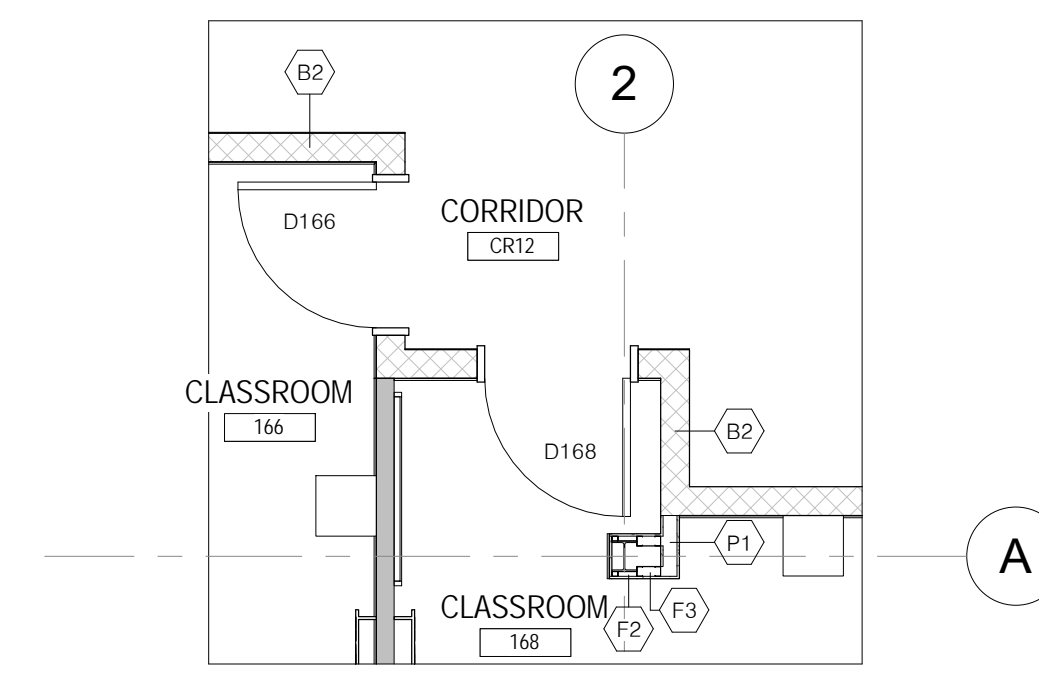
PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**PLAN DETAILS**

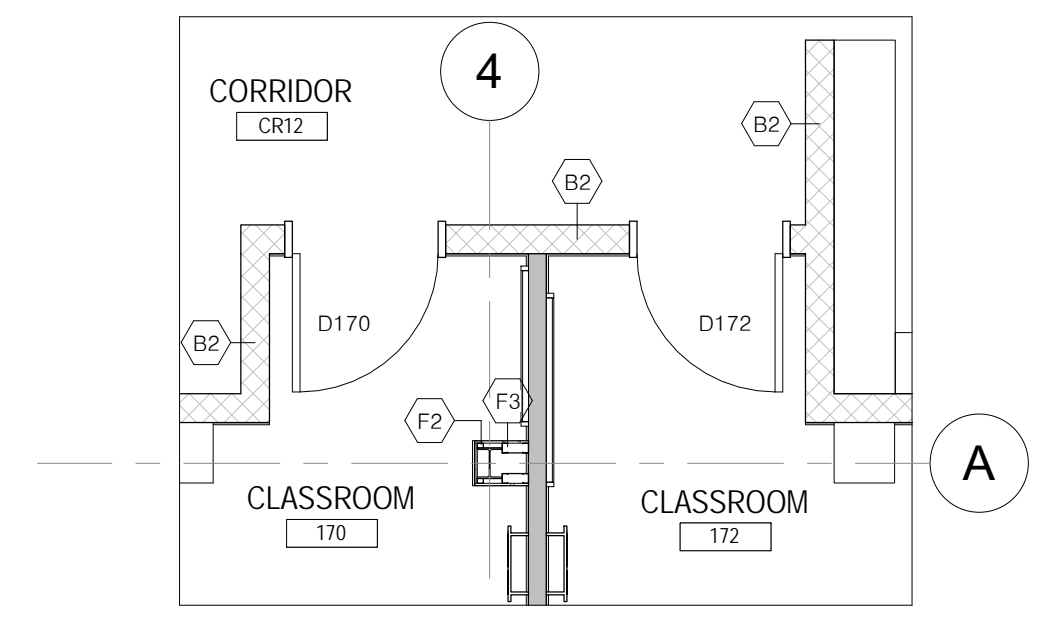
DATE PLOTTED 19/02/2020 11:53:36 AM	DRAWN BY PC	DRAWING No.
SCALE As indicated	CHECKED BY RRW	<b>A601</b>
PROJECT No. 1901		



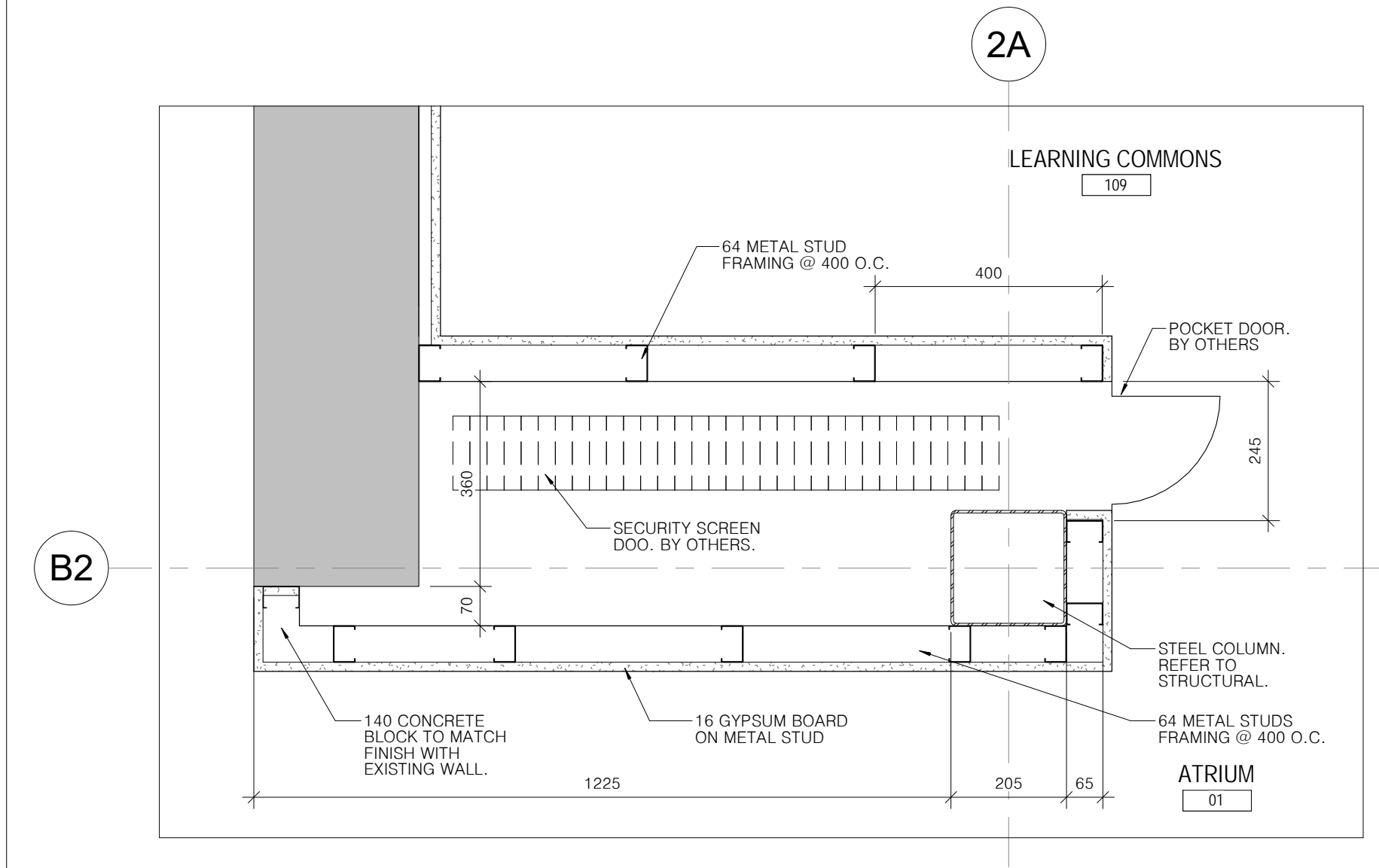
KEY PLAN



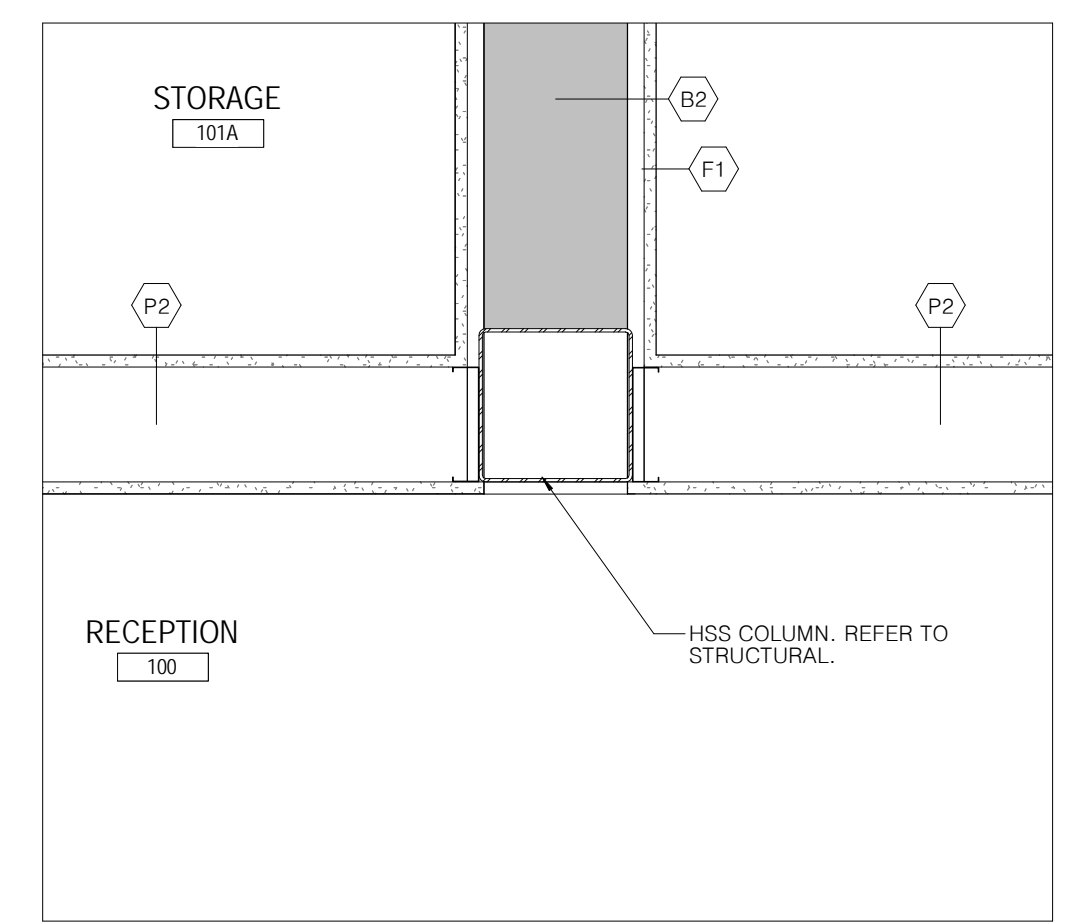
3 PLAN DETAIL  
SCALE 1:50



2 PLAN DETAIL  
SCALE 1:50



1 SECURITY SCREEN POCKET DETAIL @ LIBRARY  
SCALE 1:10

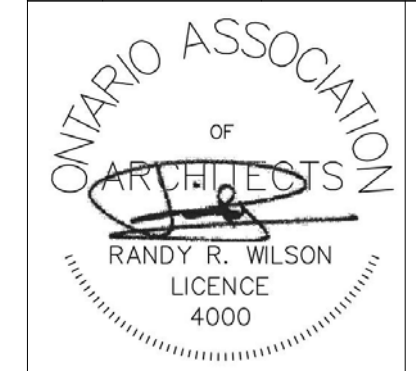


4 PLAN DETAIL  
SCALE 1:10

NOTES

LEGEND

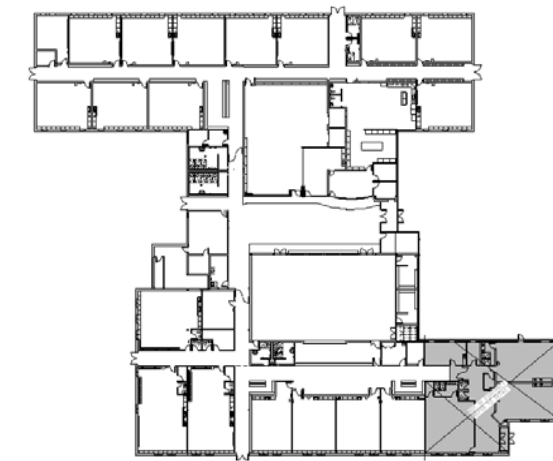
No.	DATE MM/DD/YYYY	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**PLAN DETAILS**

DATE PLOTTED 19/02/2020 11:53:37 AM	DRAWN BY TJV	DRAWING No.
SCALE As indicated	CHECKED BY RRW	<b>A602</b>
PROJECT No. 1901		

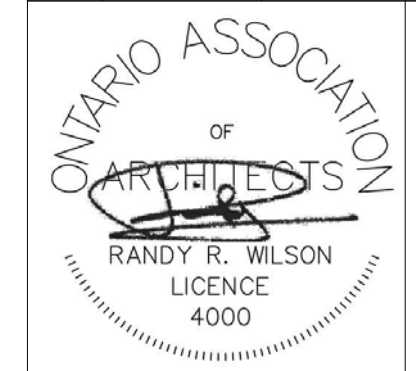


KEY PLAN

NOTES

LEGEND

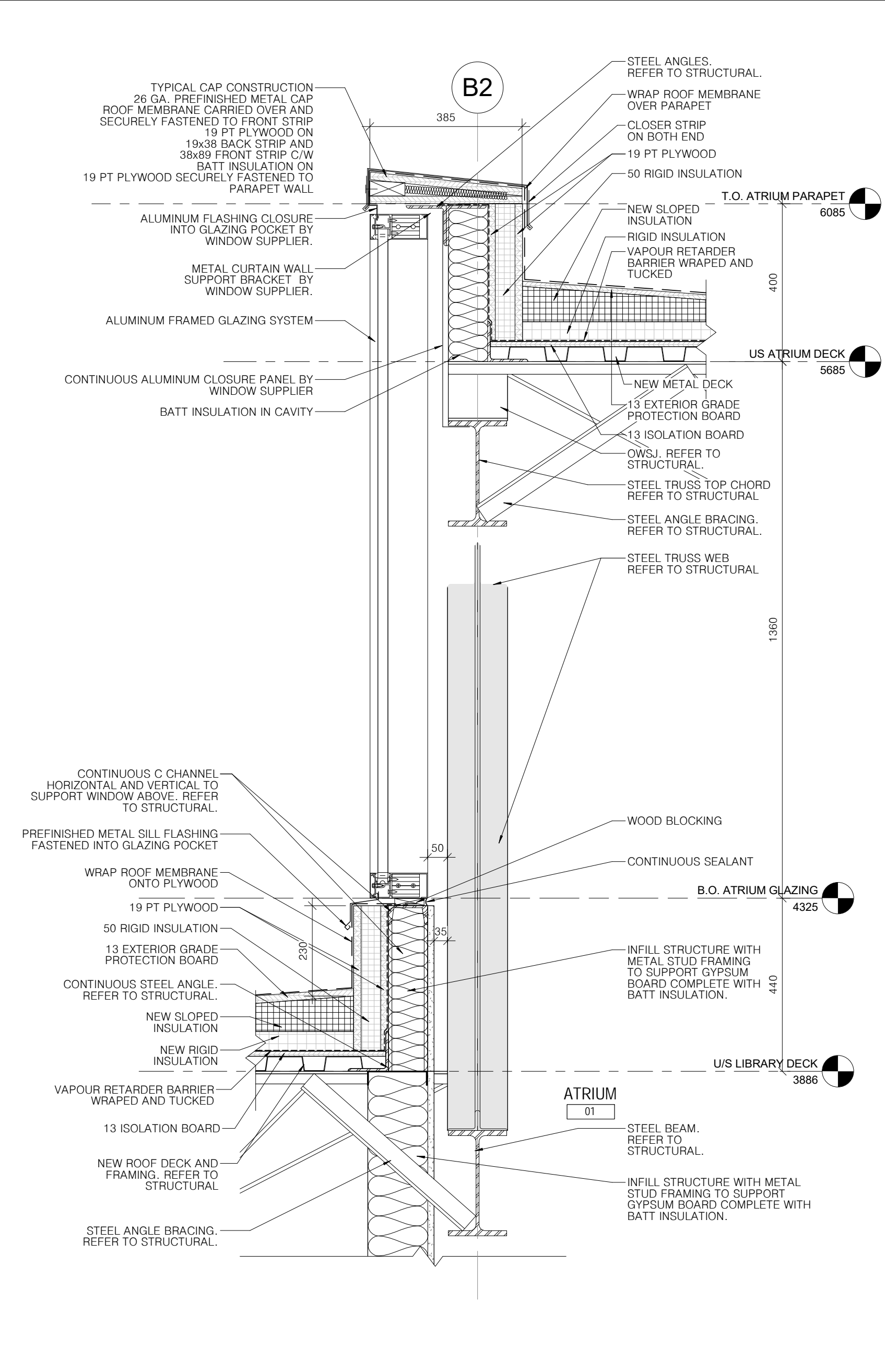
No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



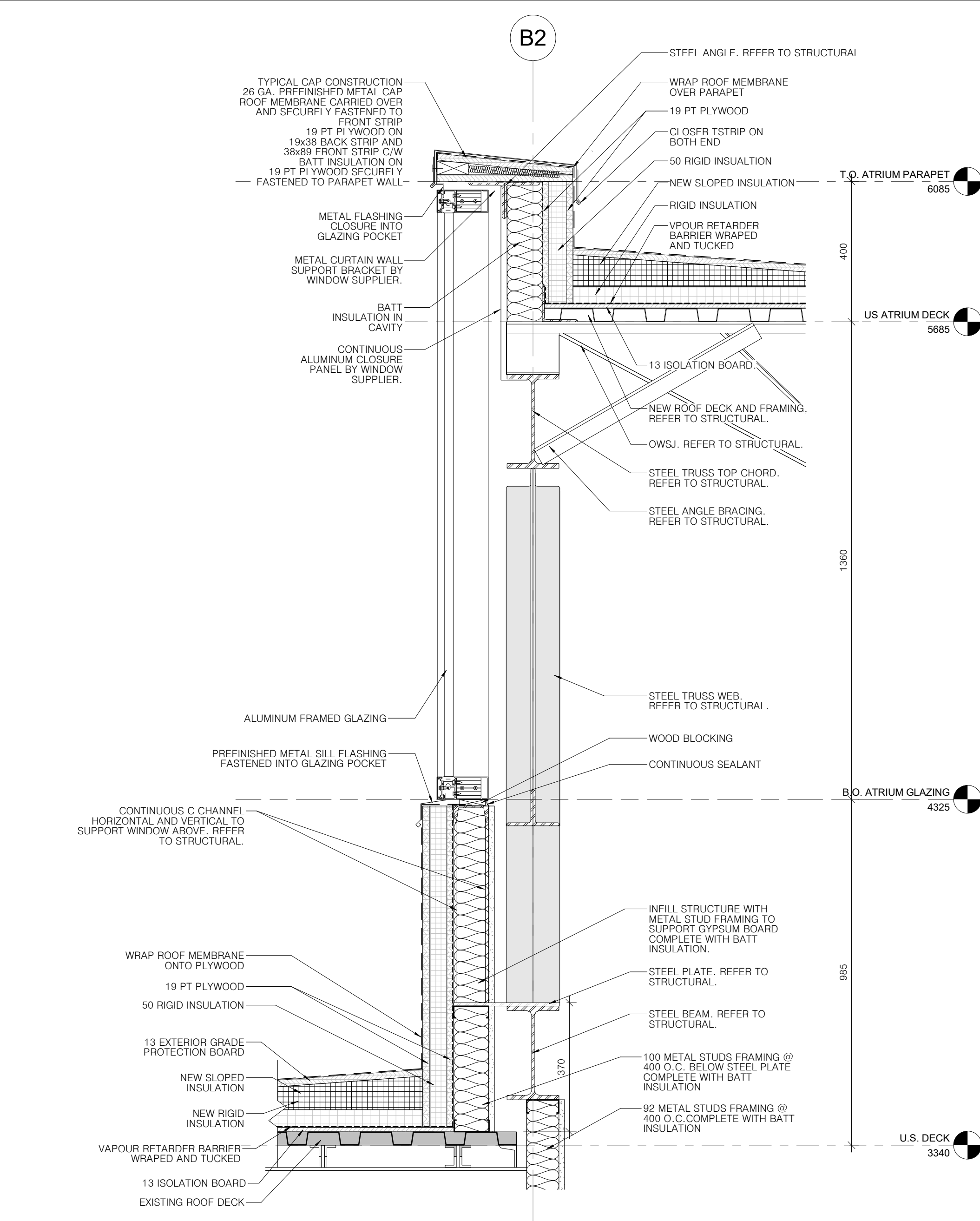
PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**SECTION DETAILS**

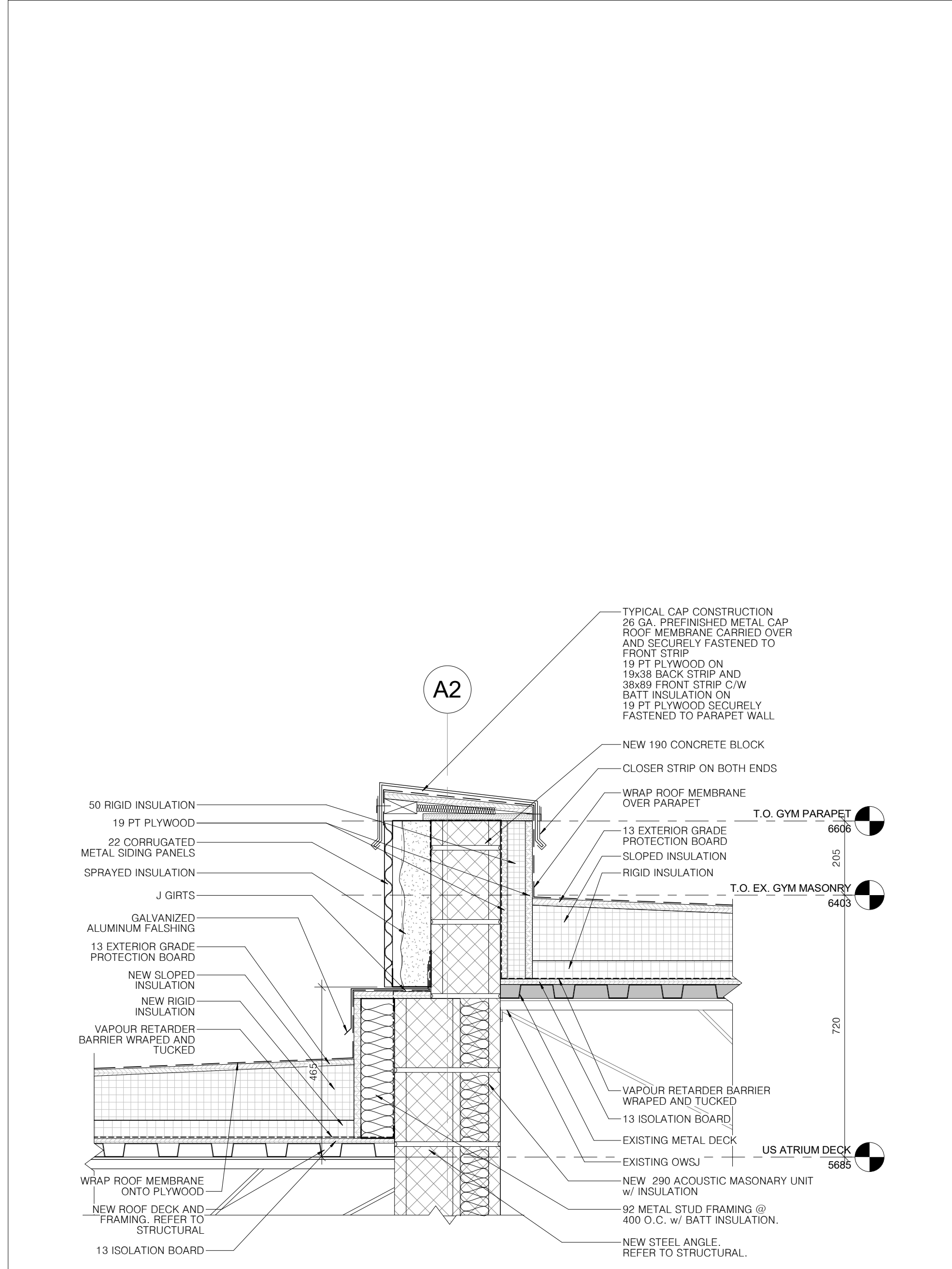
DATE PLOTTED 19/02/2020 11:53:41 AM	DRAWN BY TJV	DRAWING No.
SCALE 1 : 10	CHECKED BY RRW	<b>A650</b>
PROJECT No. 1901		



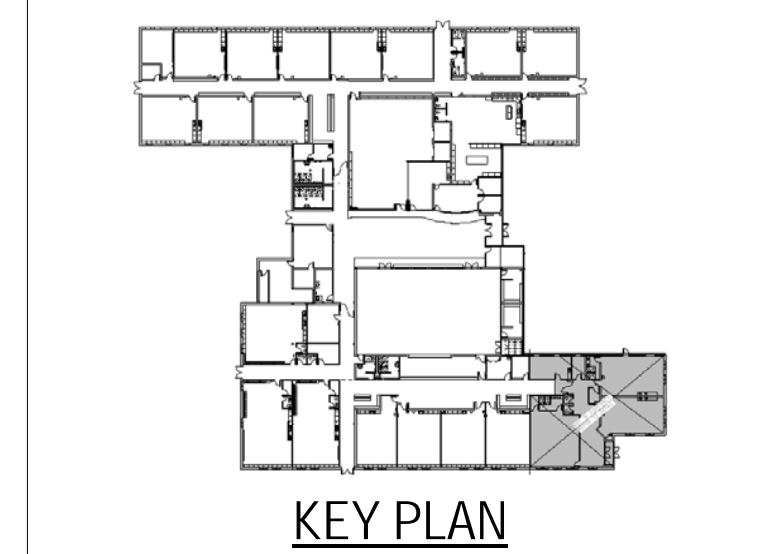
1 SECTION DETAIL  
SCALE 1 : 10



2 SECTION DETAIL  
SCALE 1 : 10



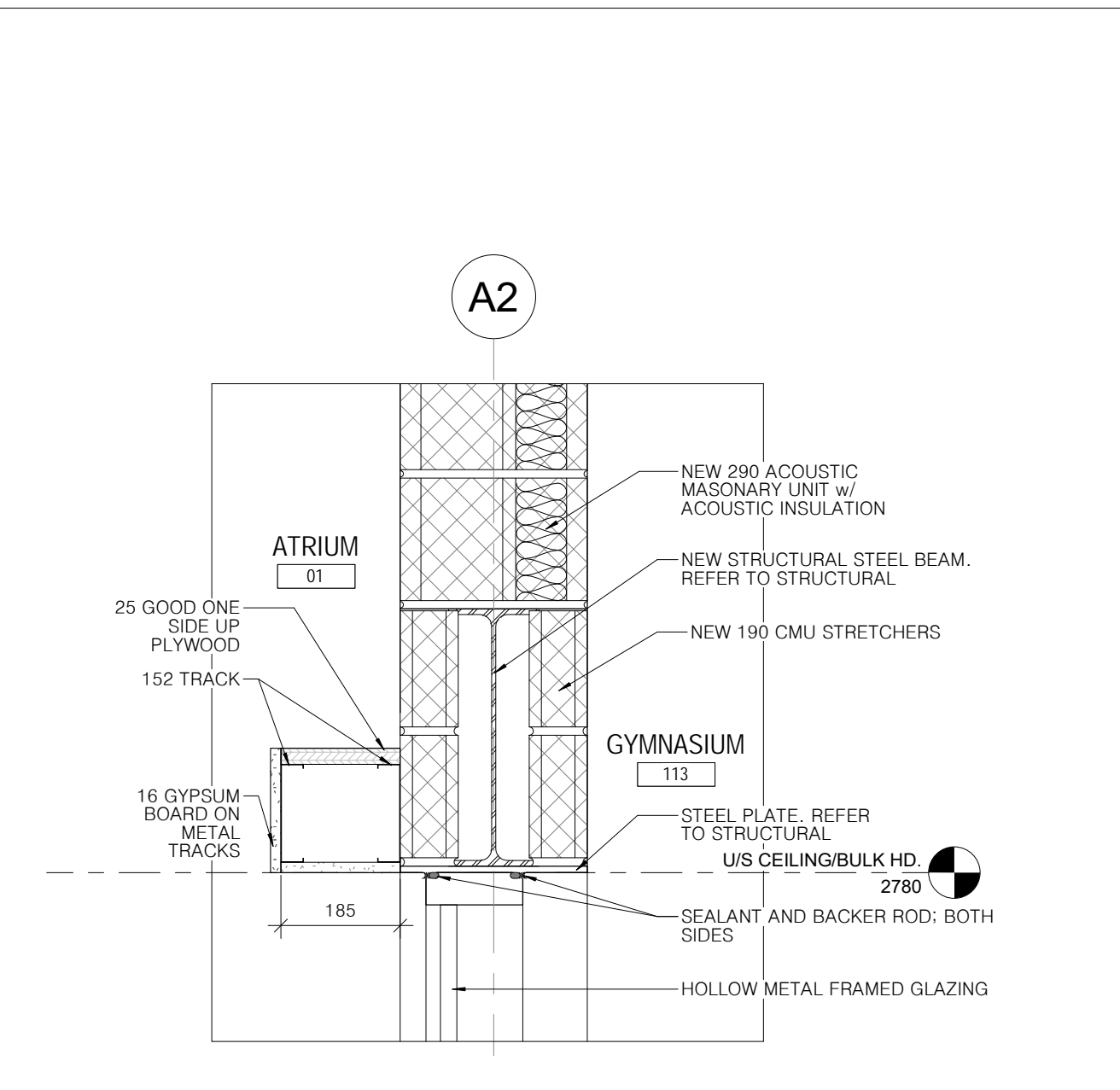
3 Section 2 - Callout 3  
SCALE 1 : 10



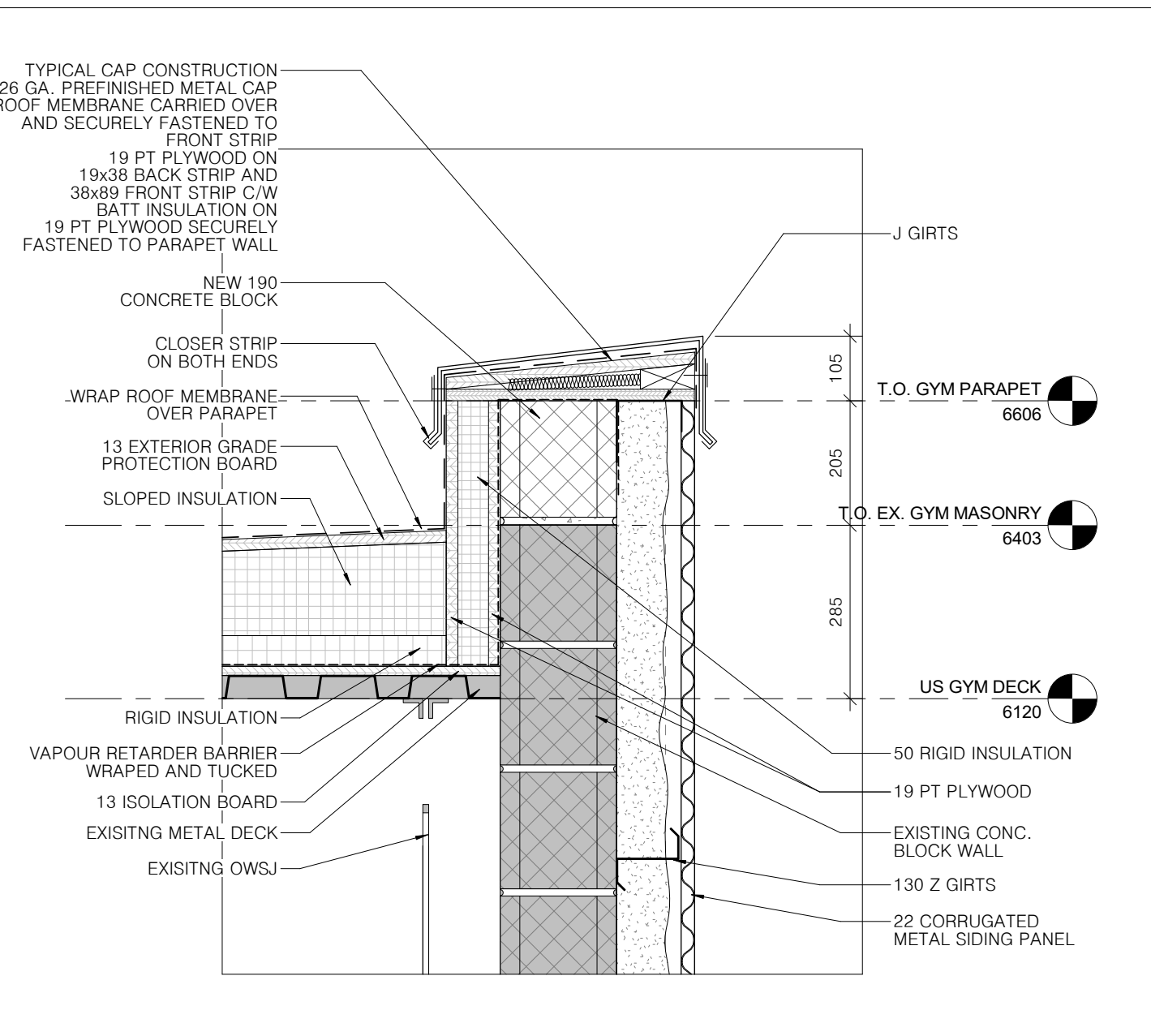
KEY PLAN

NOTES

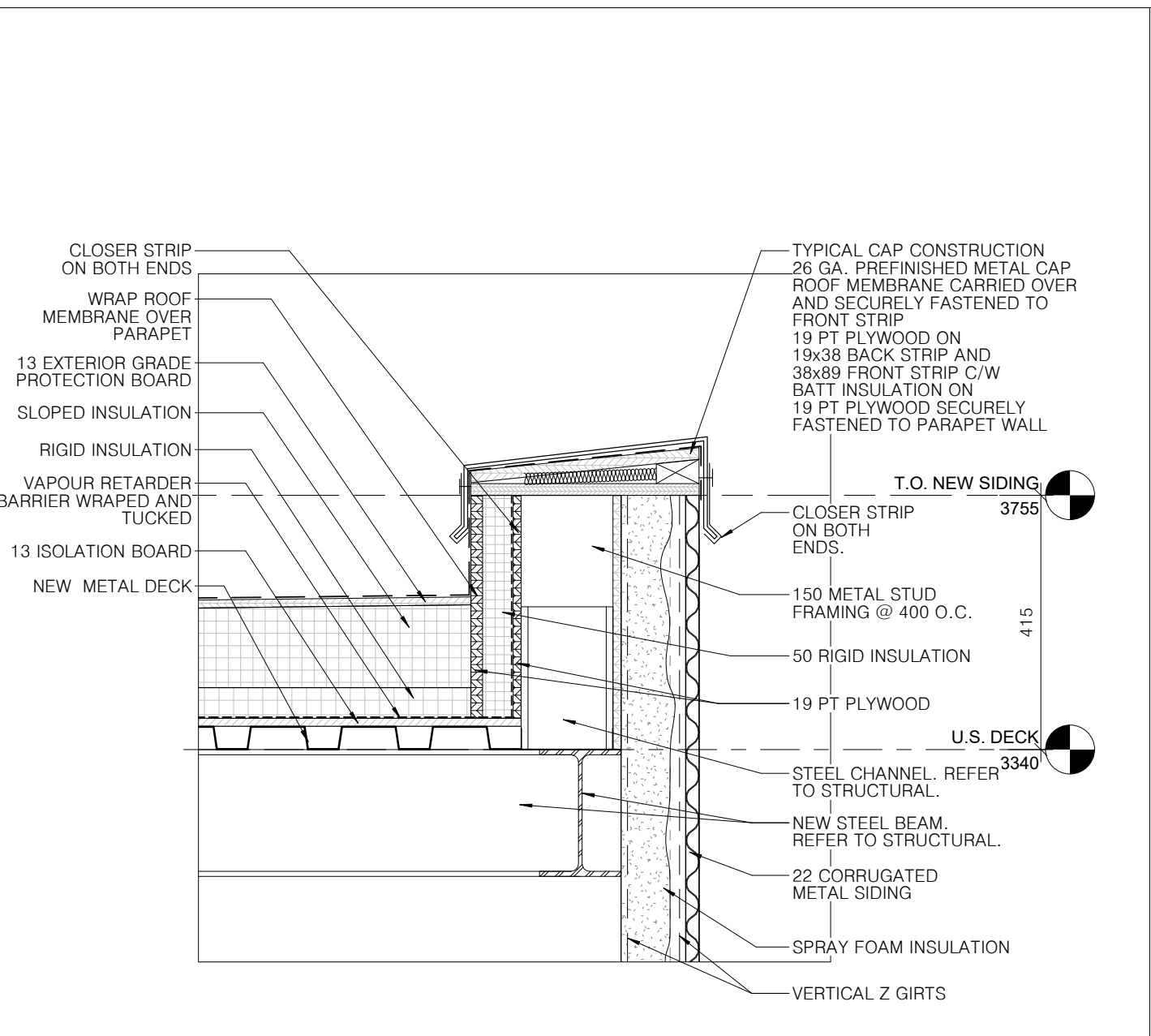
LEGEND



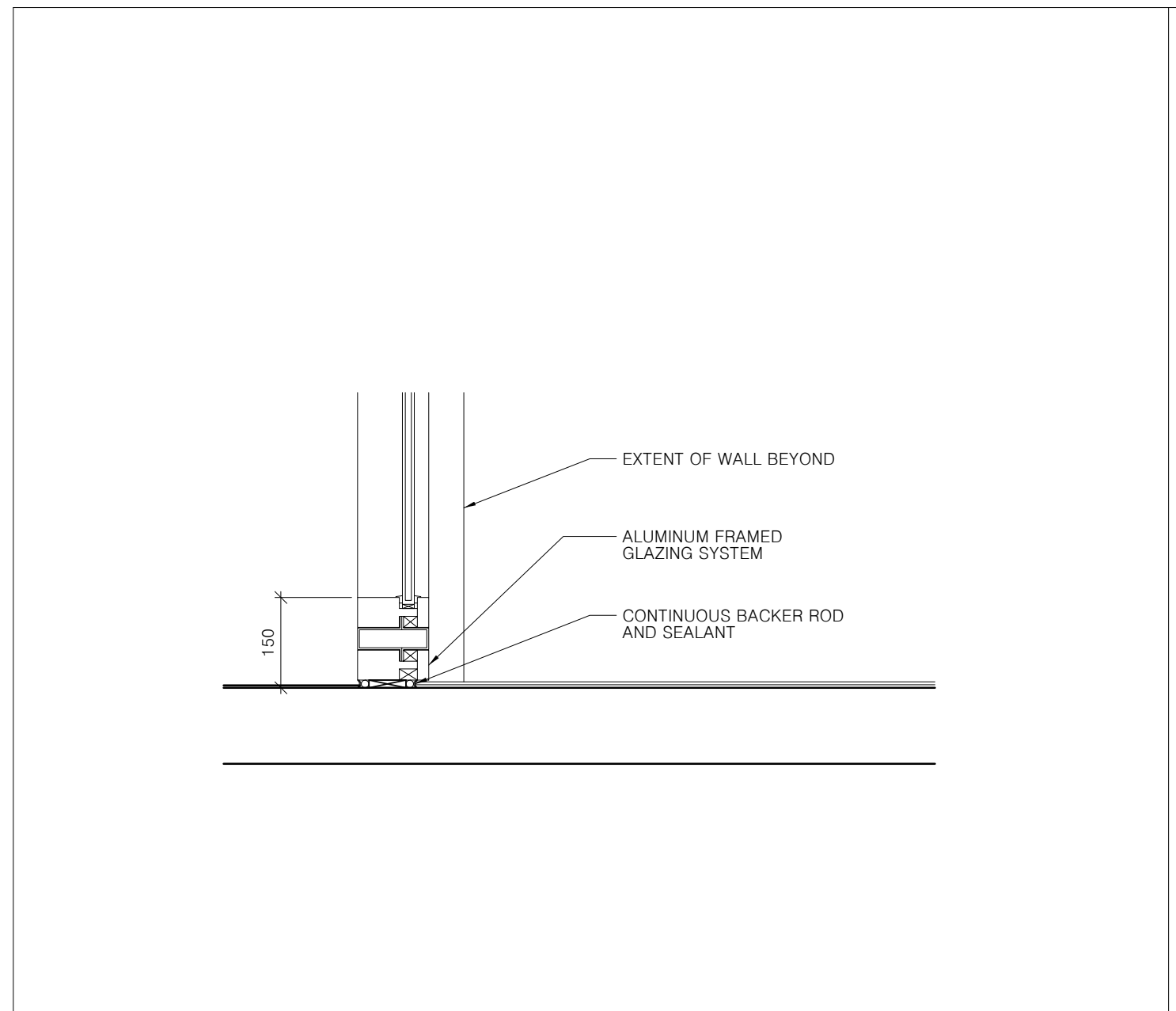
1 GYM WINDOWS HEAD AND SILL DETAIL  
SCALE 1:10



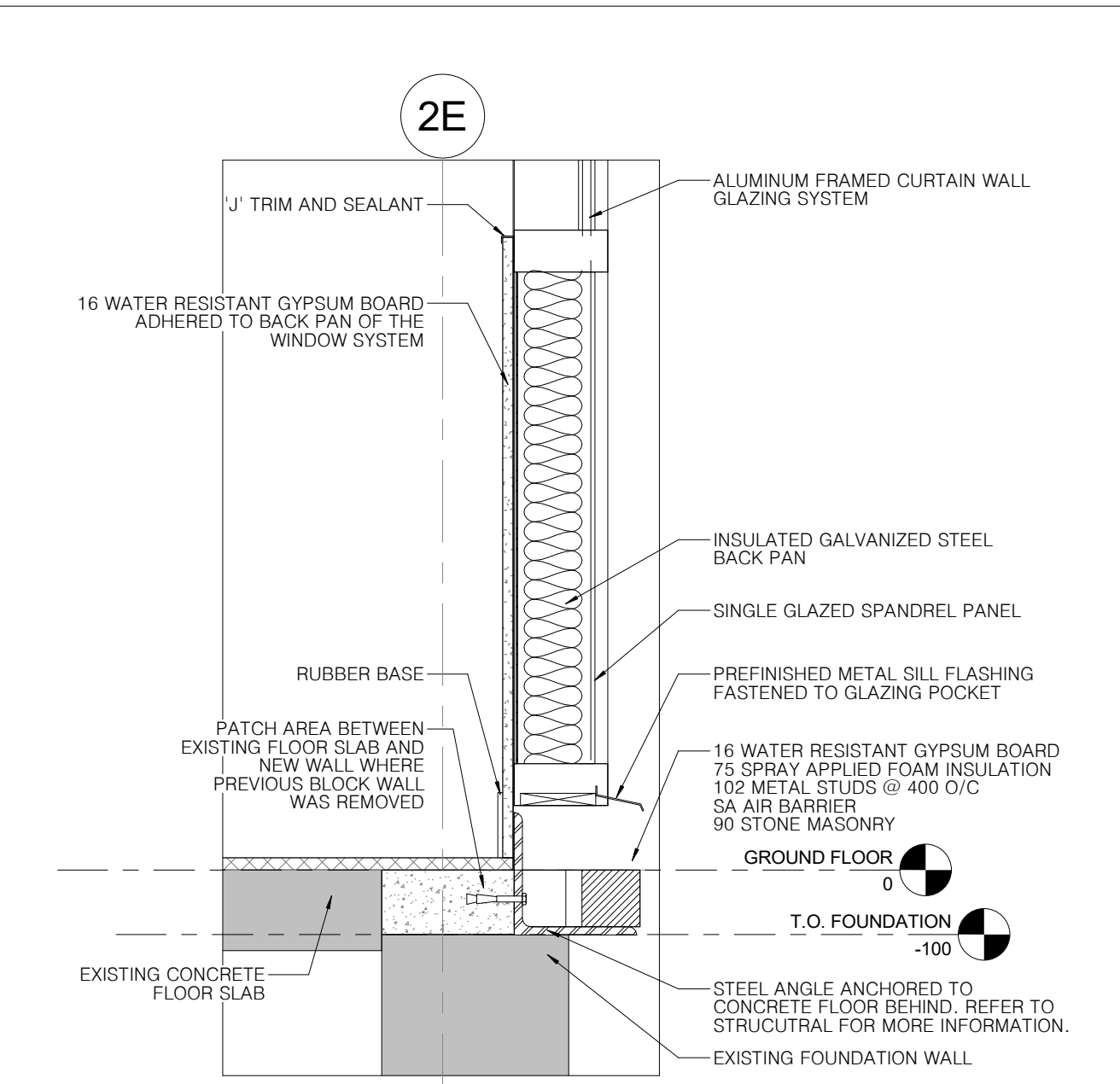
2 WALL SECTION - ABOVE EAST ADDITION - Callout 1  
SCALE 1:10



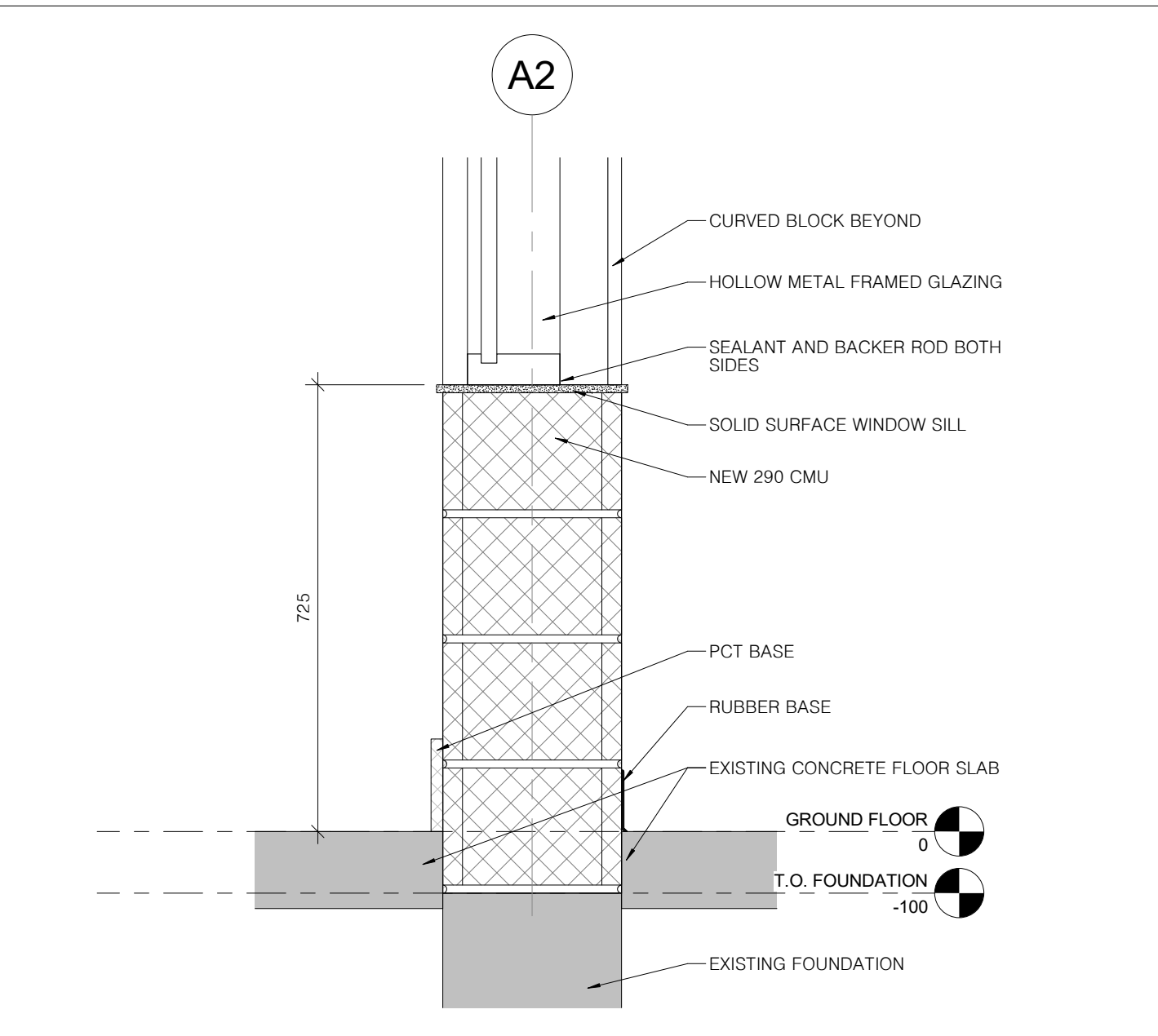
3 Section 72 - Callout 1  
SCALE 1:10



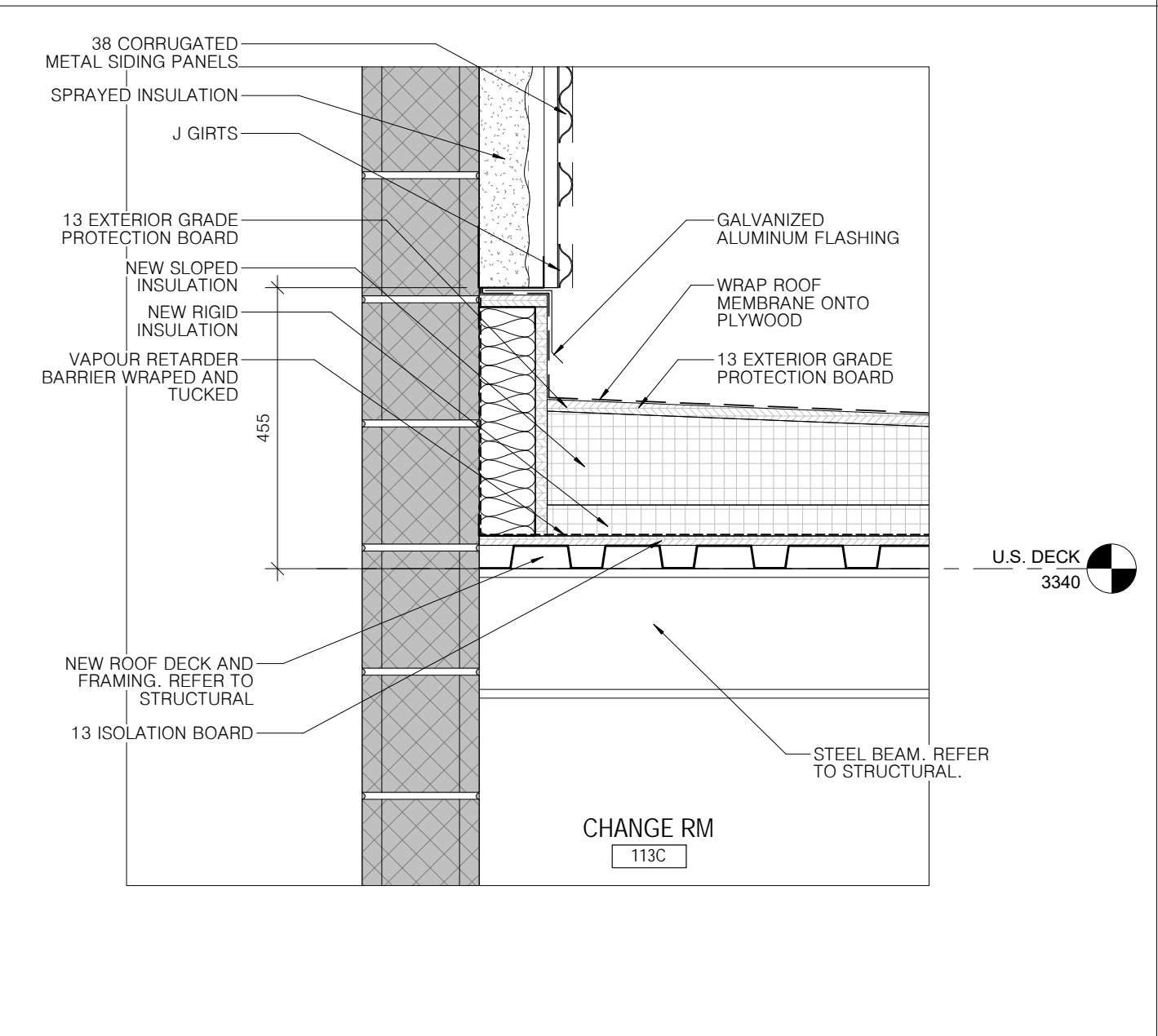
4 DETAIL @ BOTTOM FRAME  
SCALE 1:10



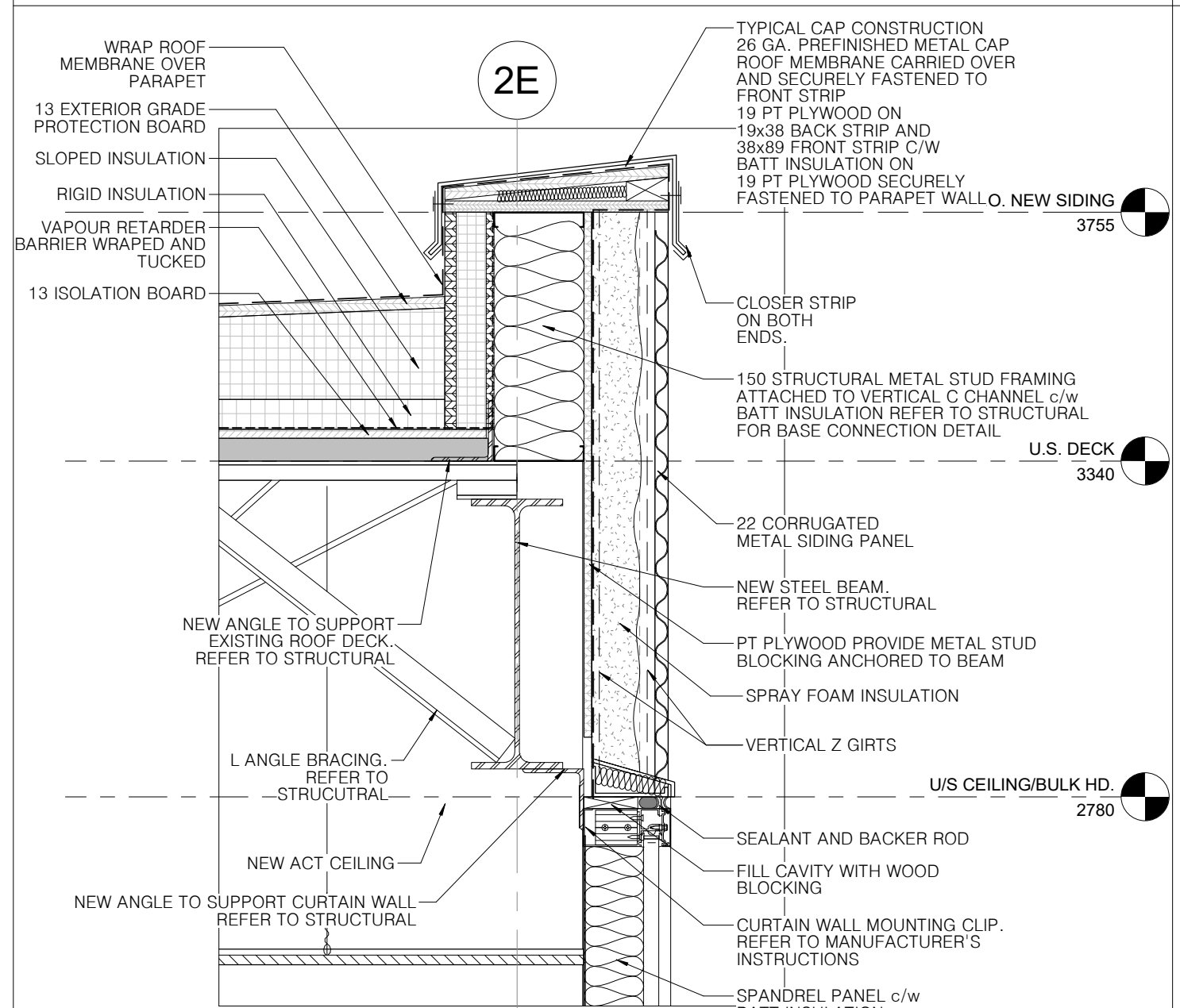
5 SECTION DETAIL  
SCALE 1:10



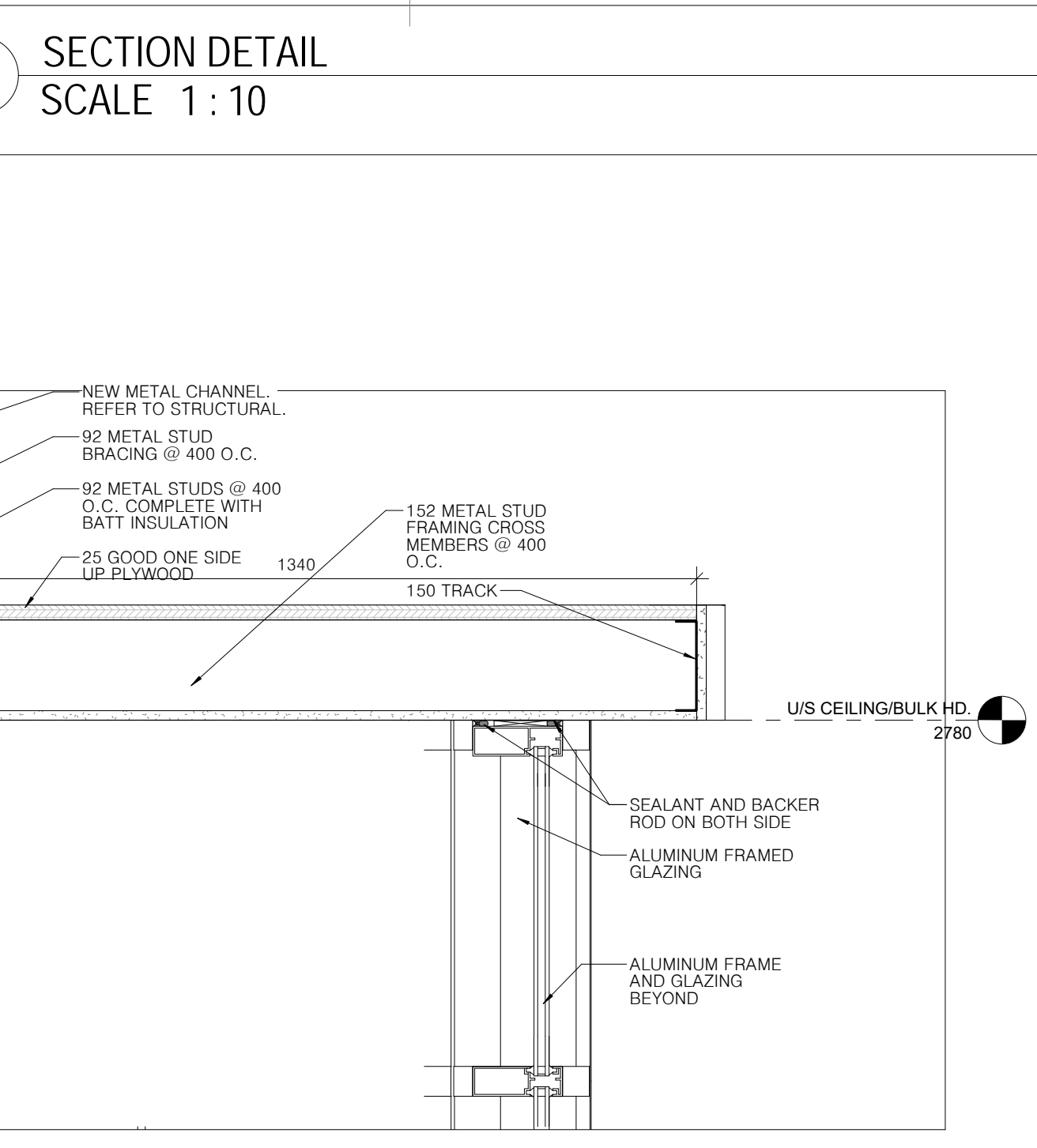
6 Section 12 - Callout 2  
SCALE 1:10



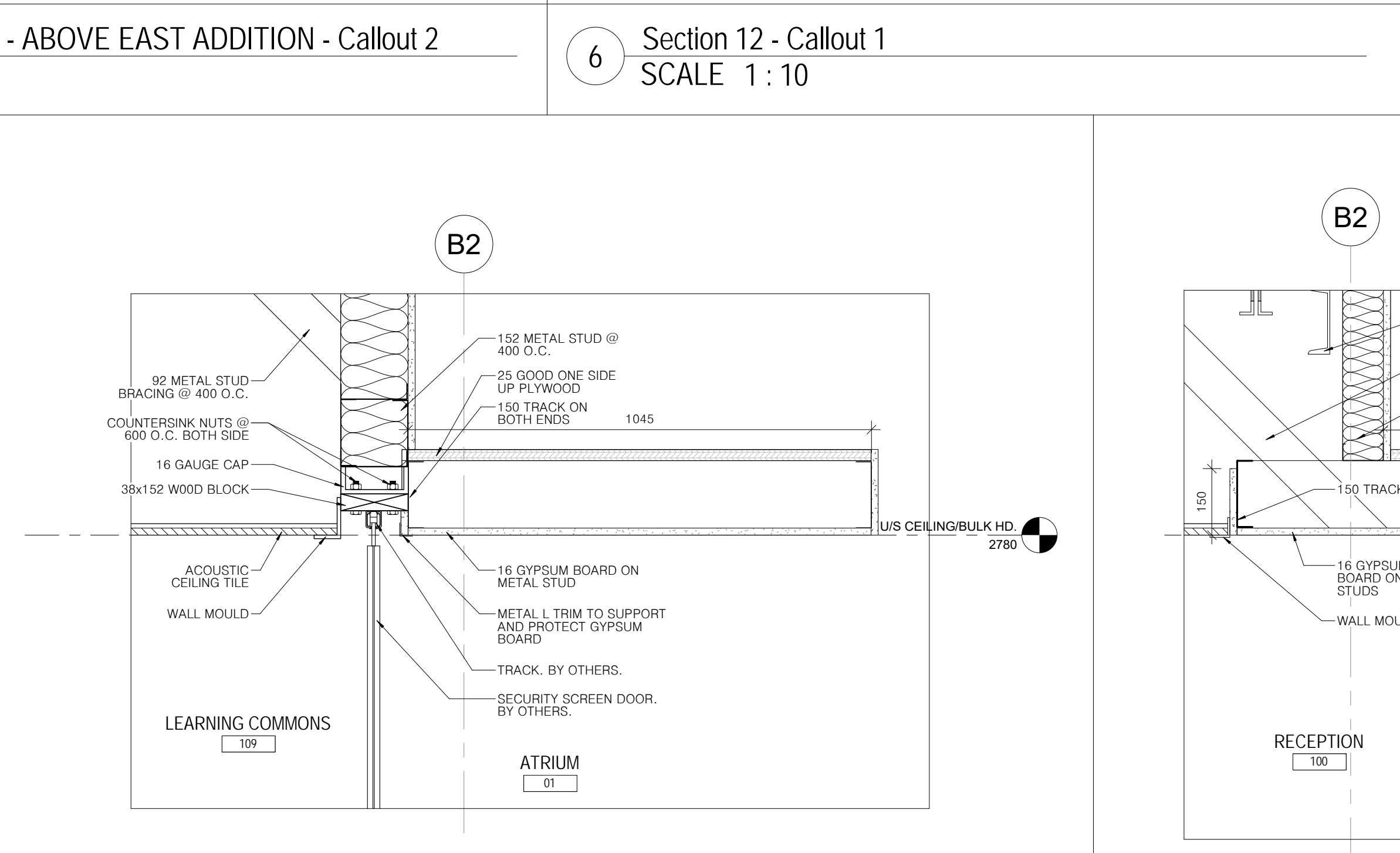
7 WALL SECTION - ABOVE EAST ADDITION - Callout 2  
SCALE 1:10



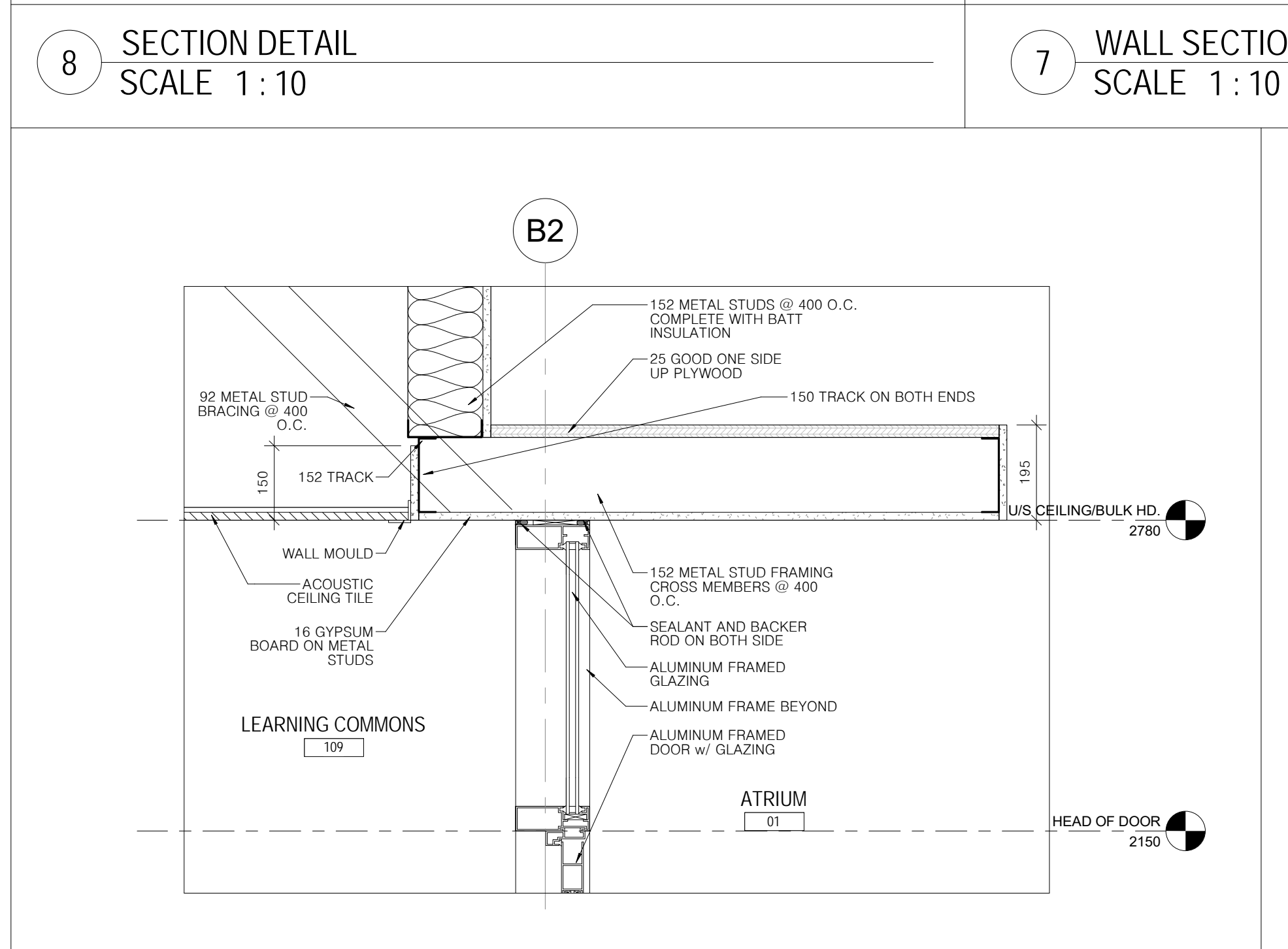
8 SECTION DETAIL  
SCALE 1:10



9 BULKHEAD DETAIL @ RECEPTION  
SCALE 1:10

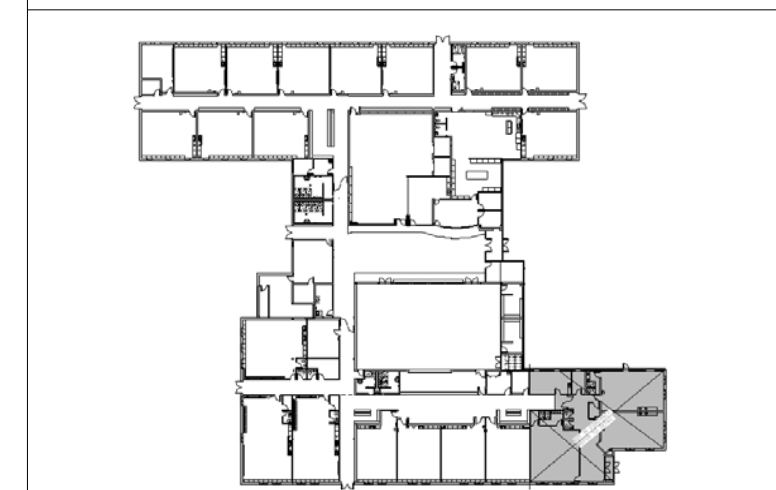


10 DETAIL @ SECURITY SCREEN  
SCALE 1:10



11 BULKHEAD DETAIL @ CONFERENCE ROOM  
SCALE 1:10

19/02/2020 11:53:48 AM				DRAWN BY TJV		DRAWING No. A651	
DATE PLOTTED				CHECKED BY RRW		SCALE 1:10	
PROJECT No. 1901				DRAWING TITLE SECTION DETAILS			
PROJECT TITLE OUR LADY OF FATIMA				DRAWING TITLE SECTION DETAILS			
 RANDY R. WILSON LICENCE 4000				PROJECT No. 1901			

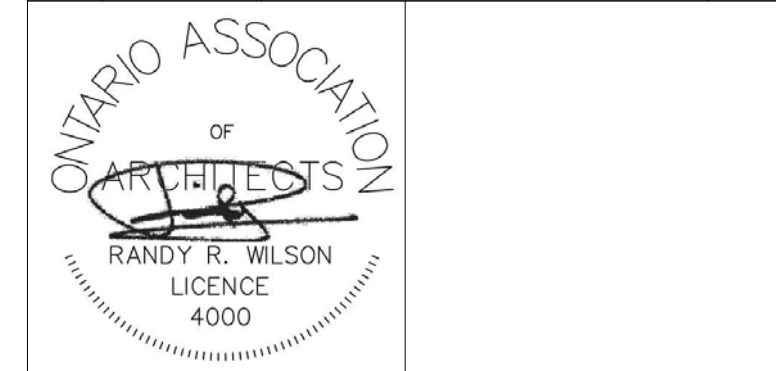


KEY PLAN

NOTES

LEGEND

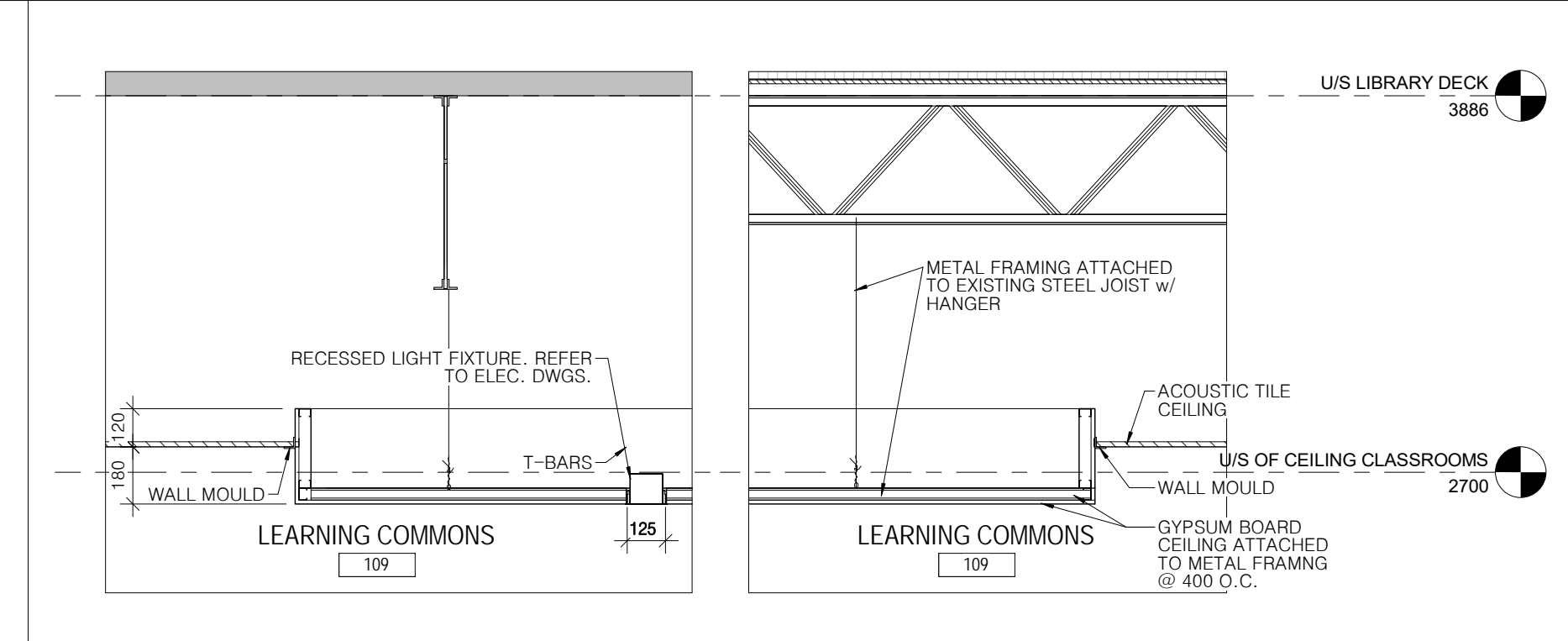
No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



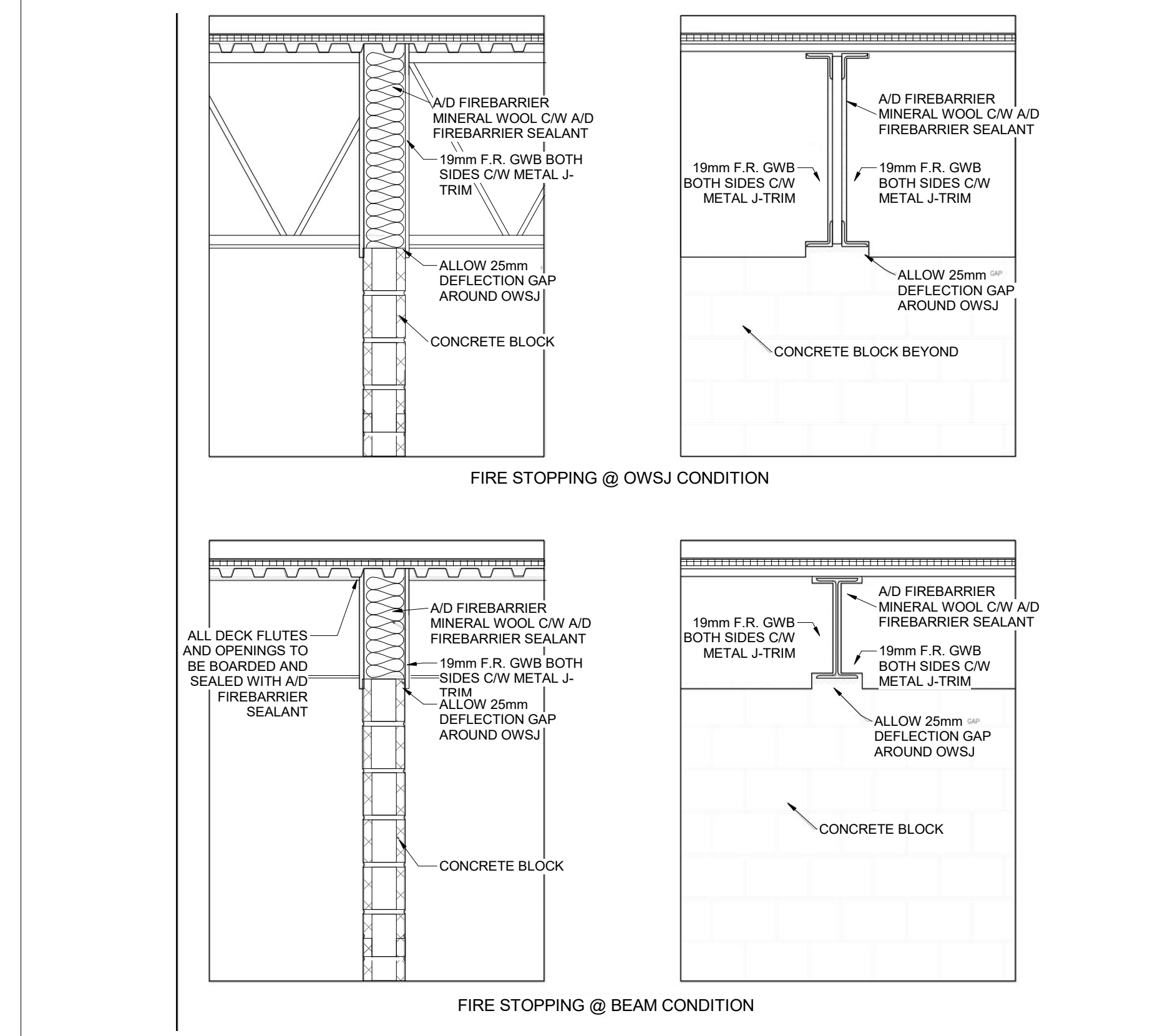
PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**SECTION DETAILS**

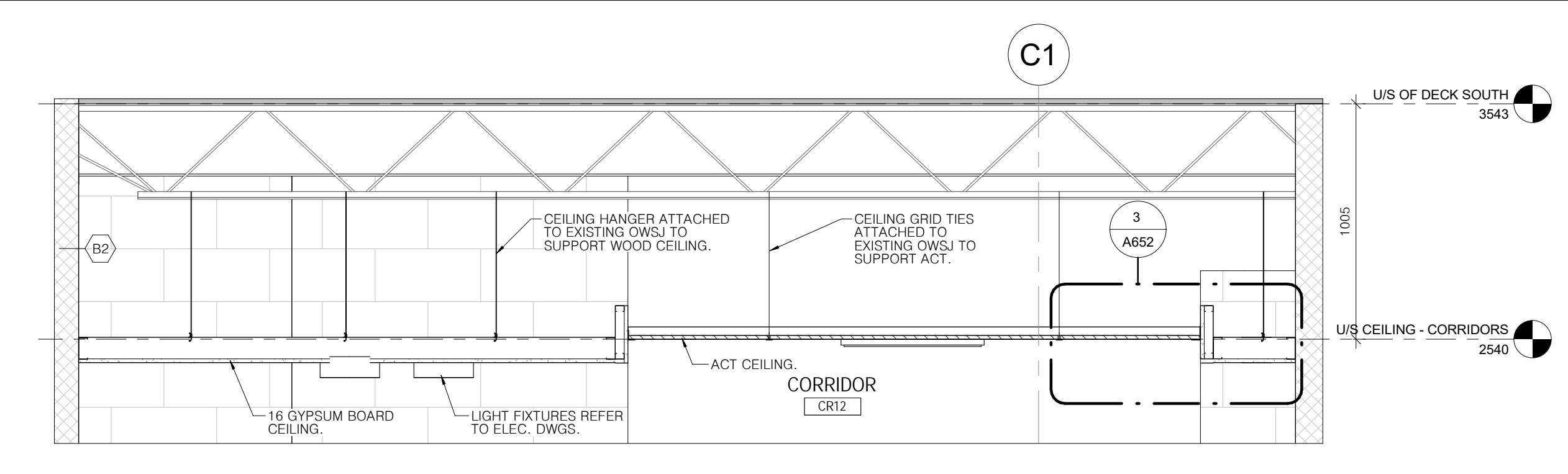
DATE PLOTTED 19/02/2020 11:53:54 AM	DRAWN BY TJV	DRAWING No.
SCALE As indicated	CHECKED BY RRW	<b>A652</b>
PROJECT No. 1901		



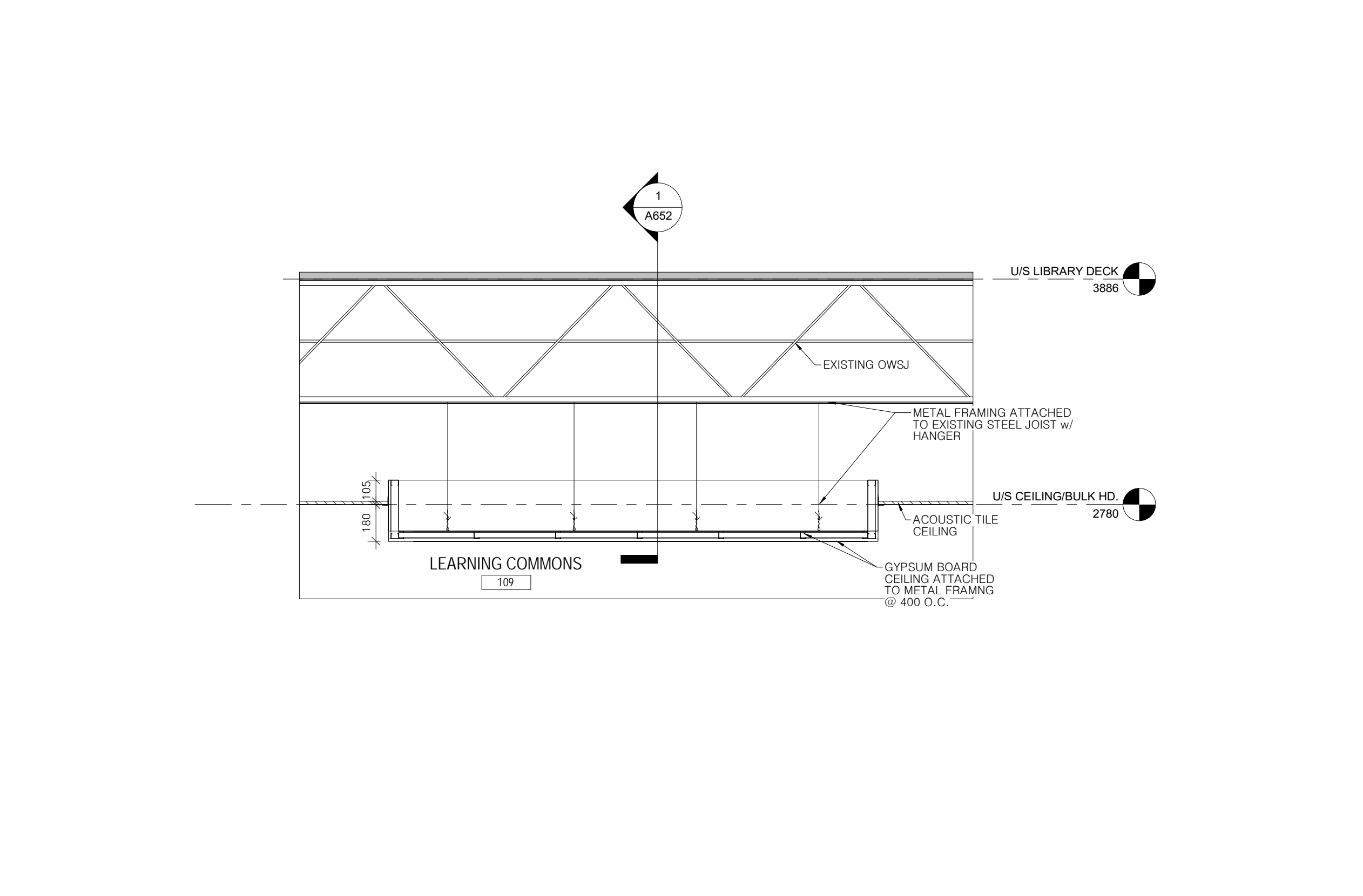
1 SECTION @ LIBRARY CEILING BULKHEAD  
SCALE 1 : 20



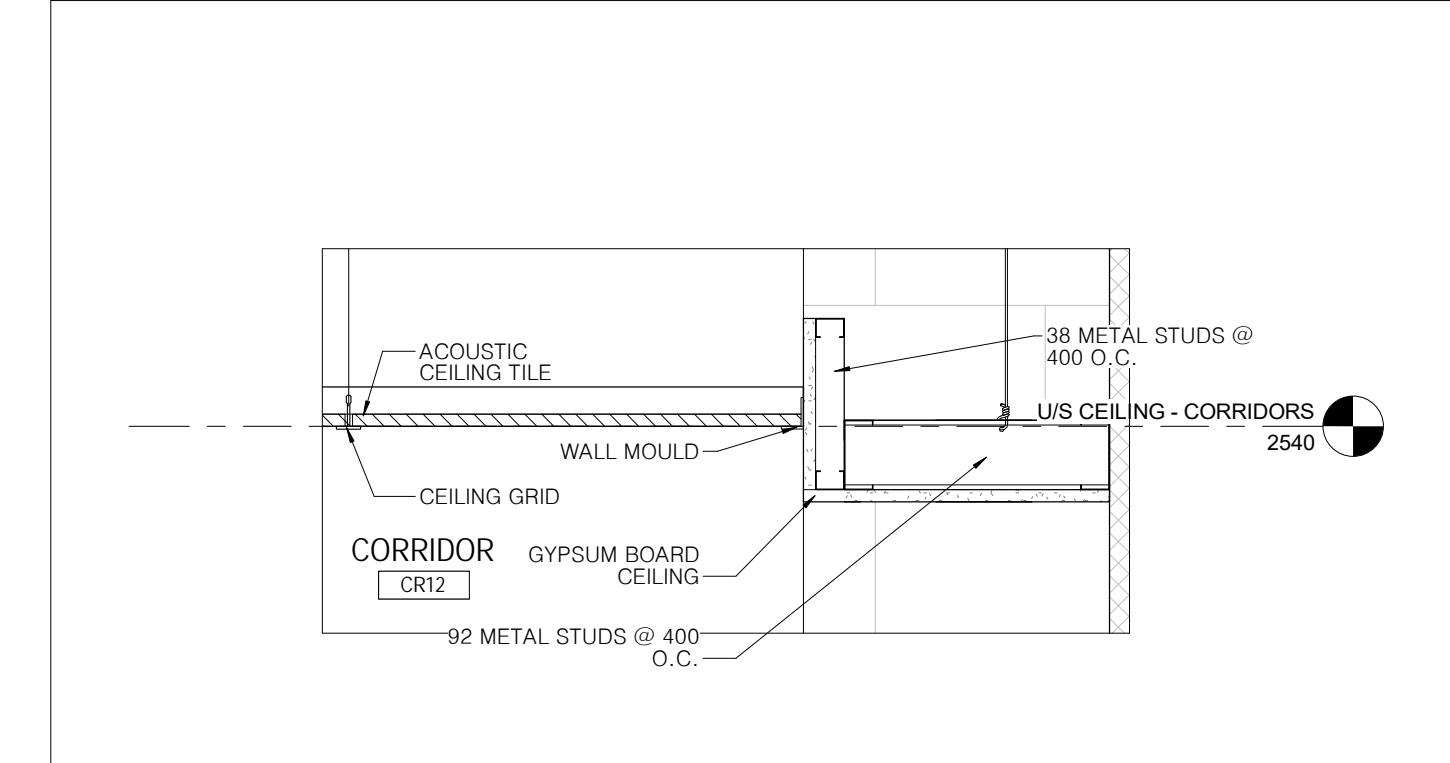
4 FIRE STOPPING @ OWSJ & BEAM  
SCALE 1 : 10



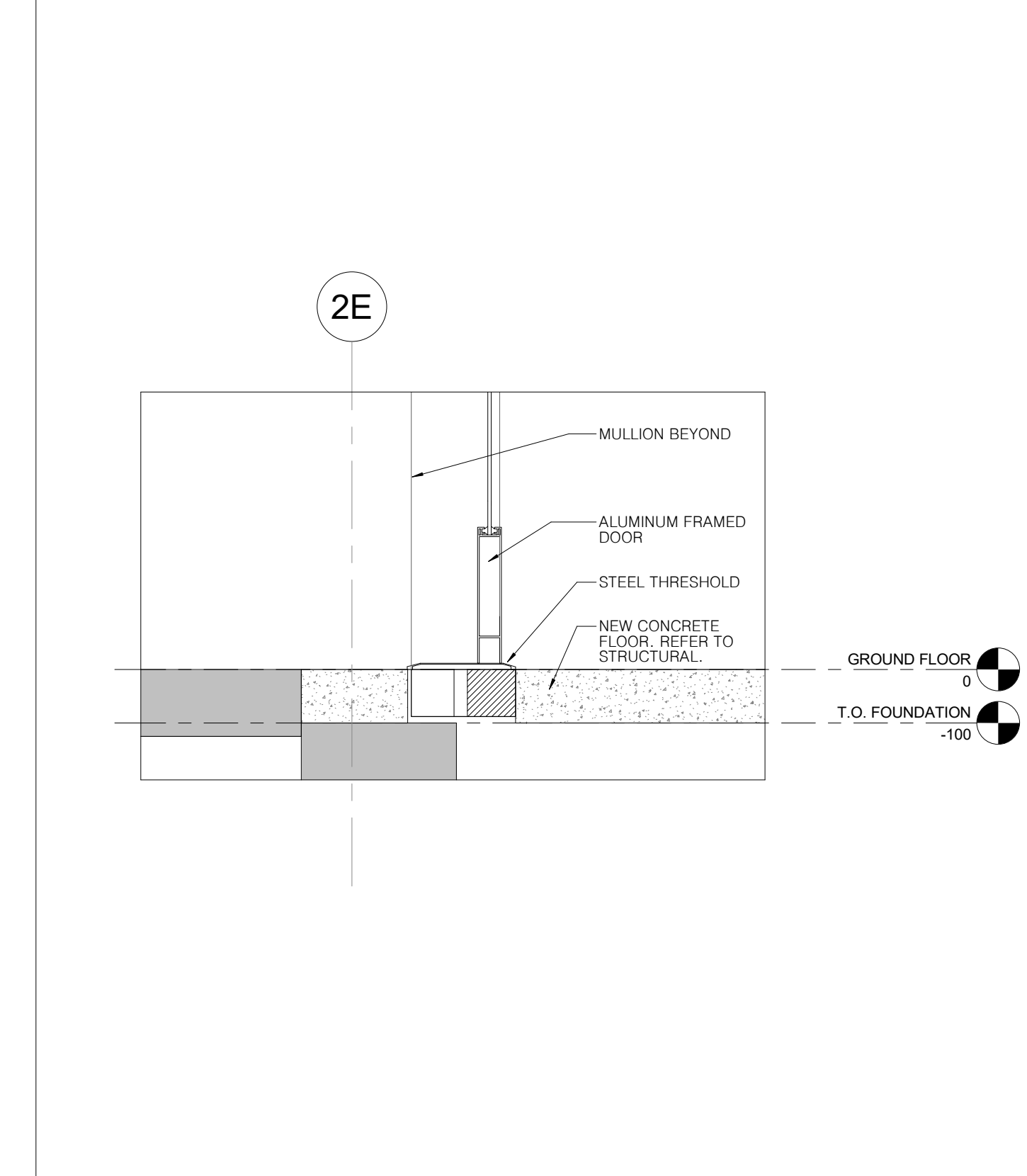
2 GYPSUMBOARD BULKHEAD @ CORRIDOR  
SCALE 1 : 20



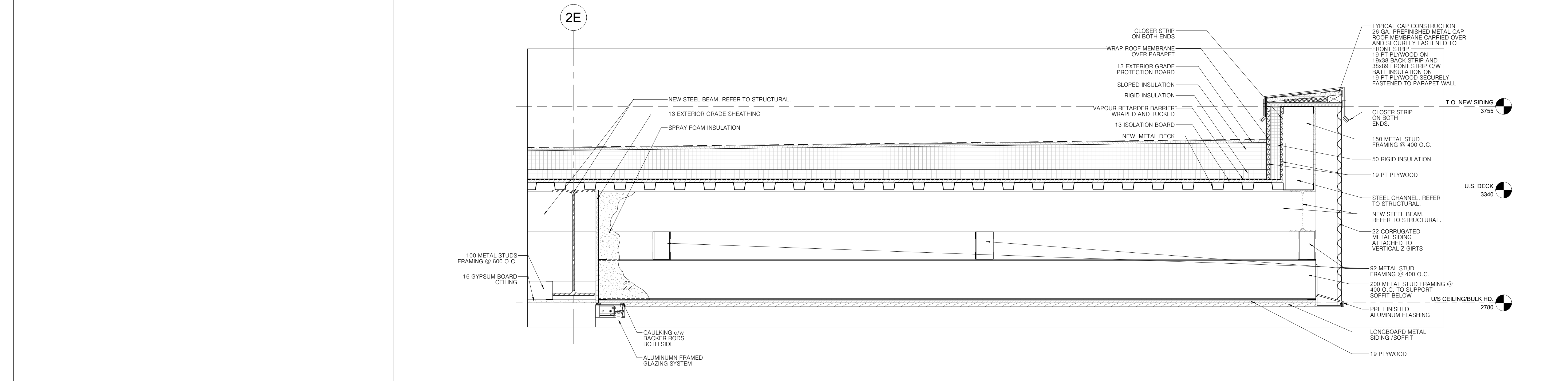
5 SECTION @ LIBRARY CEILING BULKHEAD  
SCALE 1 : 20



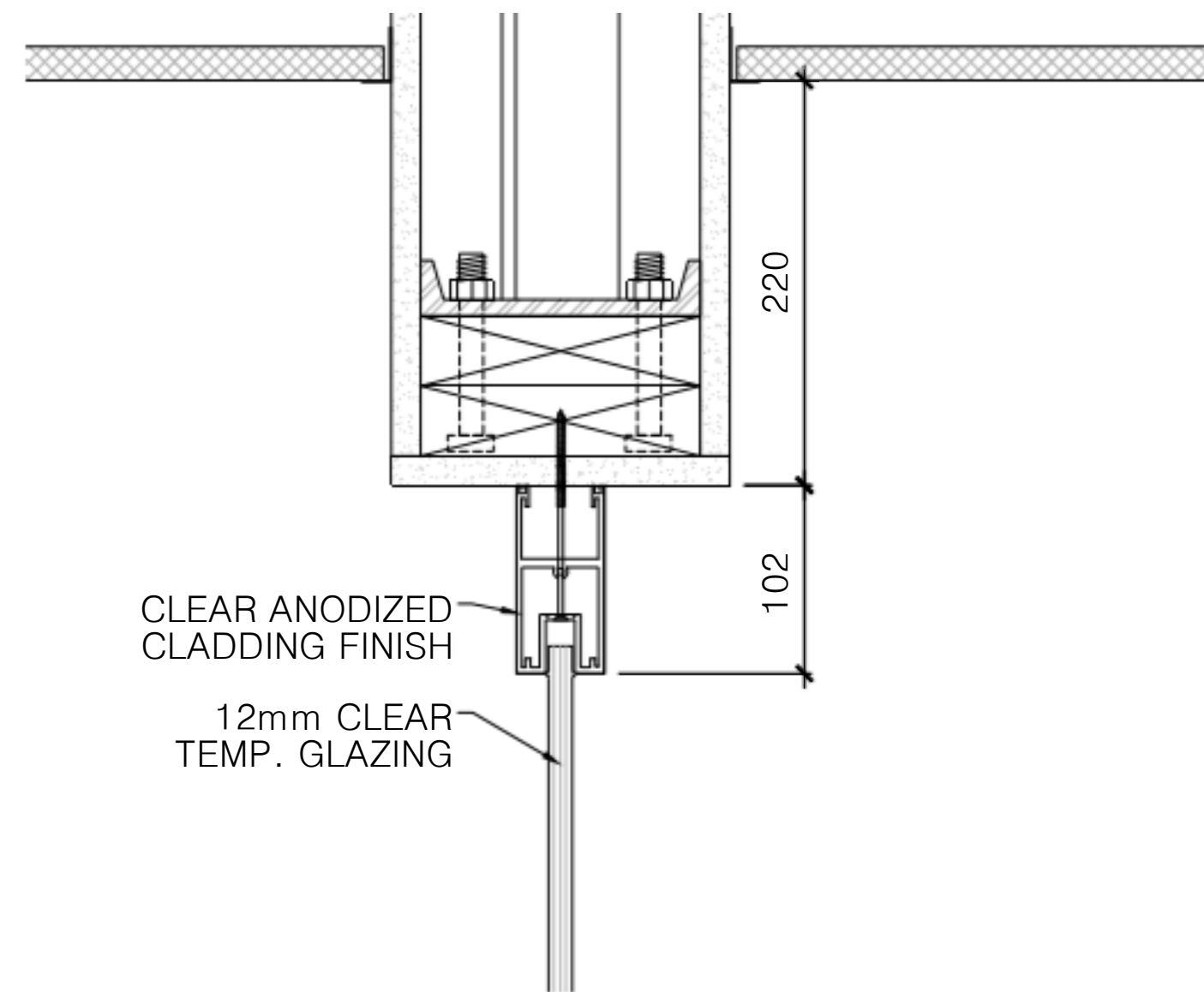
3 SECTION @ CEILING CORRIDOR  
SCALE 1 : 10



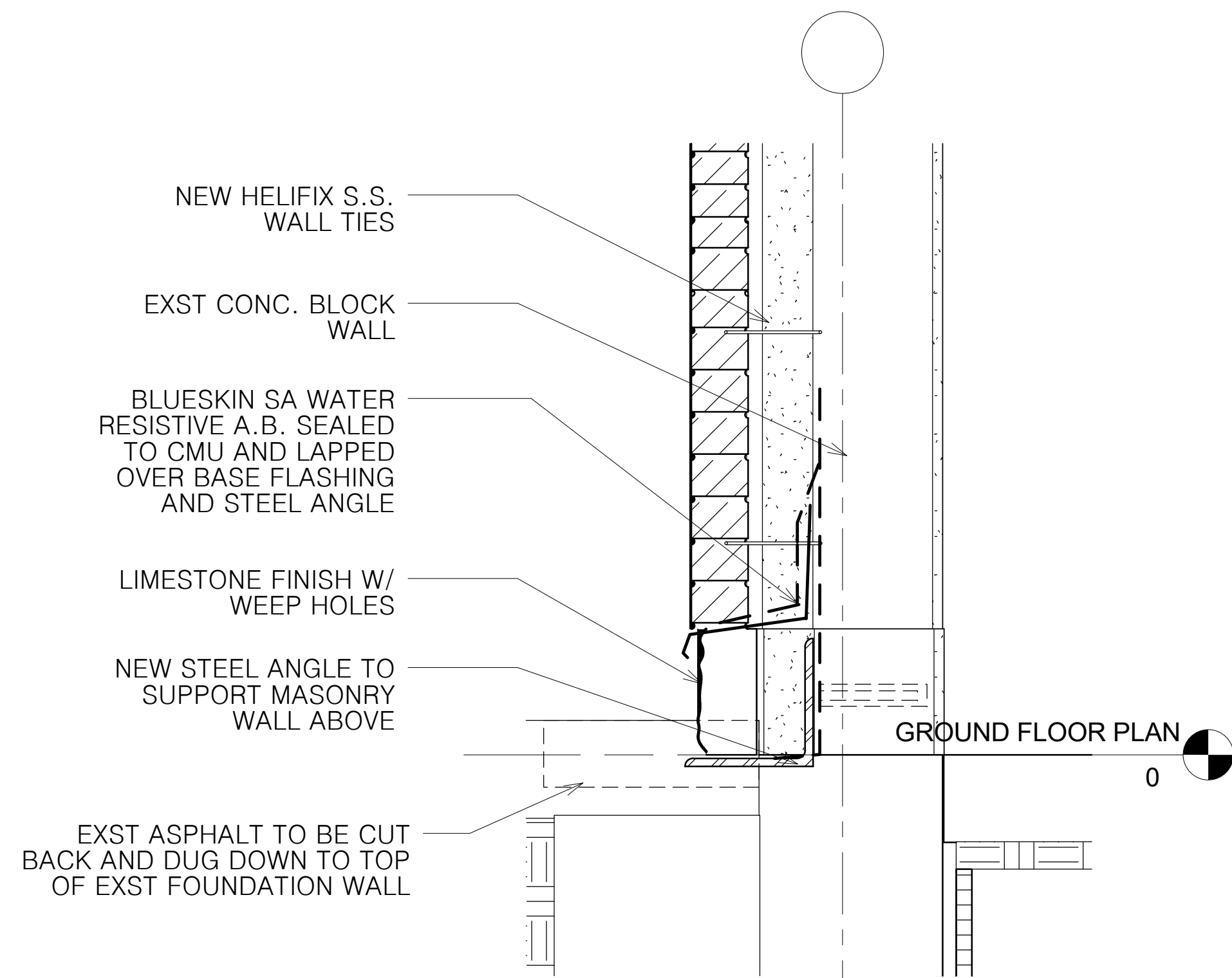
6 SECTION @ BOTTOM OF ENTRANCE DOOR  
SCALE 1 : 10



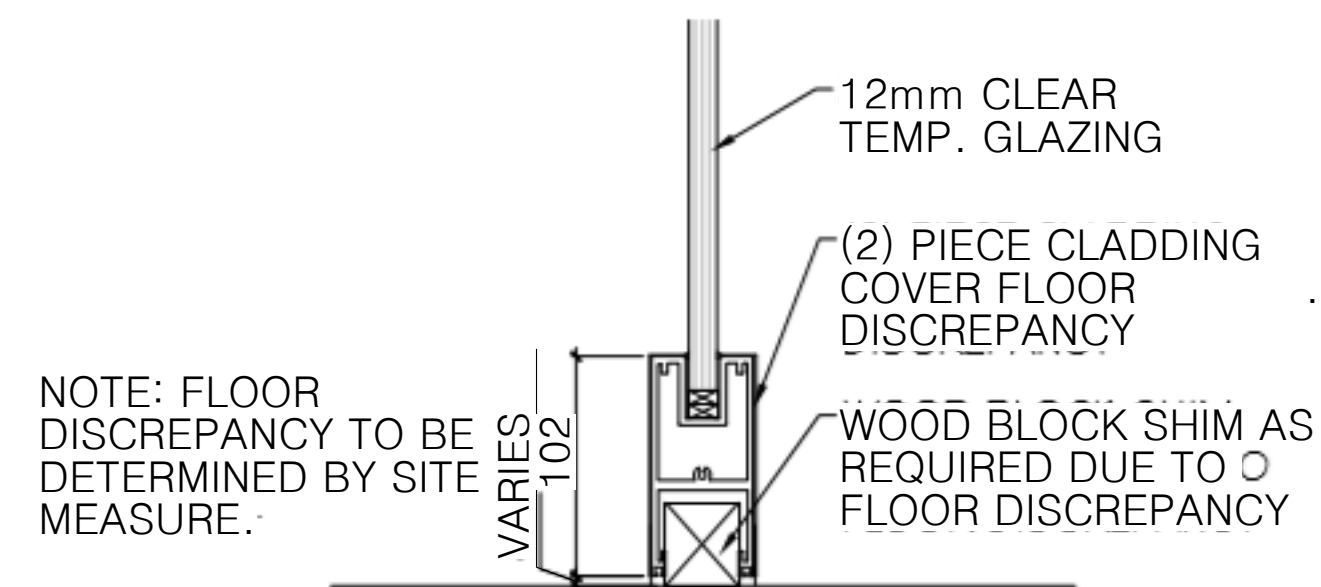
7 SECTION @ CANOPY  
SCALE 1 : 10



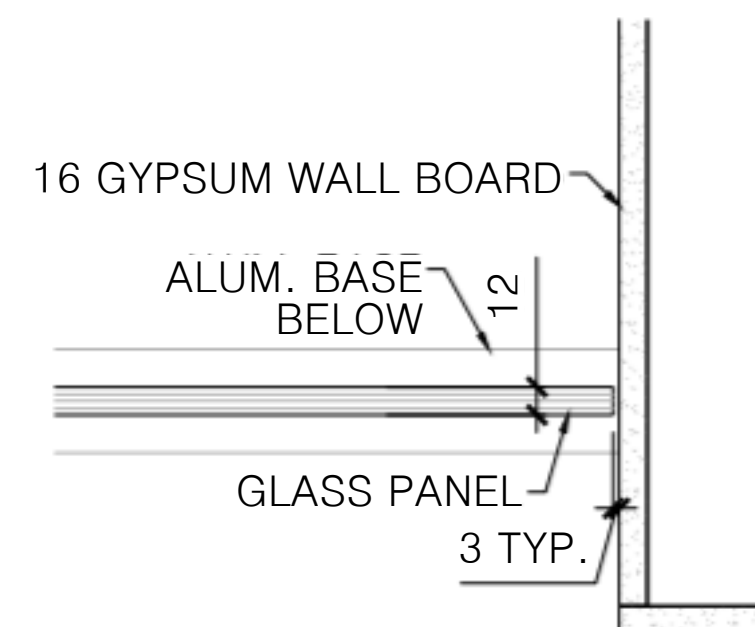
**1** ALUMINUM SLIDING DOOR SIDELITE HEAD DETAIL  
SCALE 1:4



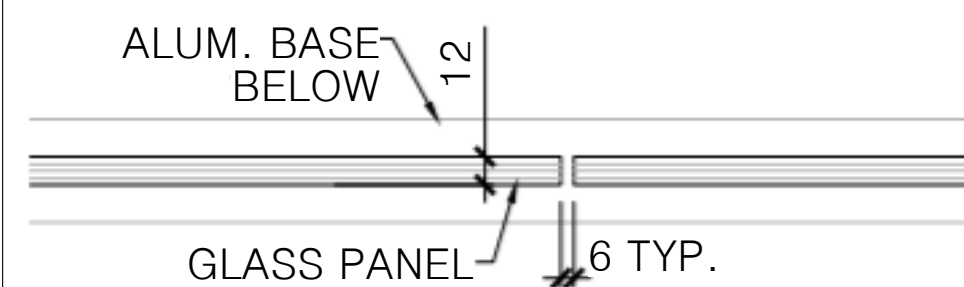
**2** BASE DETAIL WHERE ASPHALT RISES ABOVE BRICK  
SCALE 1:10



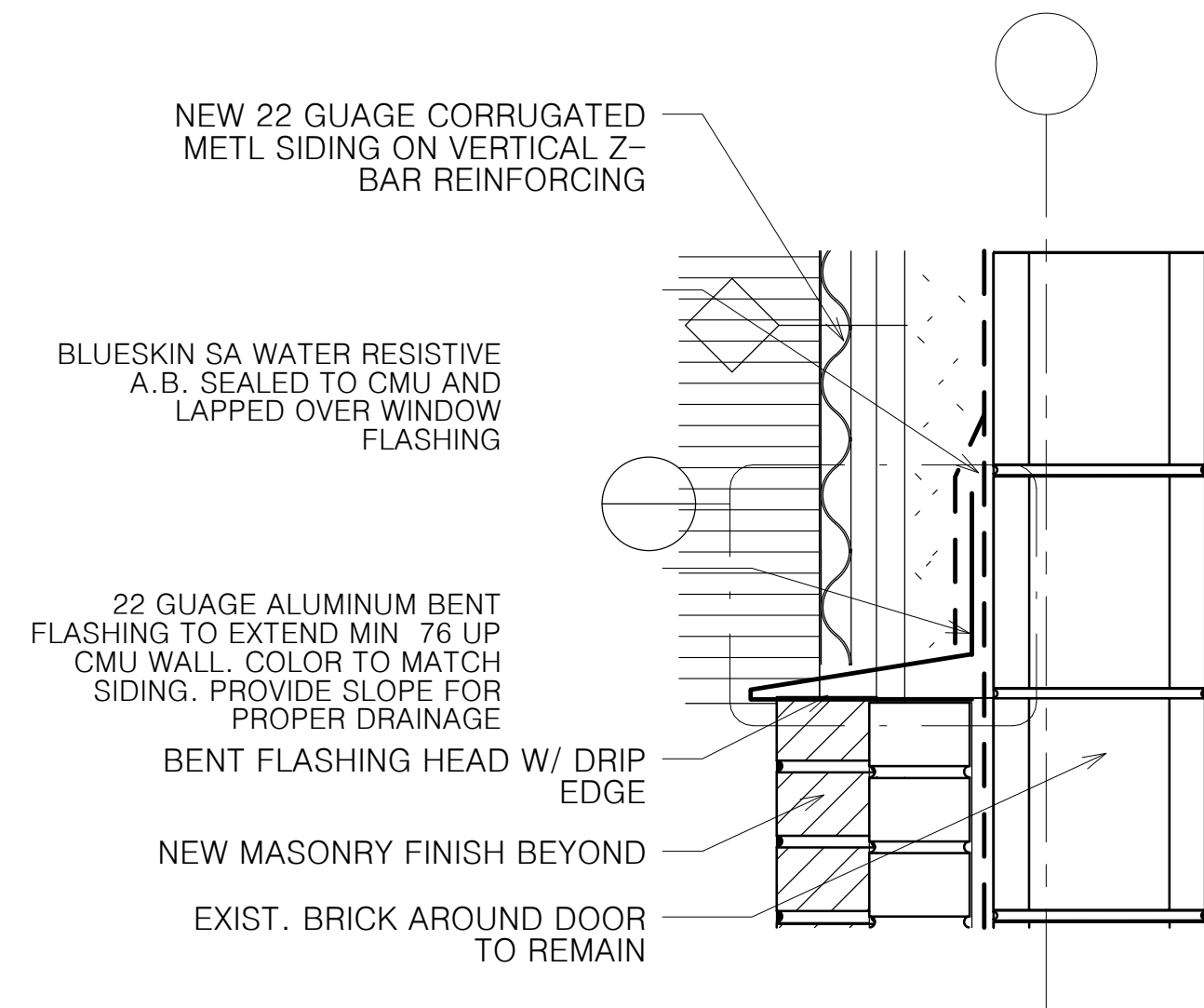
**3** ALUMINUM SLIDING DOOR SIDELITE BASE DETAIL  
SCALE 1:4



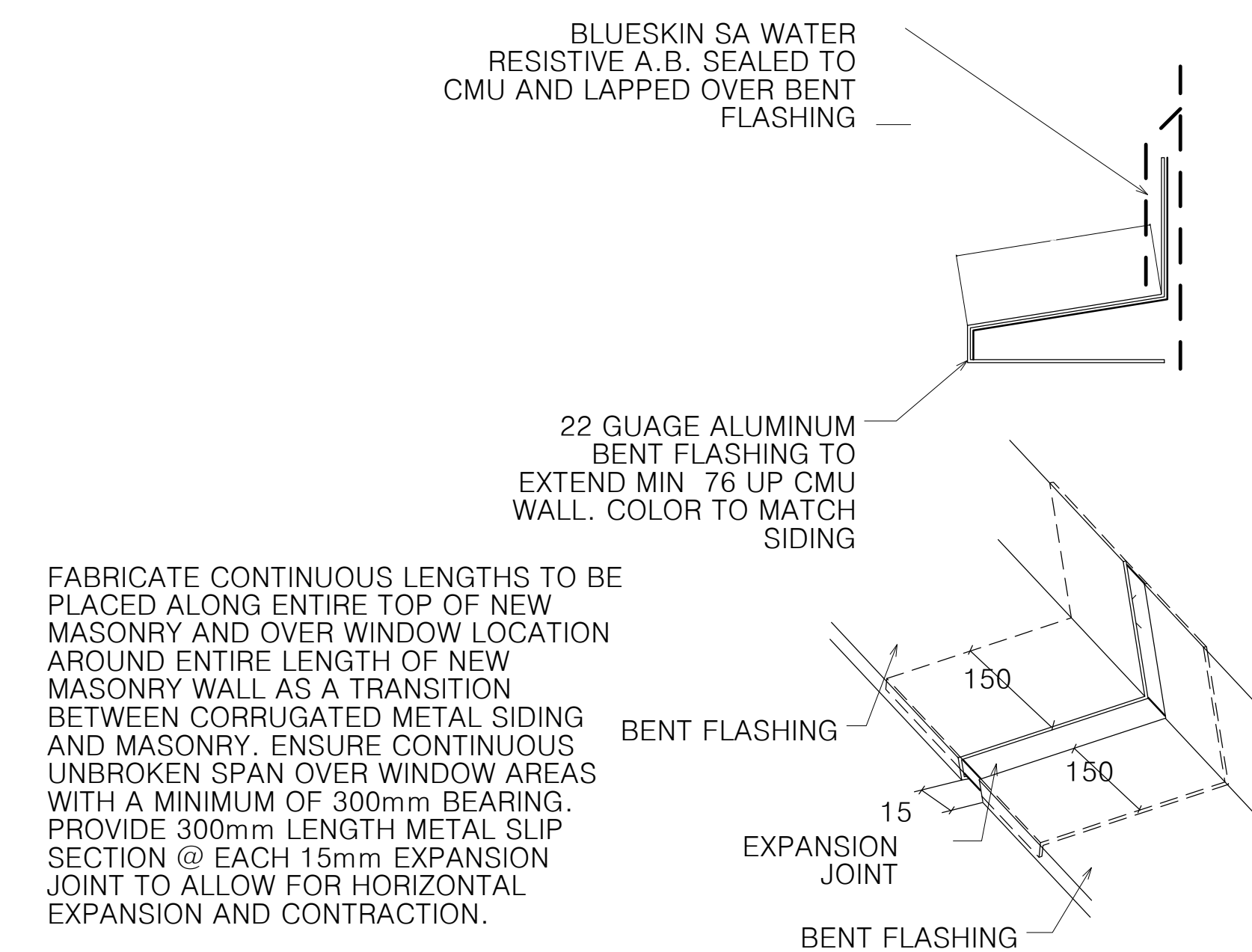
**4** TYP. GLASS JOINT @ WALL  
SCALE 1:4



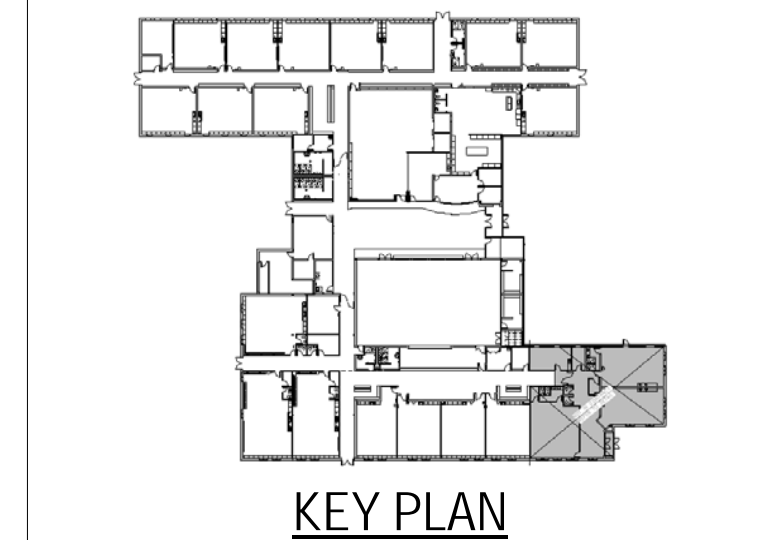
**5** TYP. GLASS JOINT  
SCALE 1:4



**6** SECTION DETAIL  
SCALE 1:7



**7** BENT FLASHING HEAD DETAIL  
SCALE 1:4



KEY PLAN

NOTES

LEGEND

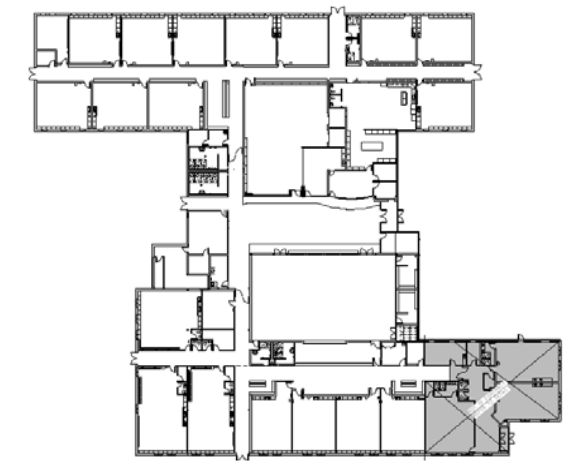
No.	DATE MM/DD/YYYY	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**SECTION DETAILS**

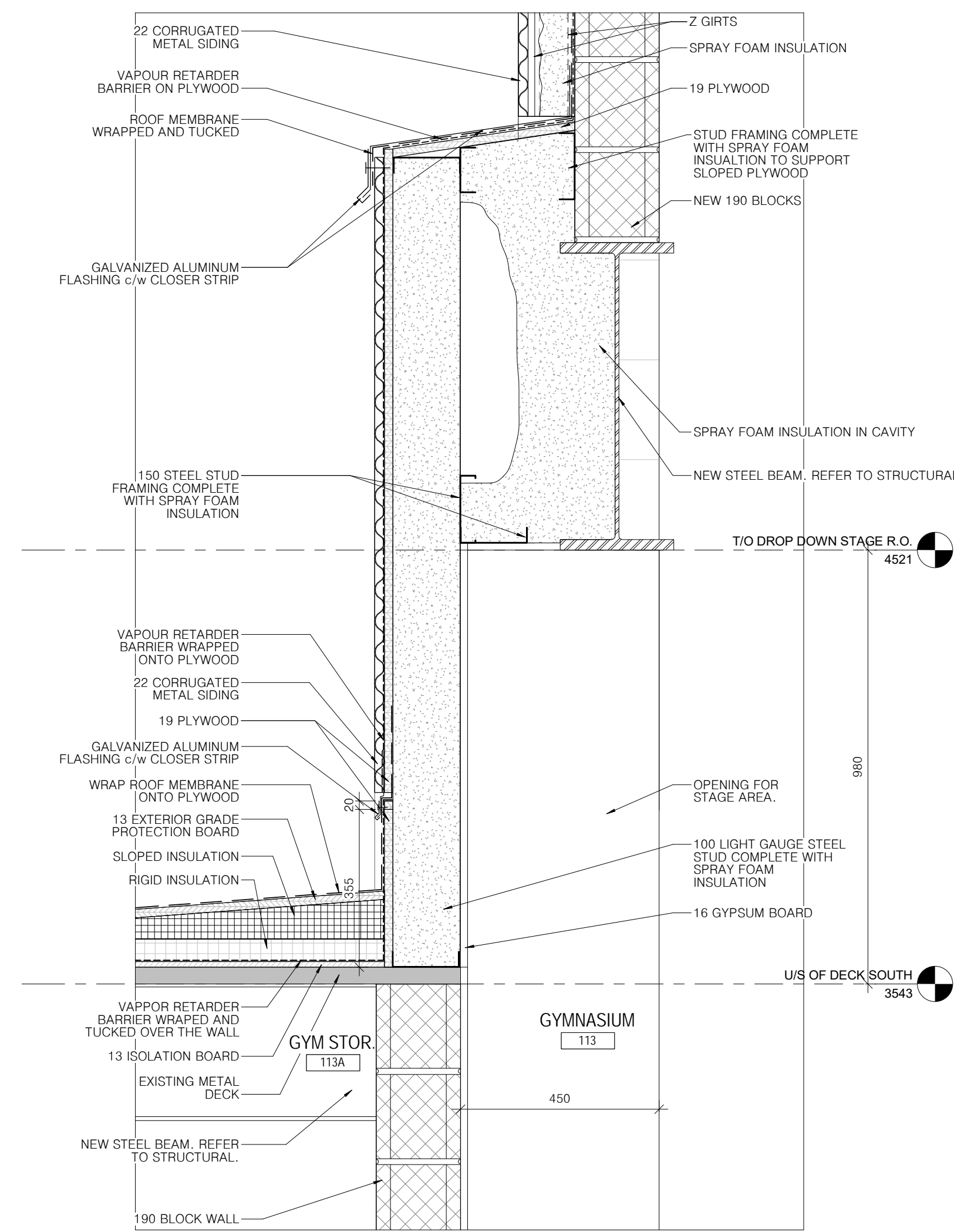
DATE PLOTTED 19/02/2020 11:53:57 AM	DRAWN BY PC	DRAWING No.
SCALE	CHECKED BY RRW	<b>A653</b>
PROJECT No. 1901		



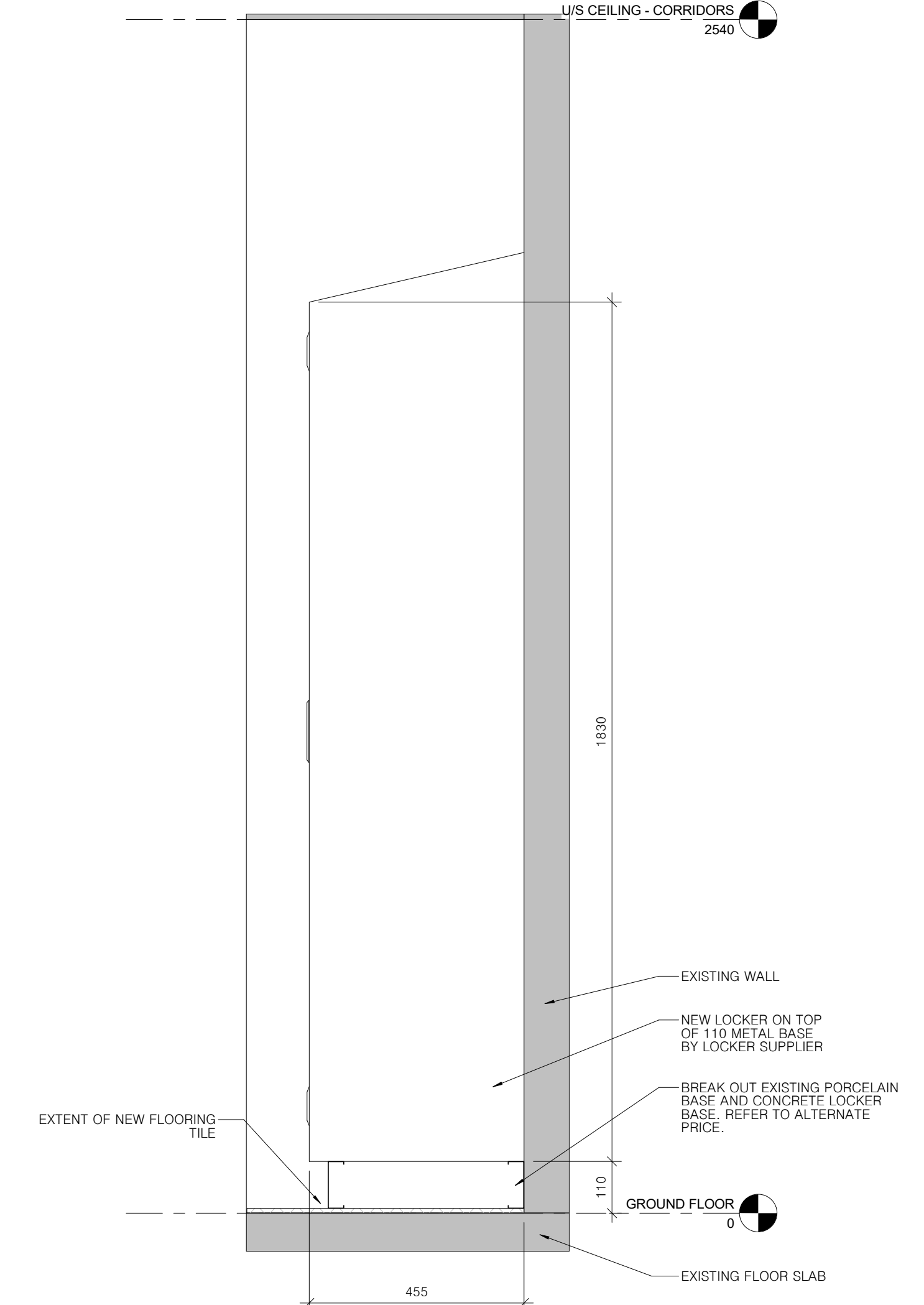
KEY PLAN

NOTES

LEGEND

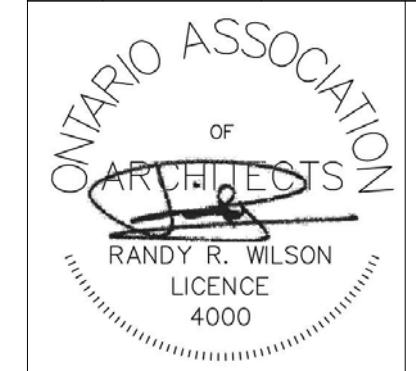


2 SECTION DETAIL AT STAGE  
 SCALE 1 : 10



1 LOCKER SECTION DETAIL  
 SCALE 1 : 10

No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	

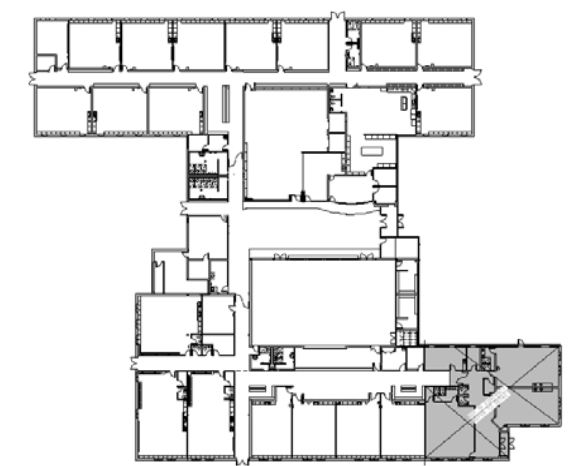


PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**SECTION DETAILS**

DATE PLOTTED 19/02/2020 11:54:00 AM	DRAWN BY TJV	DRAWING No.
SCALE 1 : 10	CHECKED BY RRW	<b>A654</b>
PROJECT No. 1901		



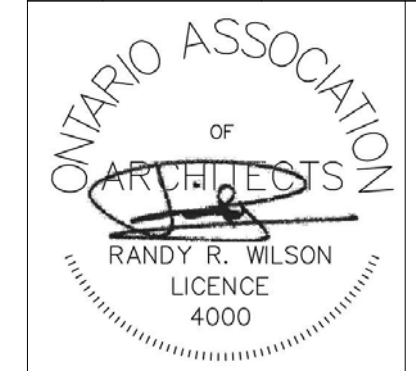


KEY PLAN

NOTES

LEGEND

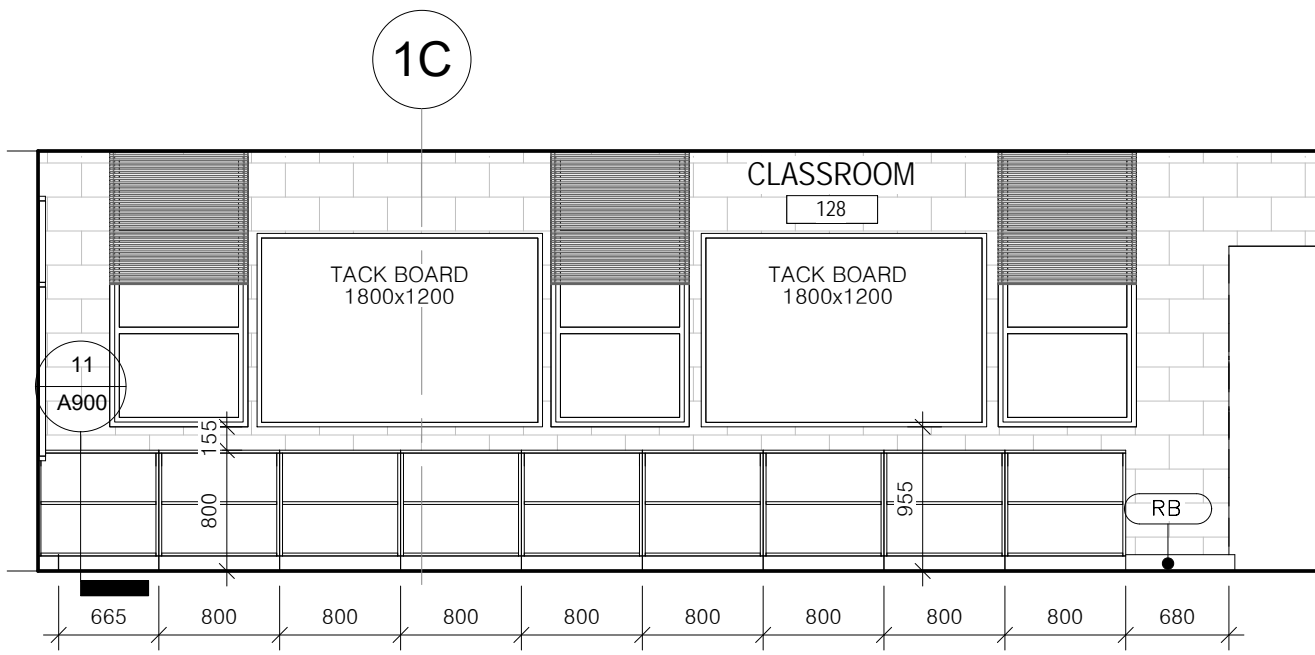
No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	
	MM/DD/YYYY		



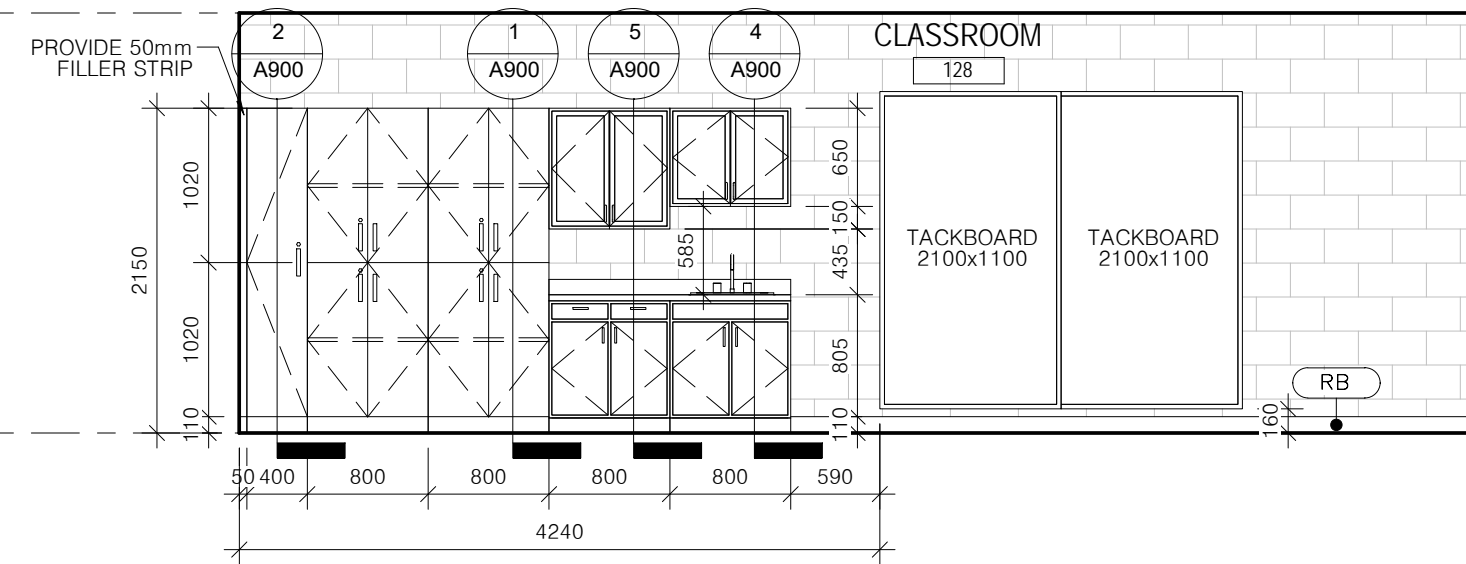
PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**TYPICAL CLASSROOM ELEVATIONS - NORTH WING**

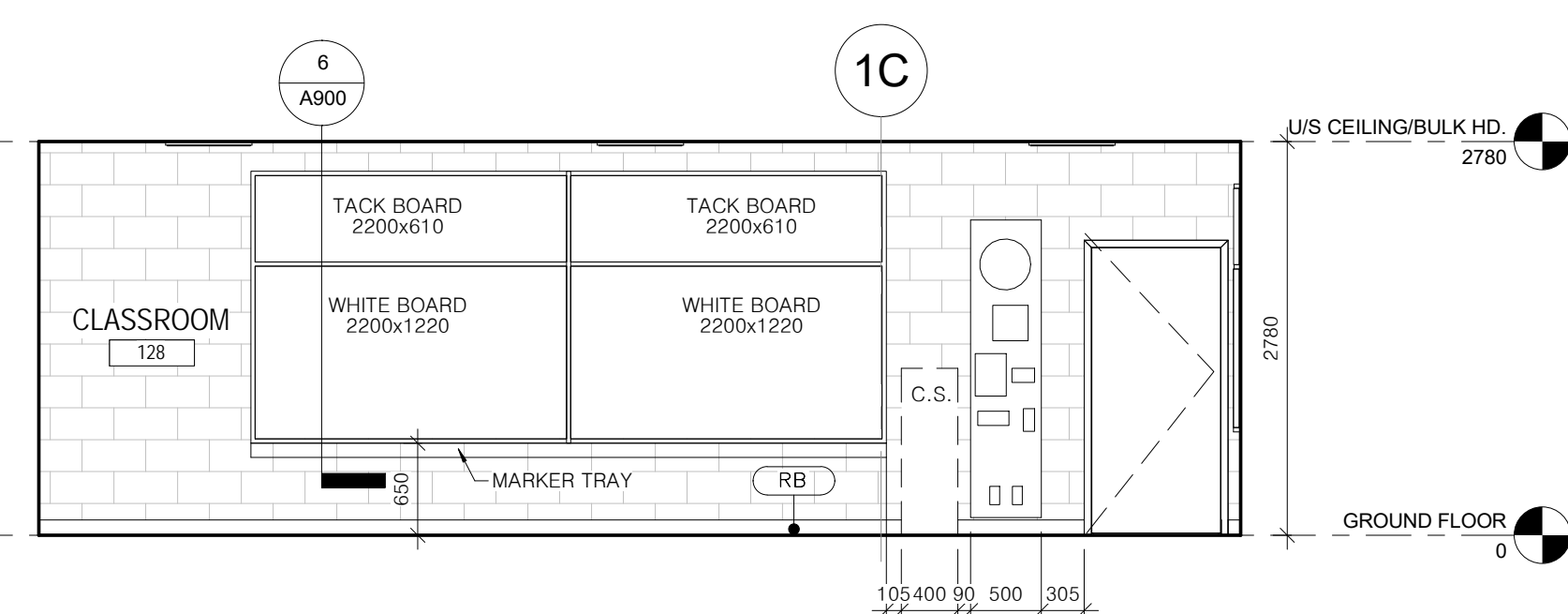
DATE PLOTTED 19/02/2020 11:54:10 AM	DRAWN BY TJV	DRAWING No.
SCALE 1:50	CHECKED BY RRW	<b>A800</b>
PROJECT No.	1901	



3 WINDOW WALL ELEVATION  
SCALE 1:50

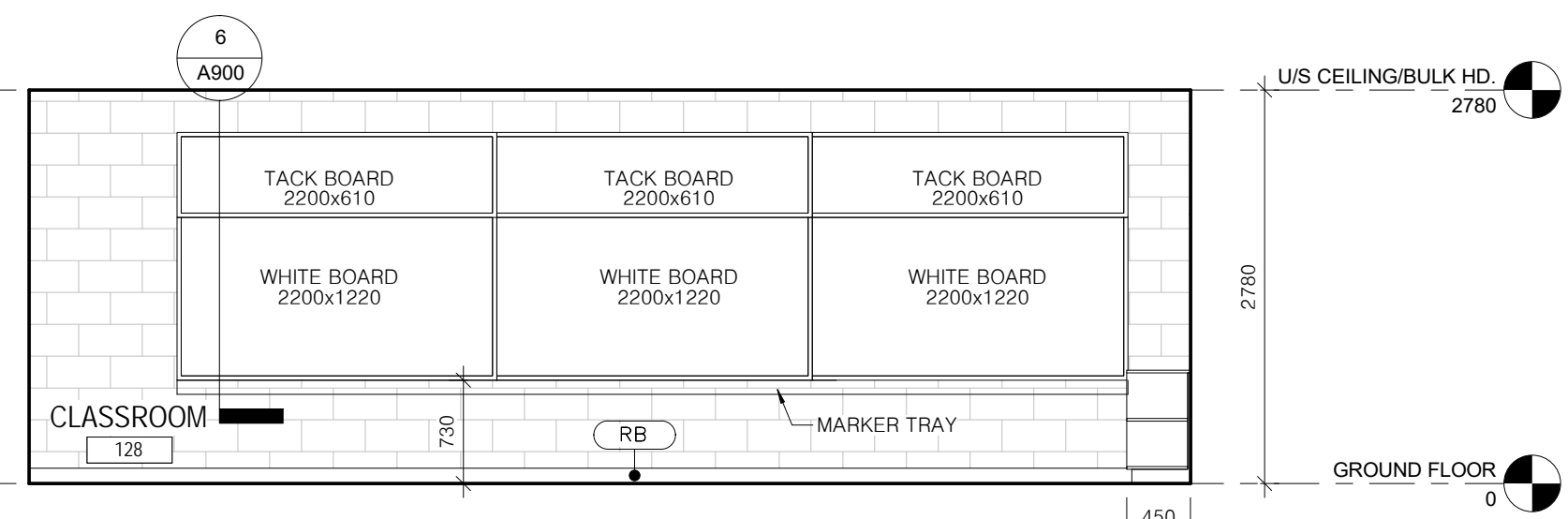


2 BACK OF CLASSROOM  
SCALE 1:50



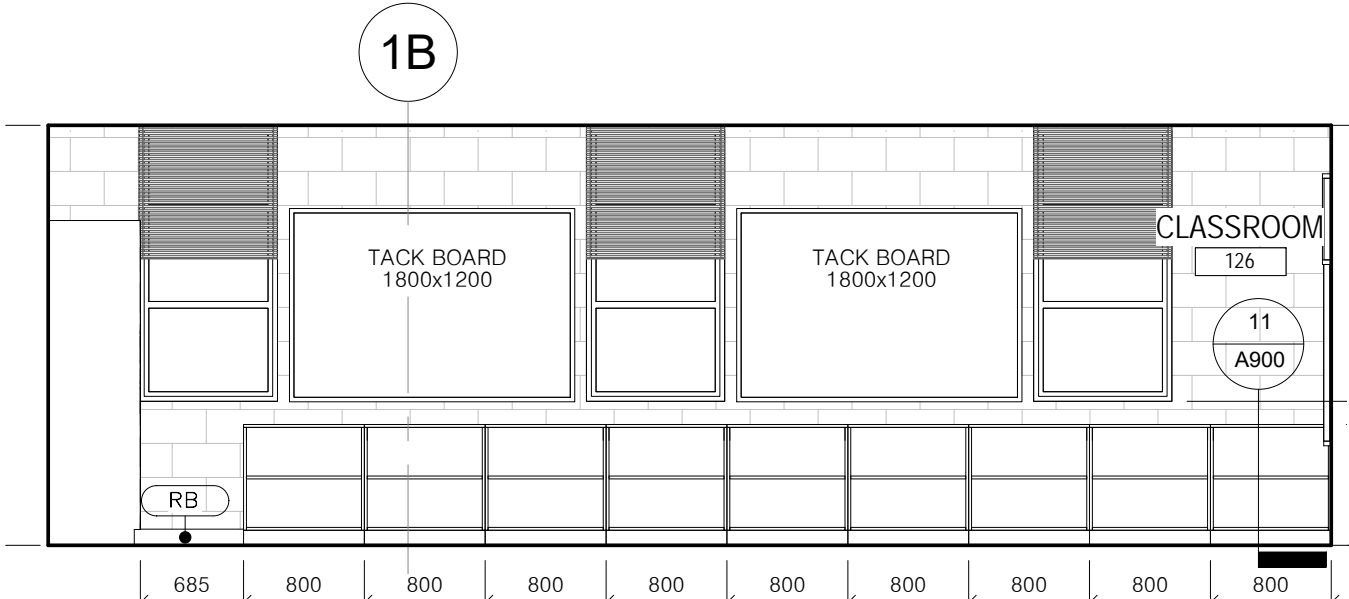
1 DOOR WALL ELEVATION  
SCALE 1:50

NOTE: ALL CEILING AS HIGH AS POSSIBLE FROM THE NOTED ELEVATIONS TO MATCH T/O WINDOW HEIGHT.

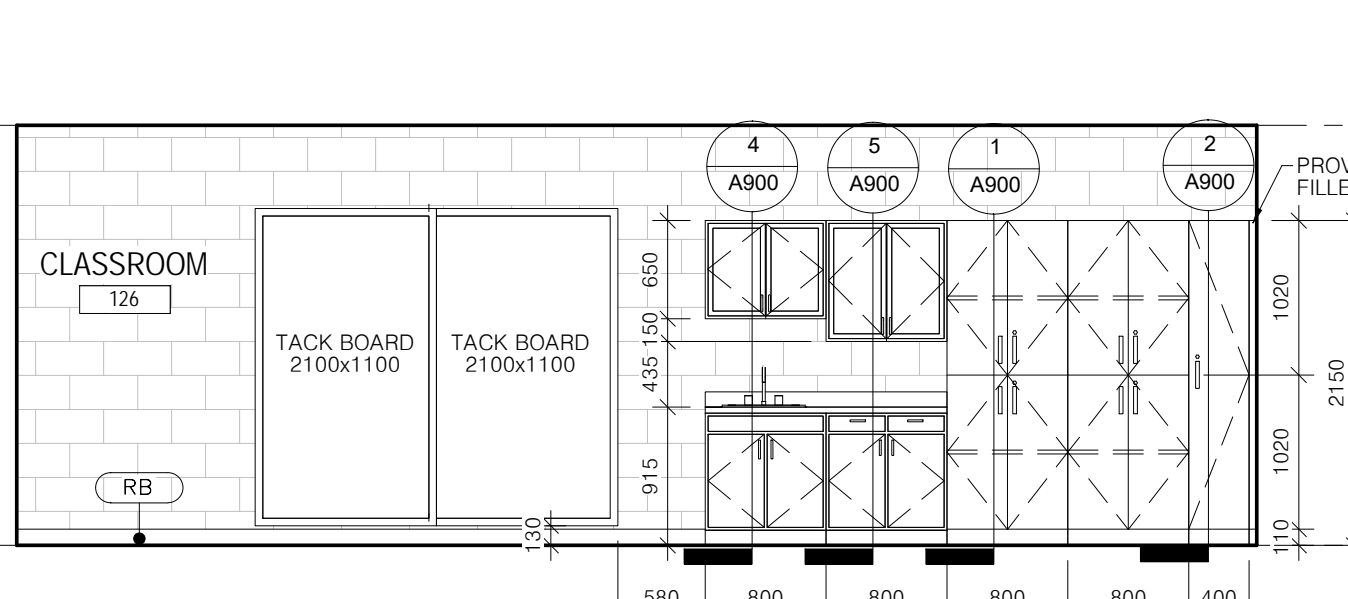


4 FRONT OF CLASSROOM  
SCALE 1:50

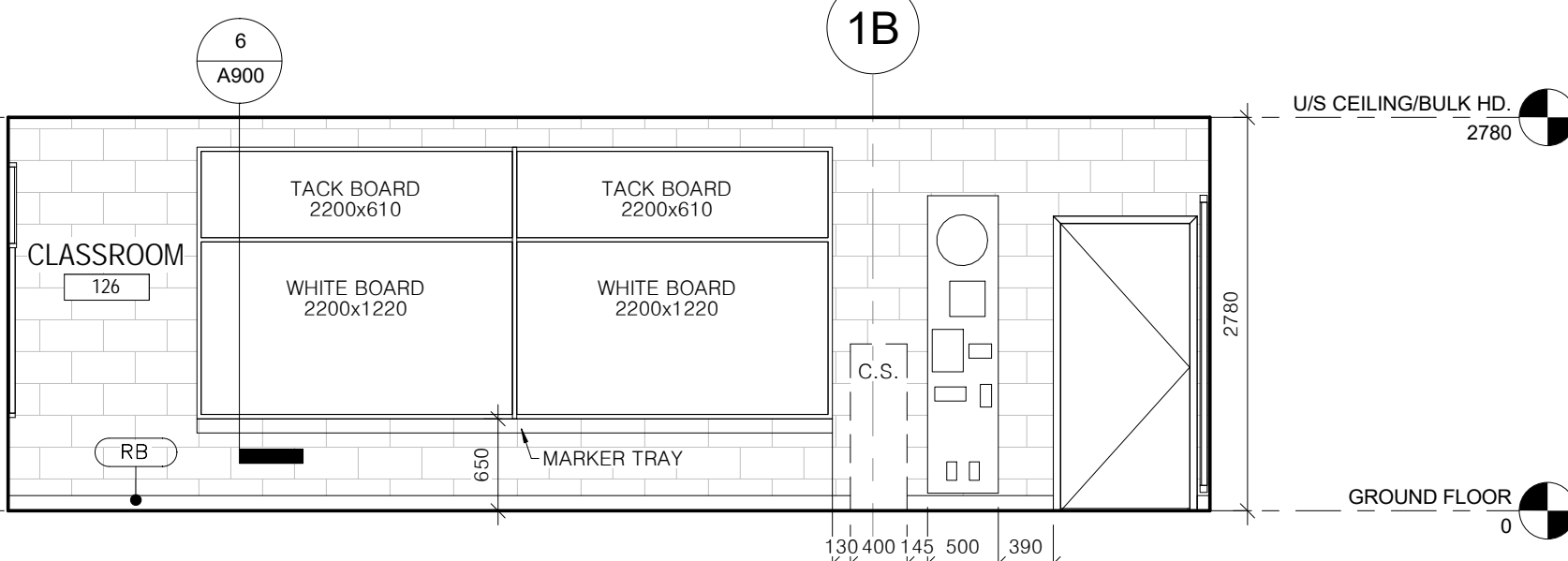
CLASSROOM TYPE 1 – ROOM 114, 116, 124, 128, AND 136



7 WINDOW WALL ELEVATION  
SCALE 1:50

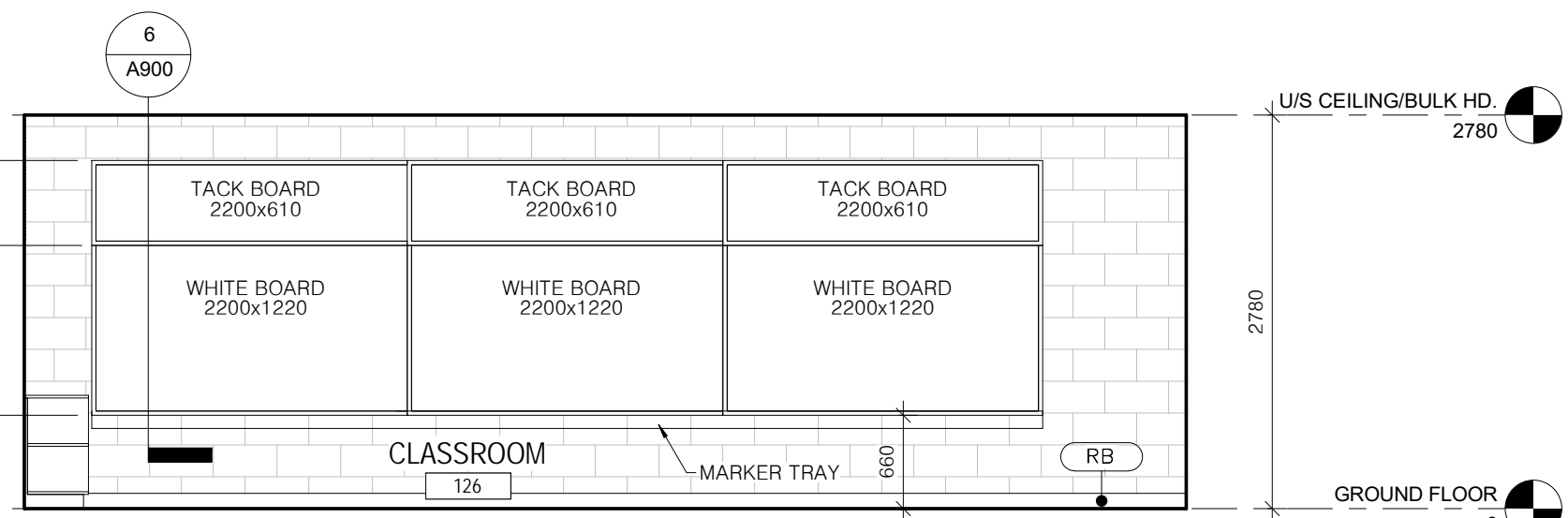


6 BACK OF CLASSROOM  
SCALE 1:50



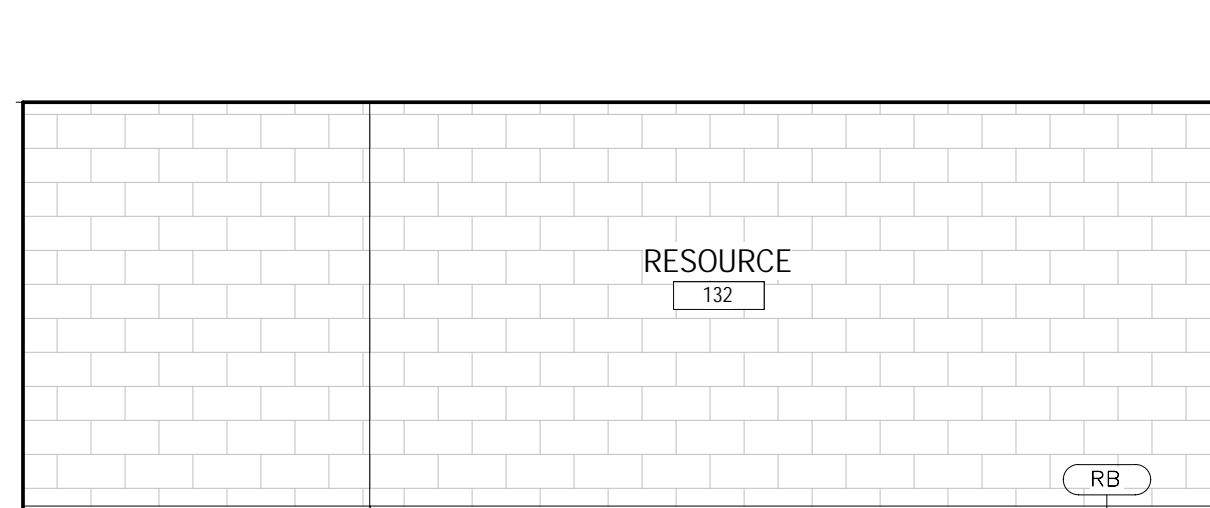
5 DOOR WALL ELEVATION  
SCALE 1:50

NOTE: ALL CEILING AS HIGH AS POSSIBLE FROM THE NOTED ELEVATIONS TO MATCH T/O WINDOW HEIGHT.

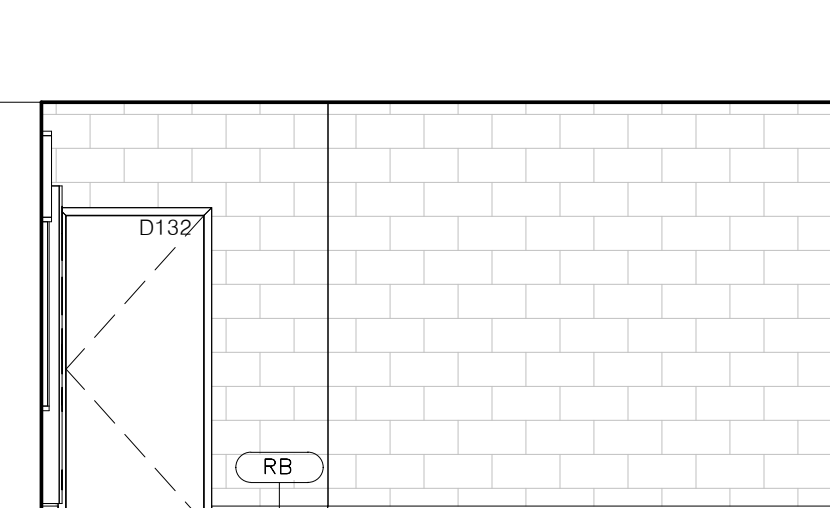


8 FRONT OF CLASSROOM  
SCALE 1:50

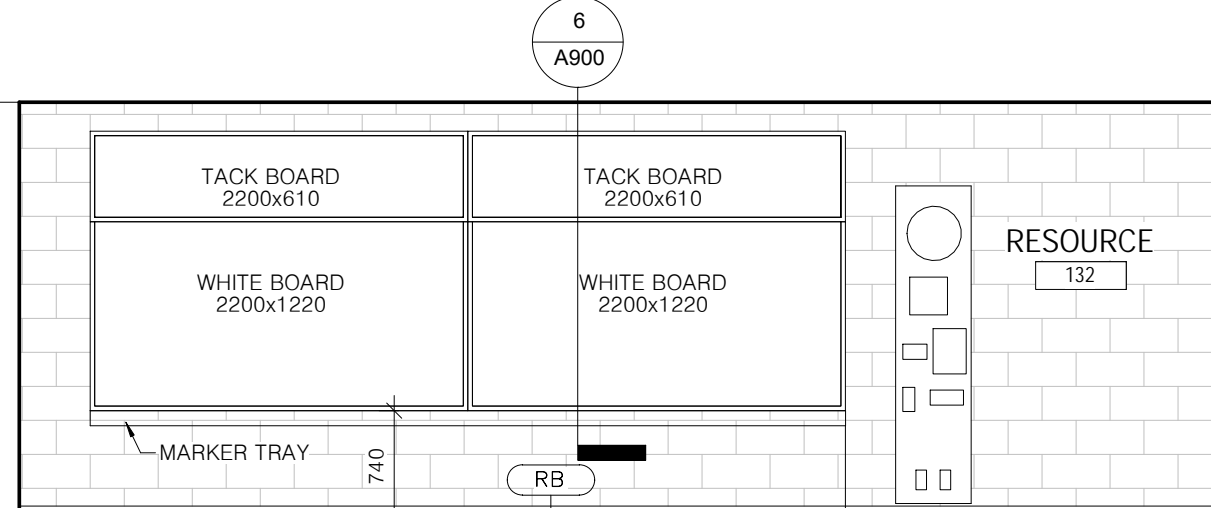
CLASSROOM TYPE 2 – ROOM 112, 122, 126, 130, 134 AND 138



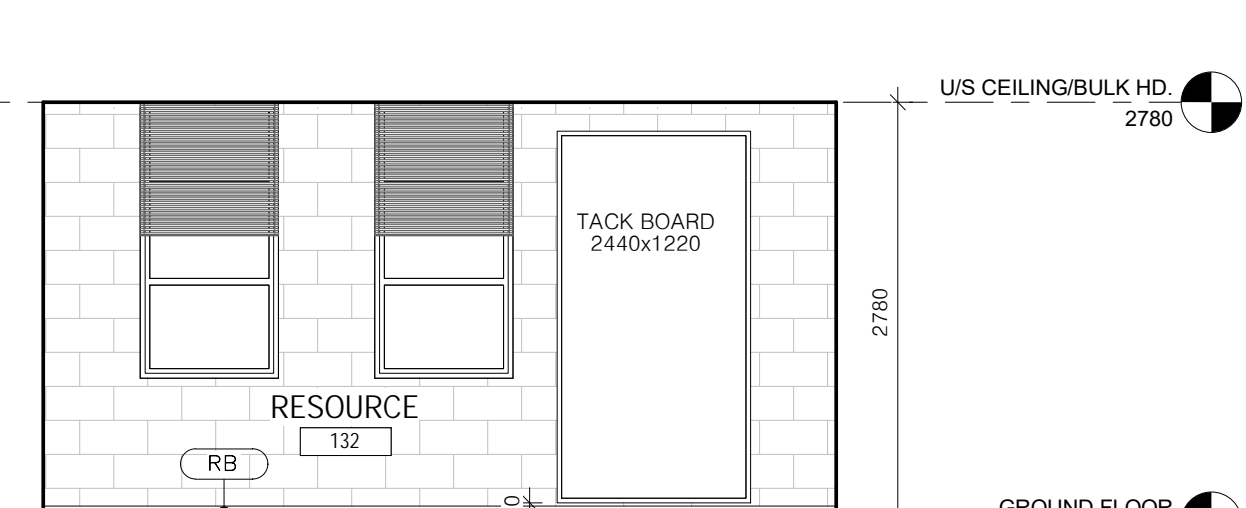
12 INTERIOR ELEVATION  
SCALE 1:50



11 INTERIOR ELEVATION  
SCALE 1:50

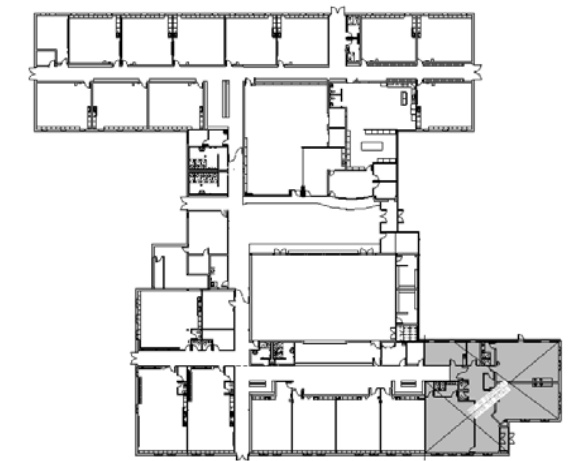


10 INTERIOR ELEVATION  
SCALE 1:50



9 INTERIOR ELEVATION  
SCALE 1:50

NOTE: ALL CEILING AS HIGH AS POSSIBLE FROM THE NOTED ELEVATIONS TO MATCH T/O WINDOW HEIGHT.

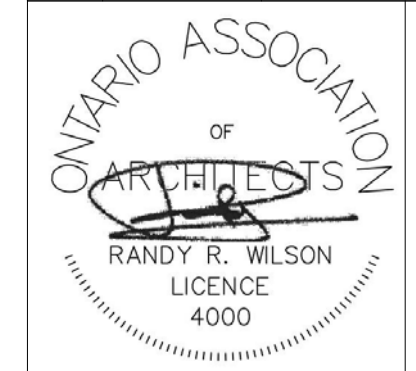


KEY PLAN

NOTES

LEGEND

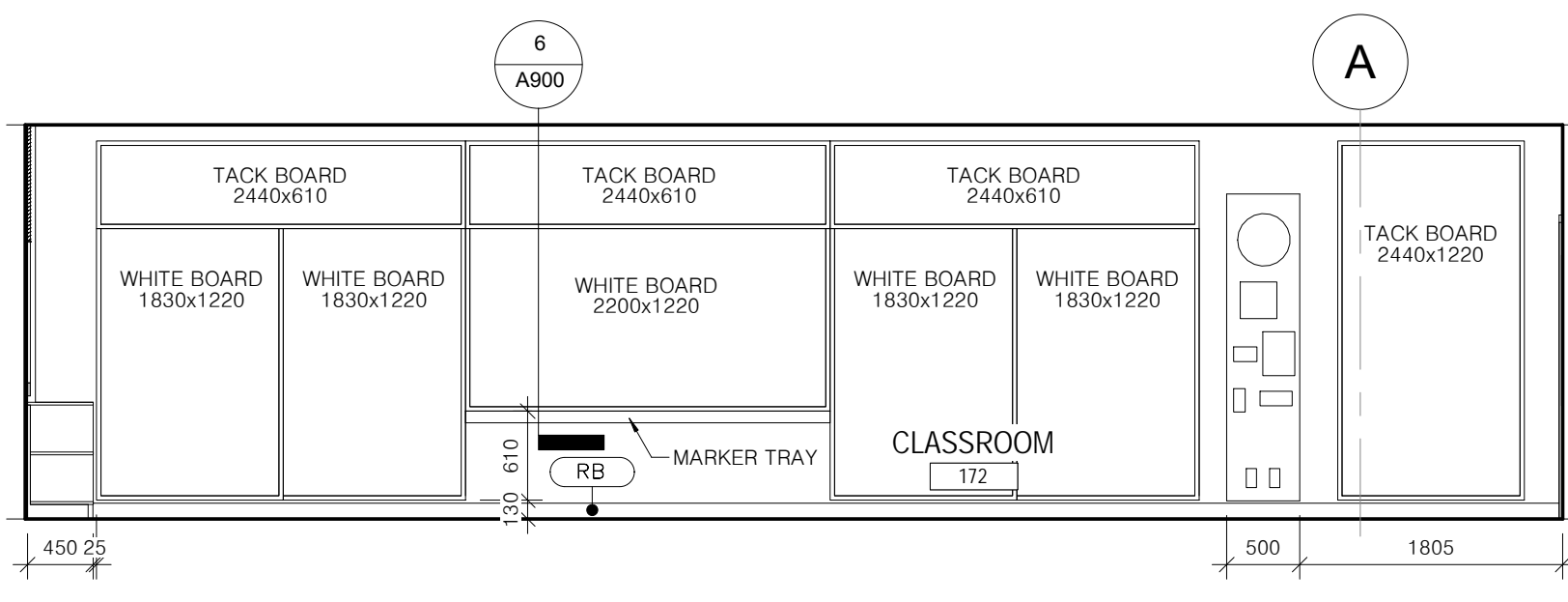
No.	DATE	ISSUED FOR	ISSUED BY	REVISION
1	19/02/2020	ISSUED FOR TENDER	TJV	
	MM/DD/YYYY	DESCRIPTION		REV. No.



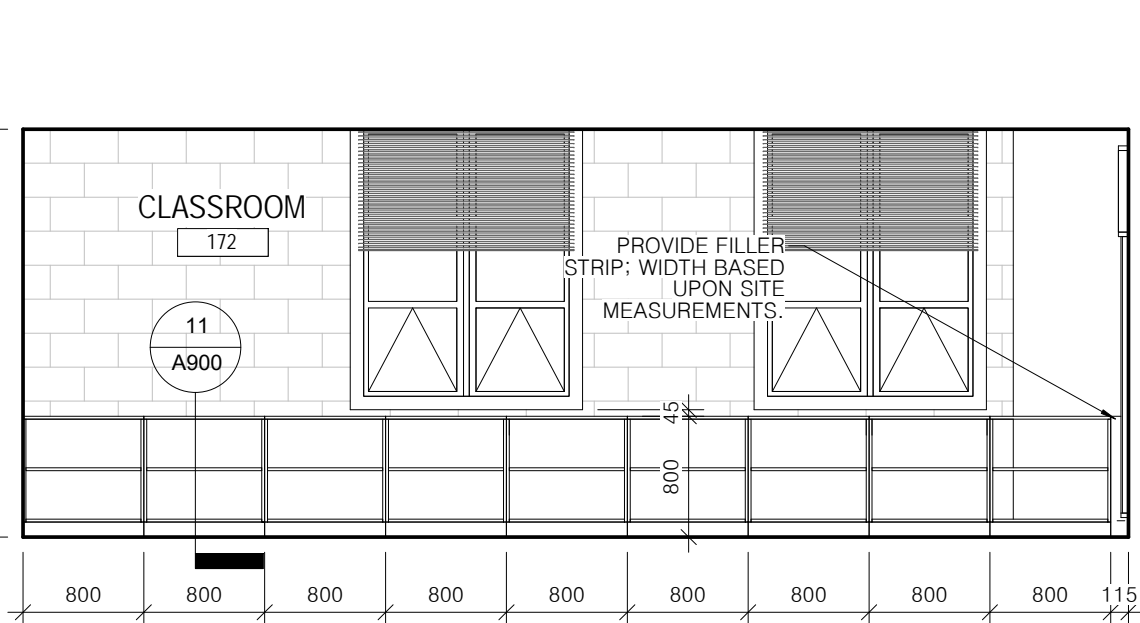
PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**TYPICAL CLASSROOM ELEVATIONS - SOUTH WING**

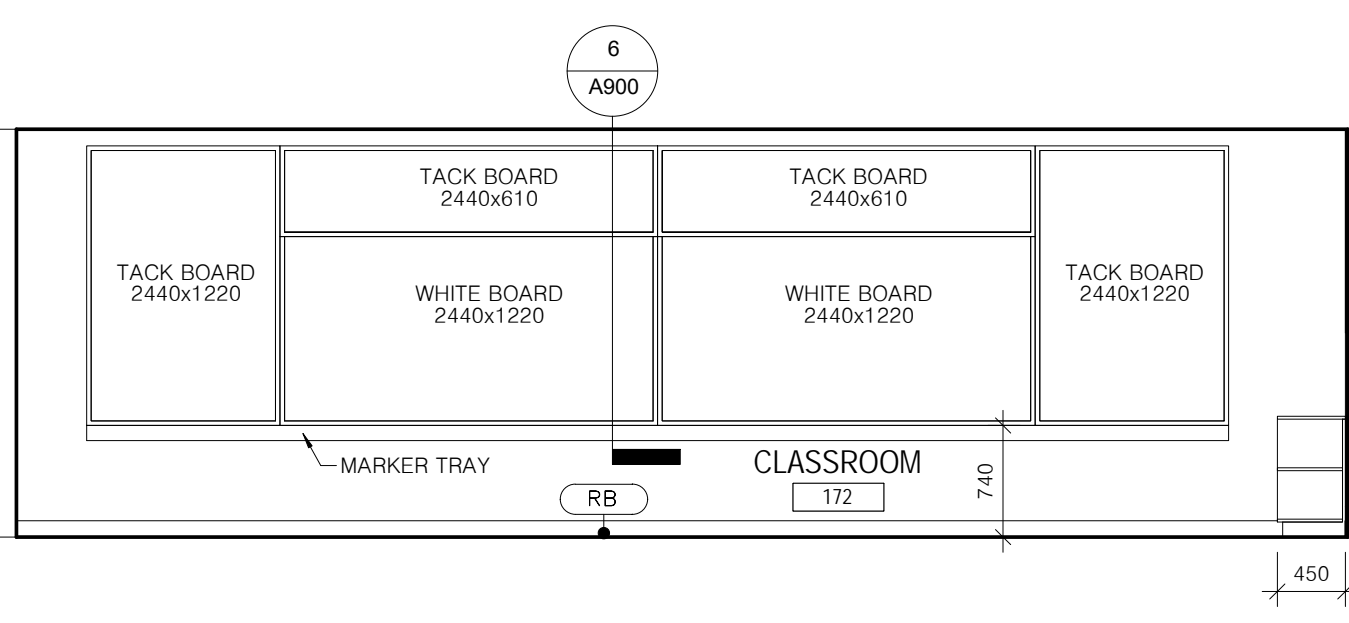
DATE PLOTTED 19/02/2020 11:54:20 AM	DRAWN BY TJV	DRAWING No.
SCALE 1:50	CHECKED BY RRW	<b>A801</b>
PROJECT No. 1901		



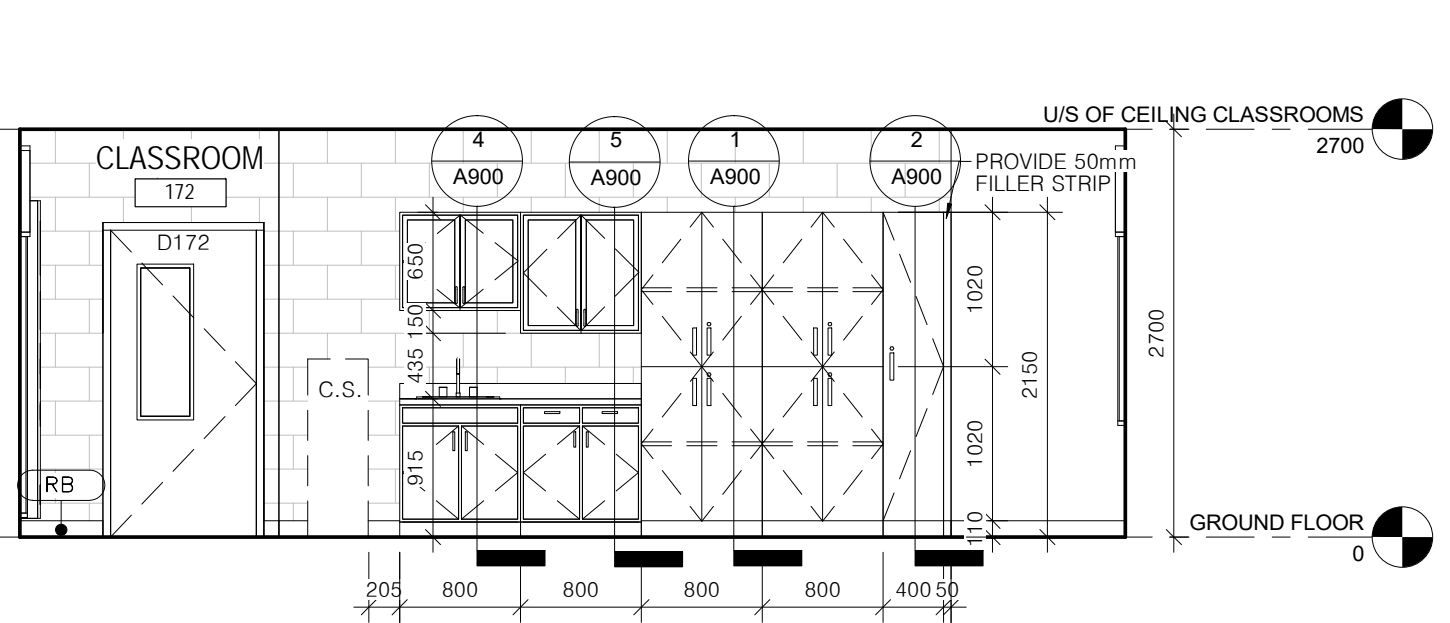
4 FRONT OF CLASSROOM  
SCALE 1:50



3 WINDOW WALL ELEVATION  
SCALE 1:50

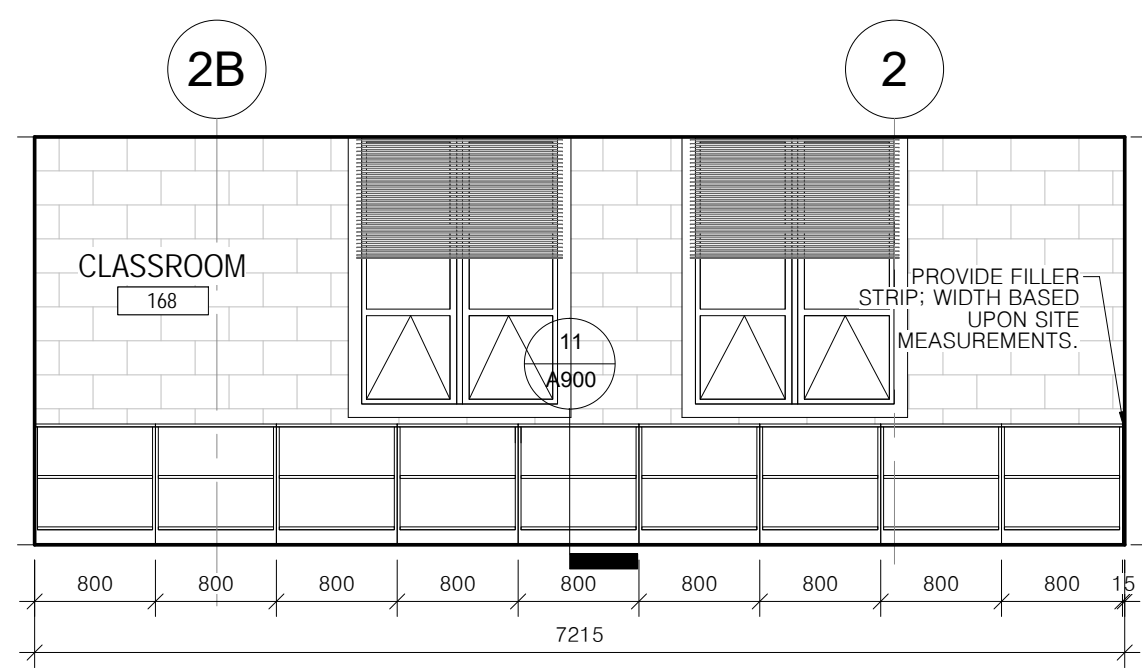


2 BACK OF CLASSROOM  
SCALE 1:50

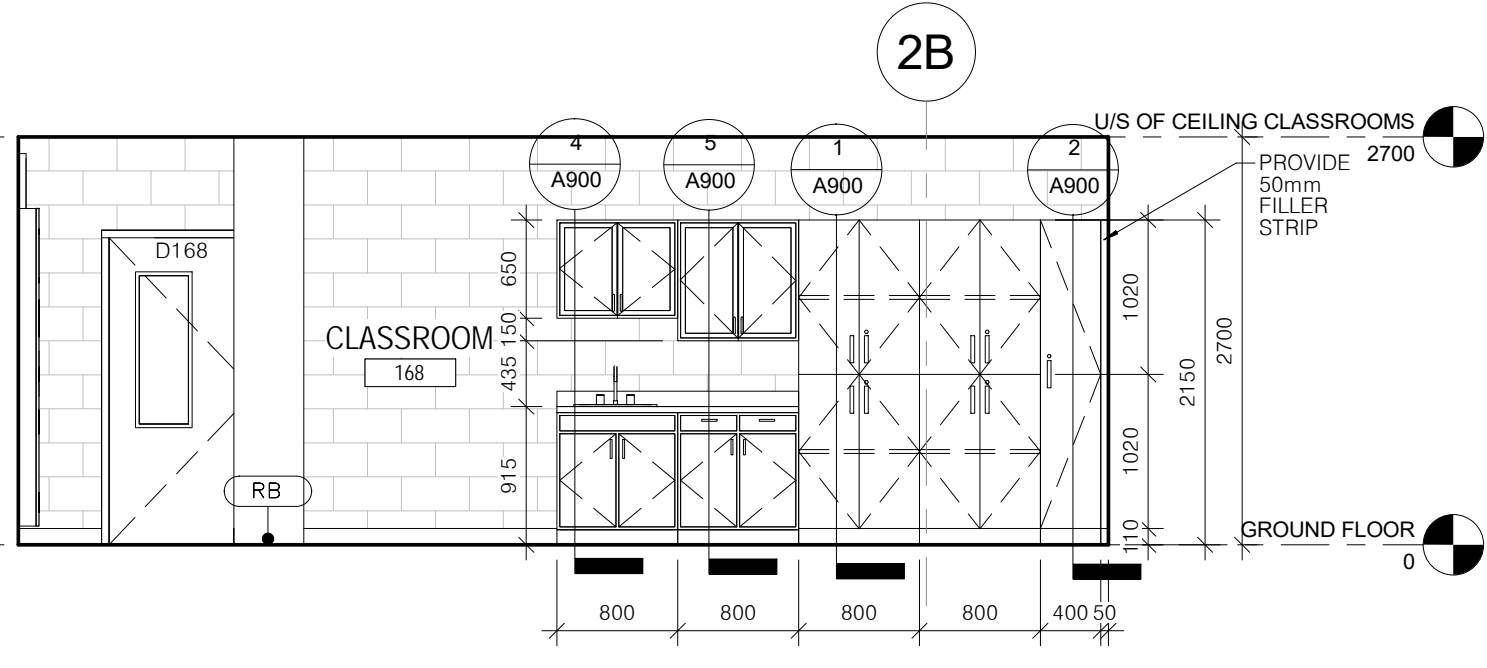


1 DOOR WALL ELEVATION  
SCALE 1:50

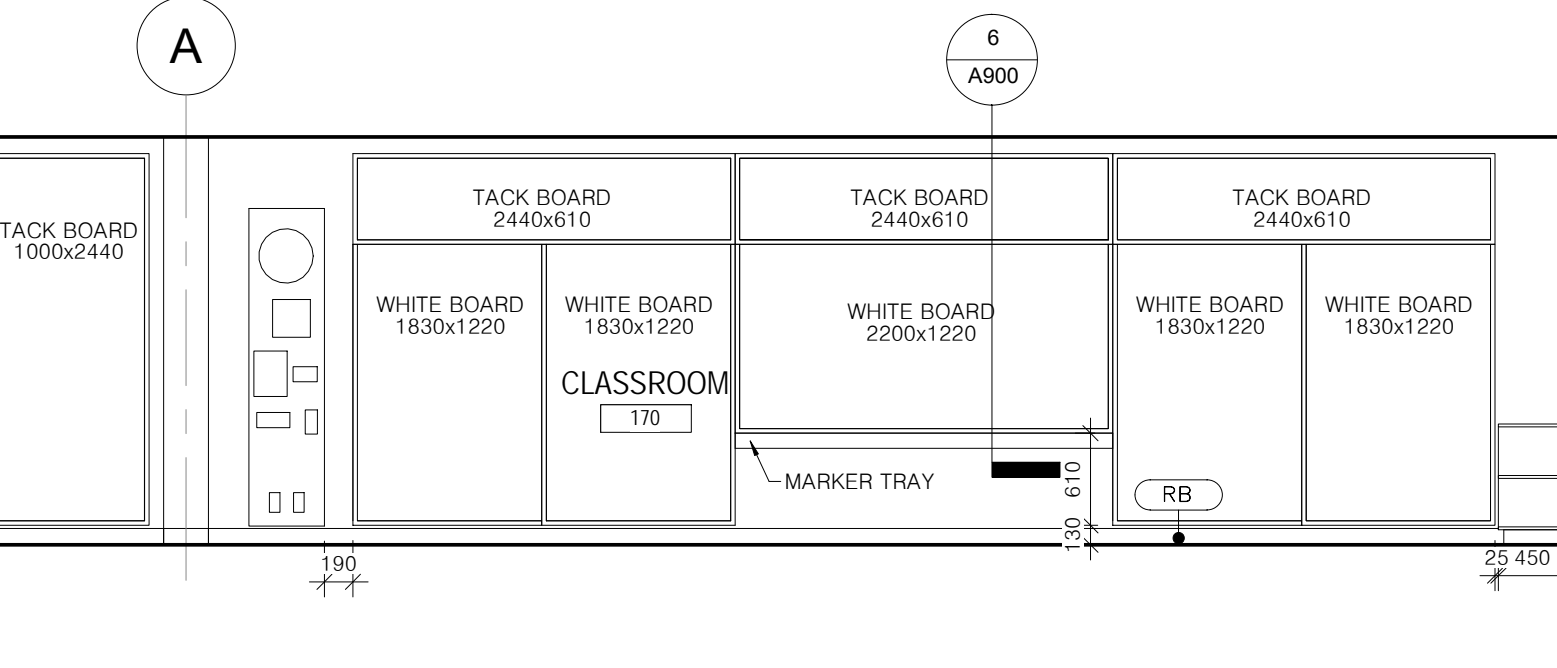
NOTE: ALL CEILING AS HIGH AS POSSIBLE FROM THE NOTED ELEVATIONS TO MATCH T/O WINDOW HEIGHT.



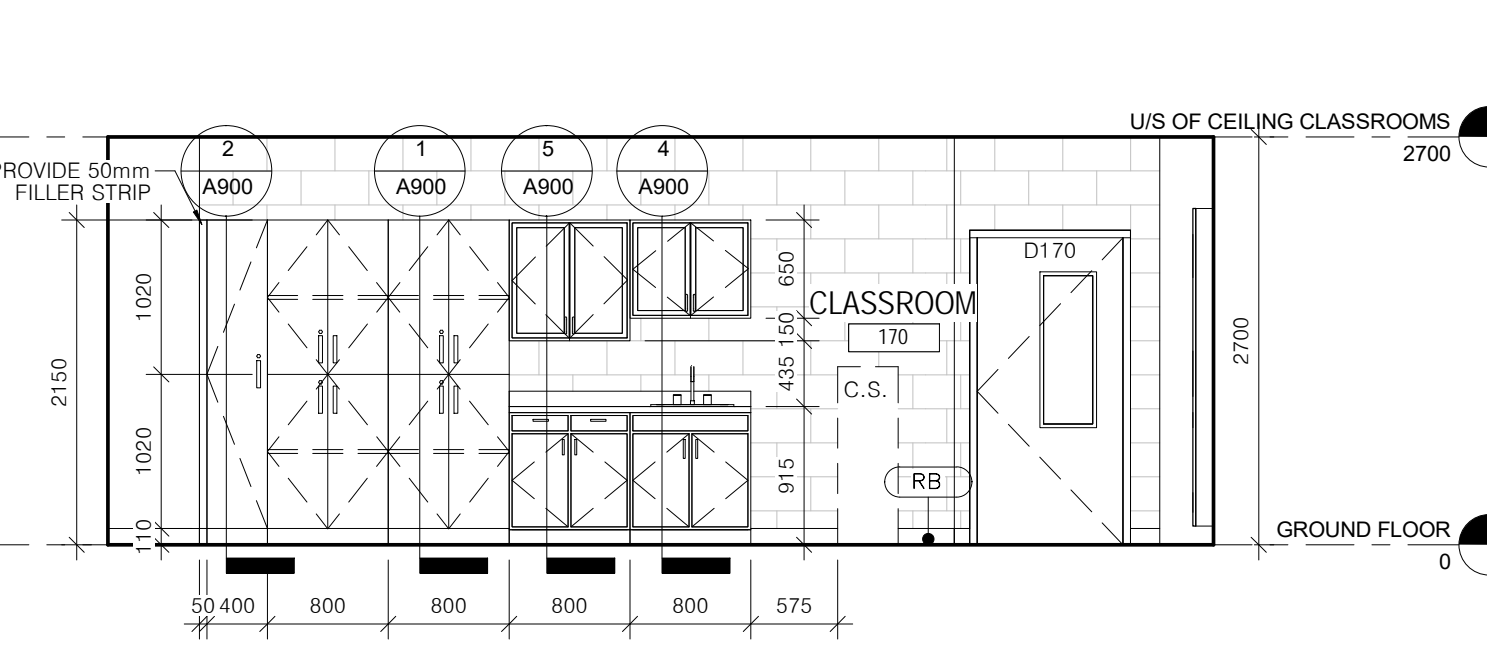
8 WINDOW WALL ELEVATION  
SCALE 1:50



7 DOOR WALL ELEVATION  
SCALE 1:50

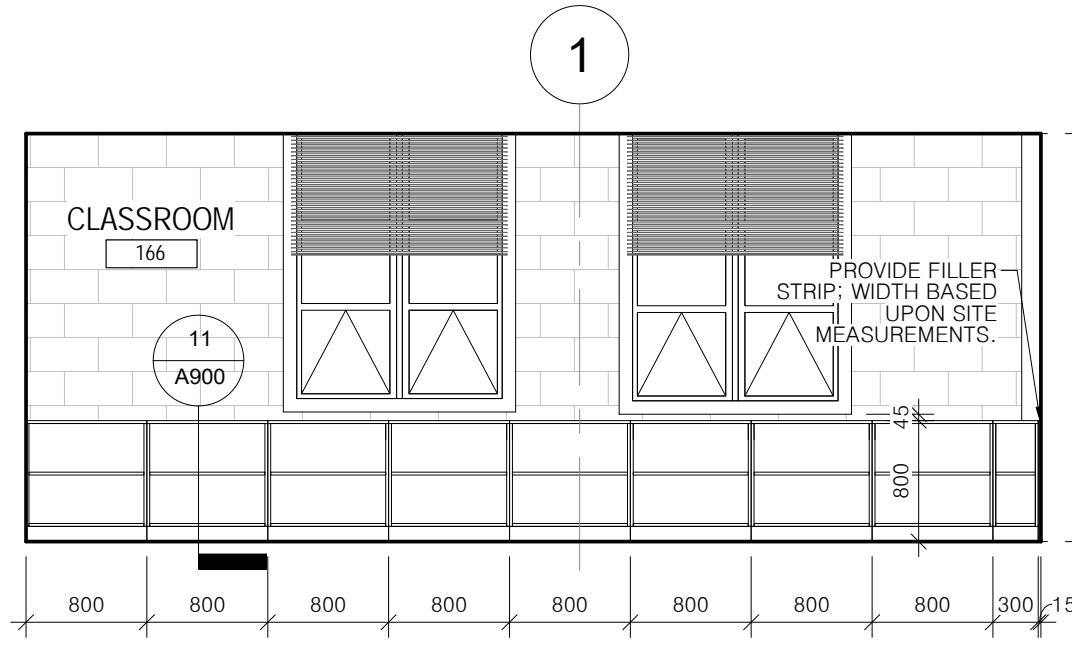


6 FRONT OF CLASSROOM  
SCALE 1:50

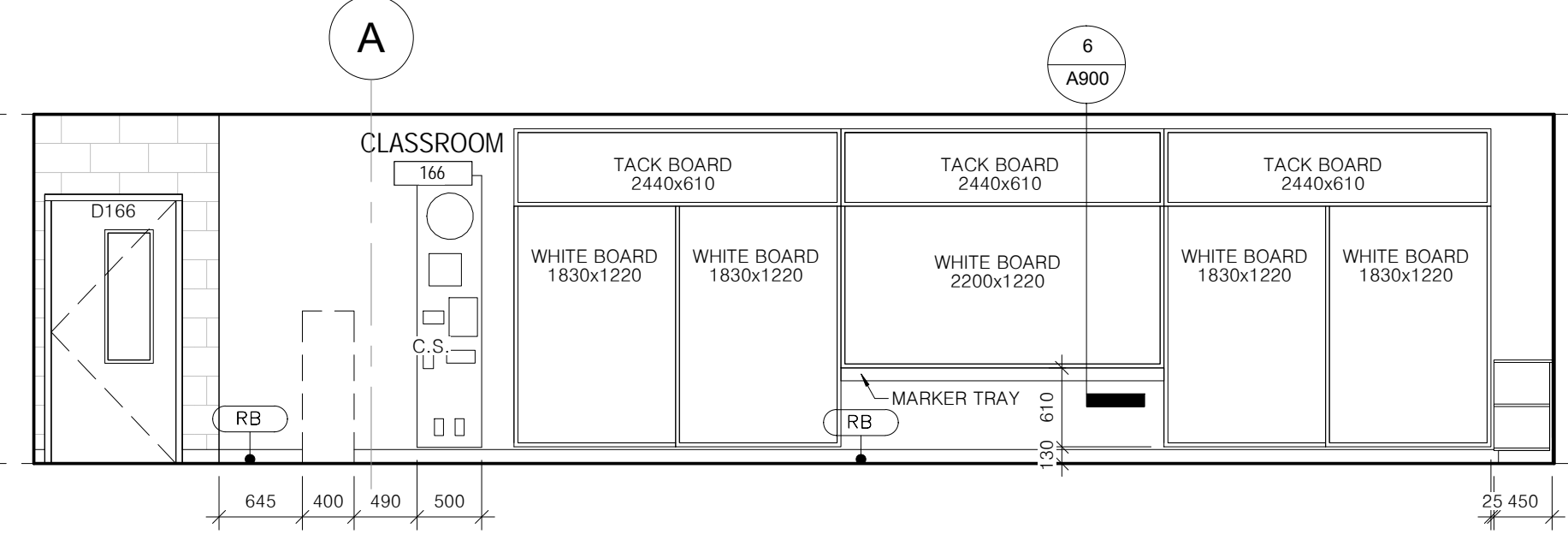


5 DOOR WALL ELEVATION  
SCALE 1:50

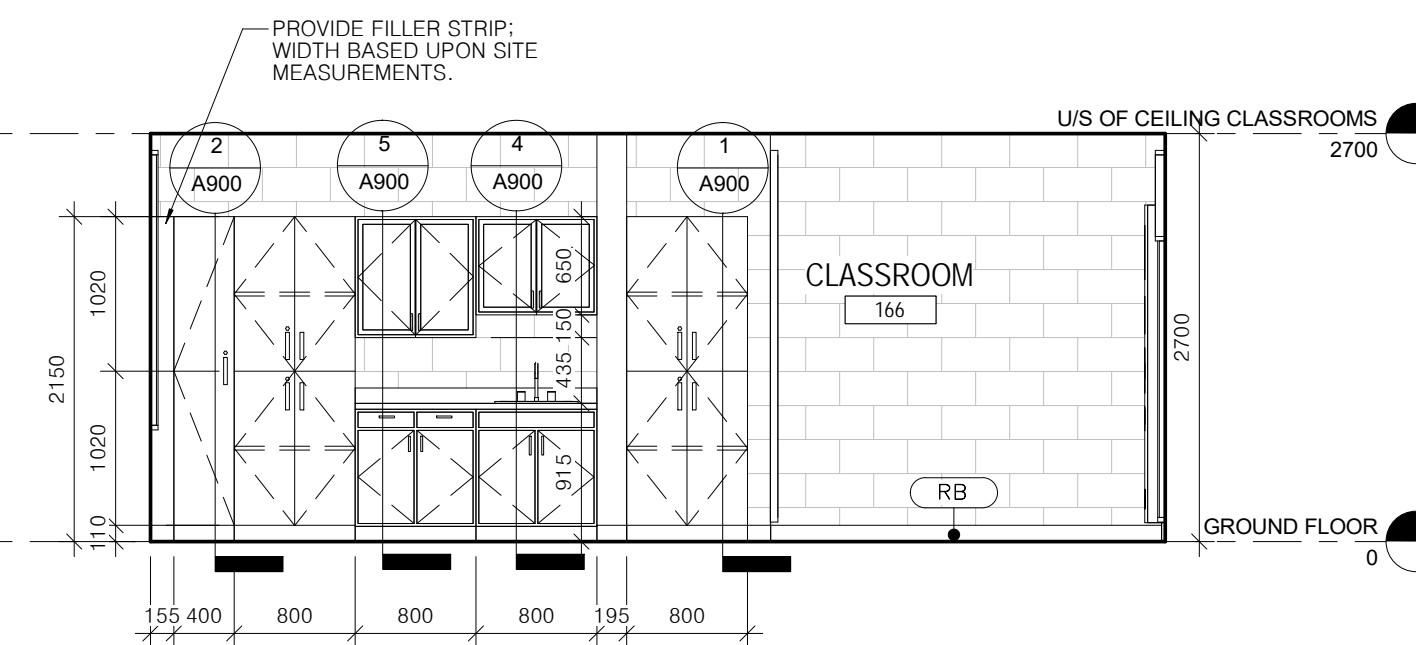
NOTE: ALL CEILING AS HIGH AS POSSIBLE FROM THE NOTED ELEVATIONS TO MATCH T/O WINDOW HEIGHT.



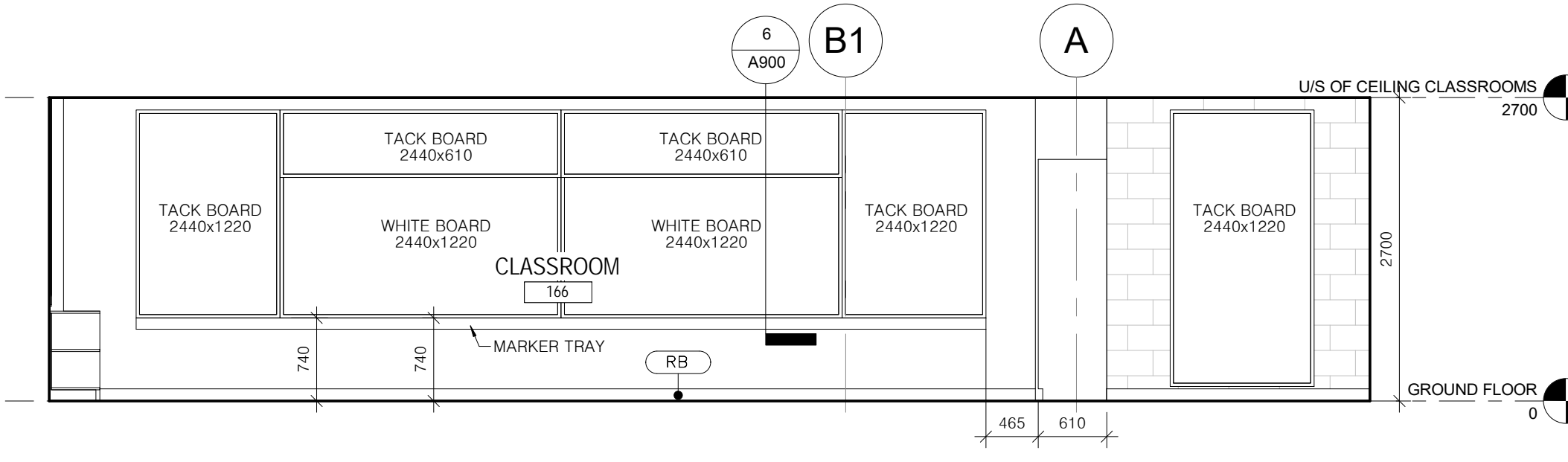
11 WINDOW WALL ELEVATION  
SCALE 1:50



10 FRONT OF CLASSROOM  
SCALE 1:50

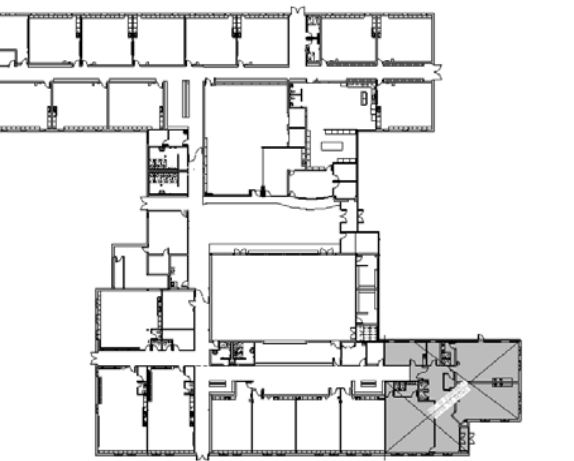


9 SIDE WALL ELEVATION  
SCALE 1:50



12 BACK OF CLASSROOM  
SCALE 1:50

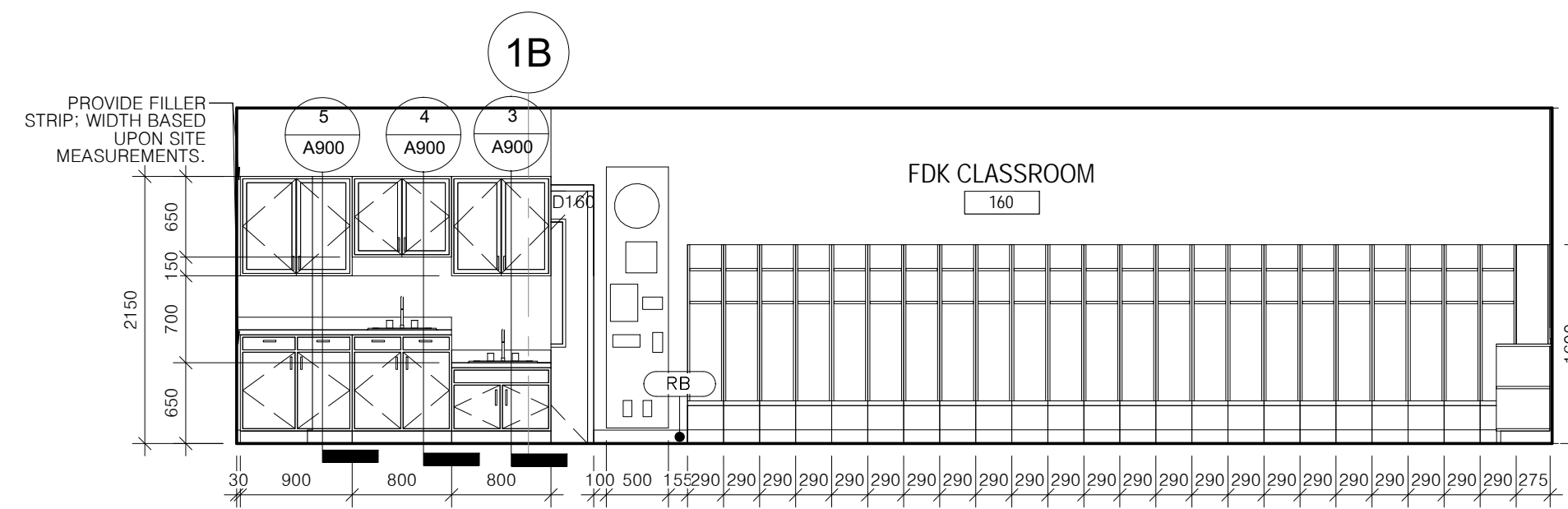
NOTE: ALL CEILING AS HIGH AS POSSIBLE FROM THE NOTED ELEVATIONS TO MATCH T/O WINDOW HEIGHT.



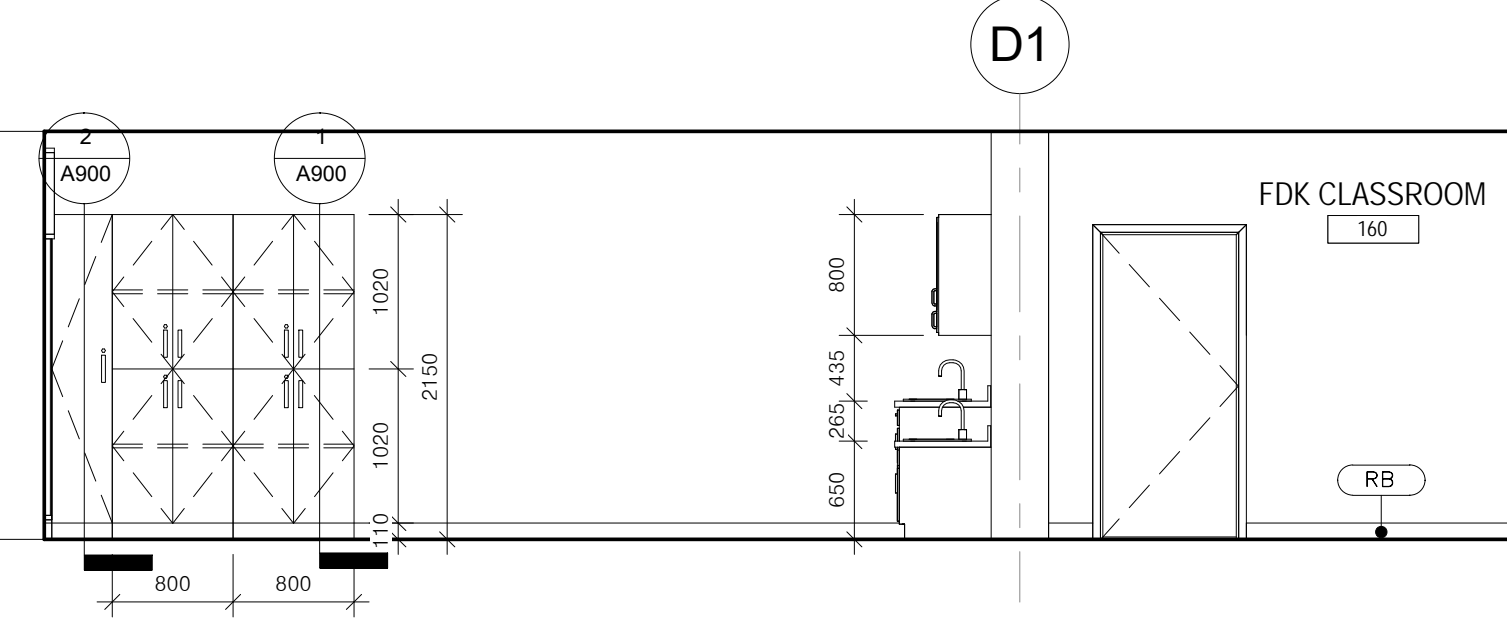
KEY PLAN

NOTES

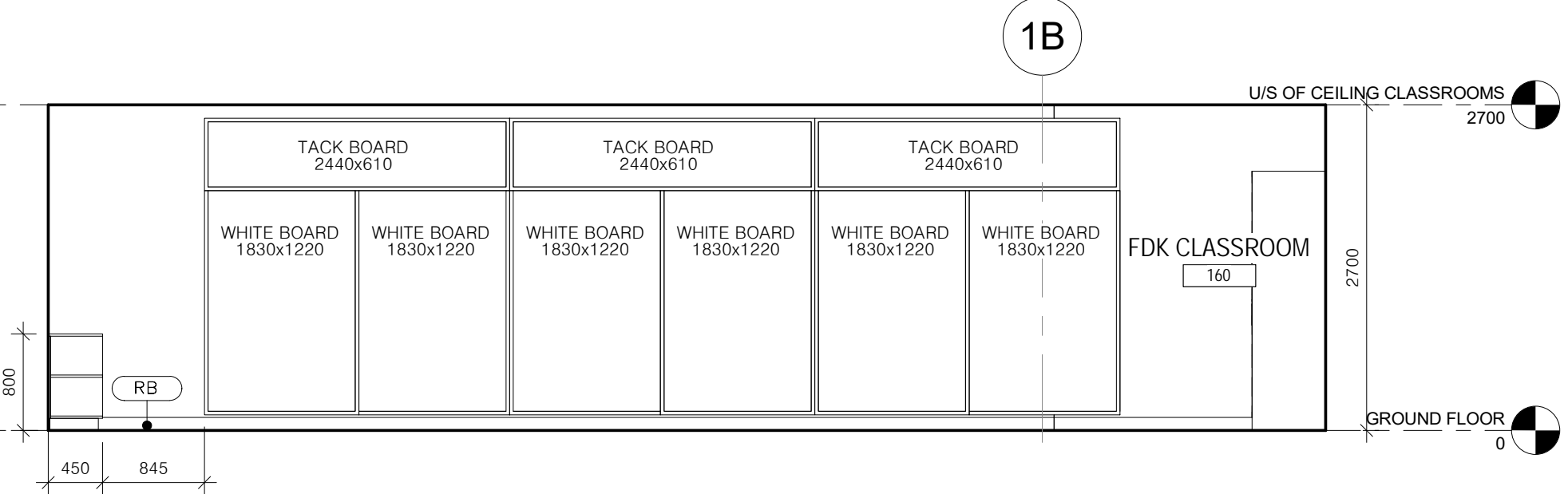
LEGEND



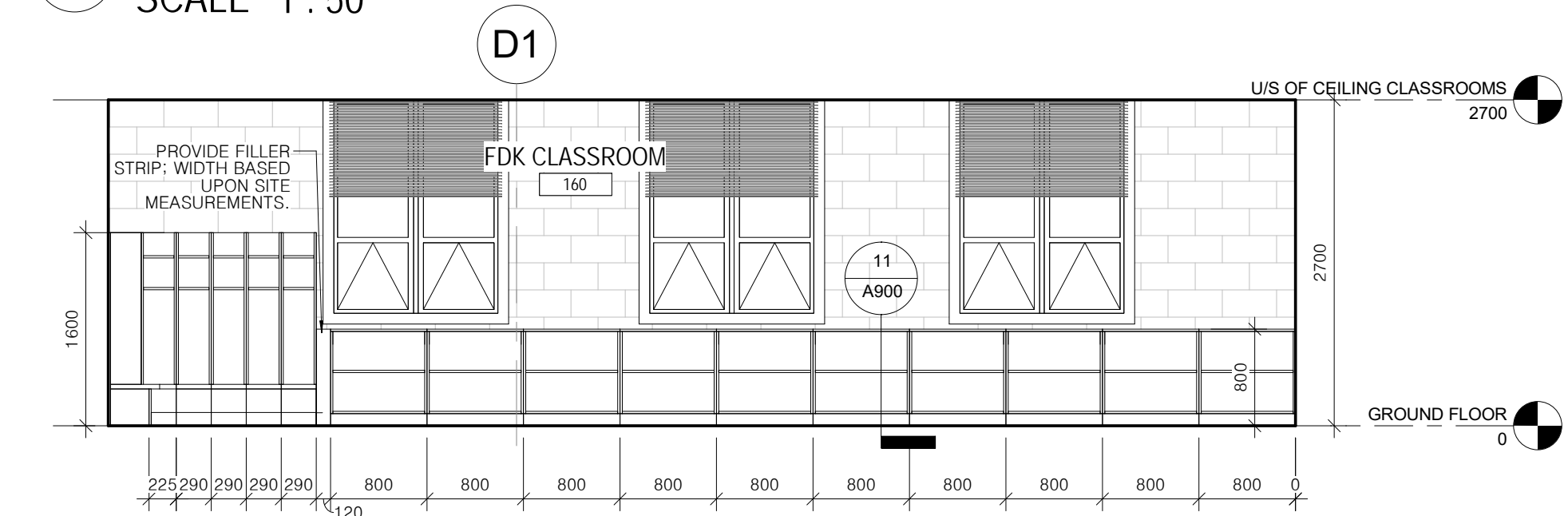
3 BACK OF CLASSROOM  
SCALE 1:50



2 SIDE WALL ELEVATION  
SCALE 1:50

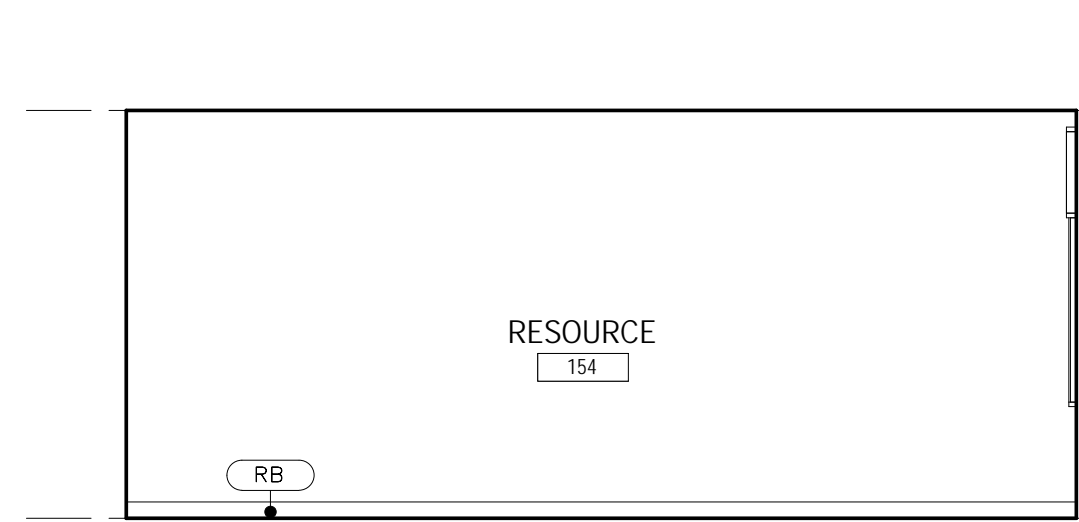


1 FRONT OF CLASSROOM  
SCALE 1:50

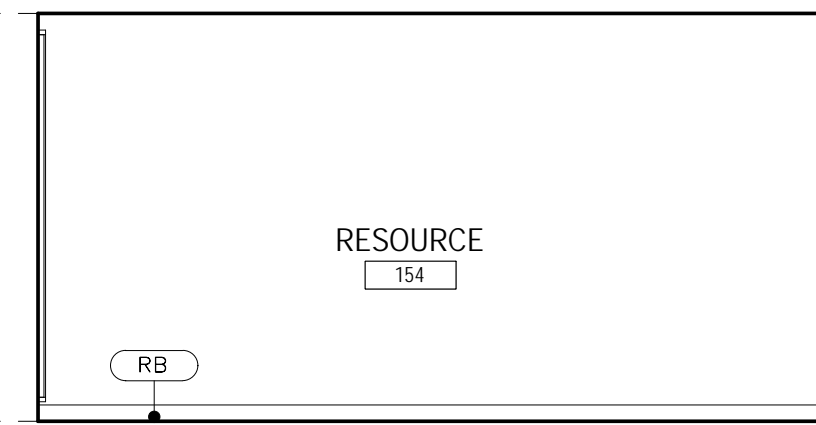


4 WINDOW WALL ELEVATION  
SCALE 1:50

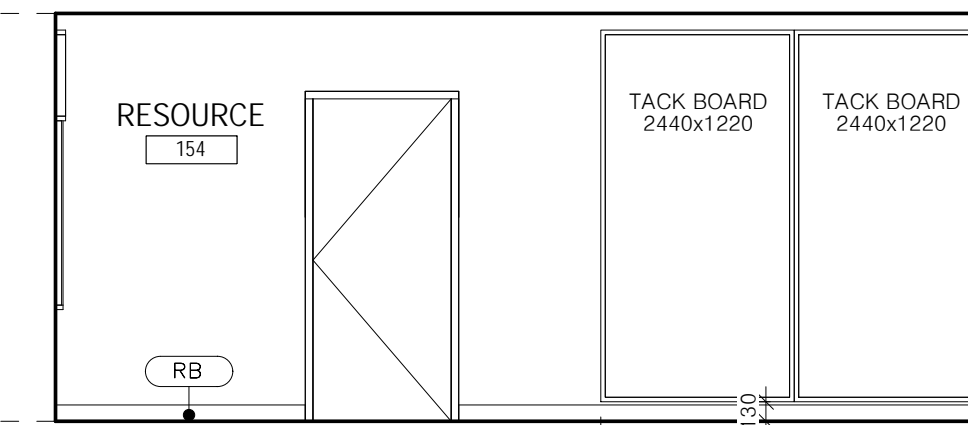
NOTE: ALL CEILING AS HIGH AS POSSIBLE FROM THE NOTED ELEVATIONS TO MATCH T/O WINDOW HEIGHT.



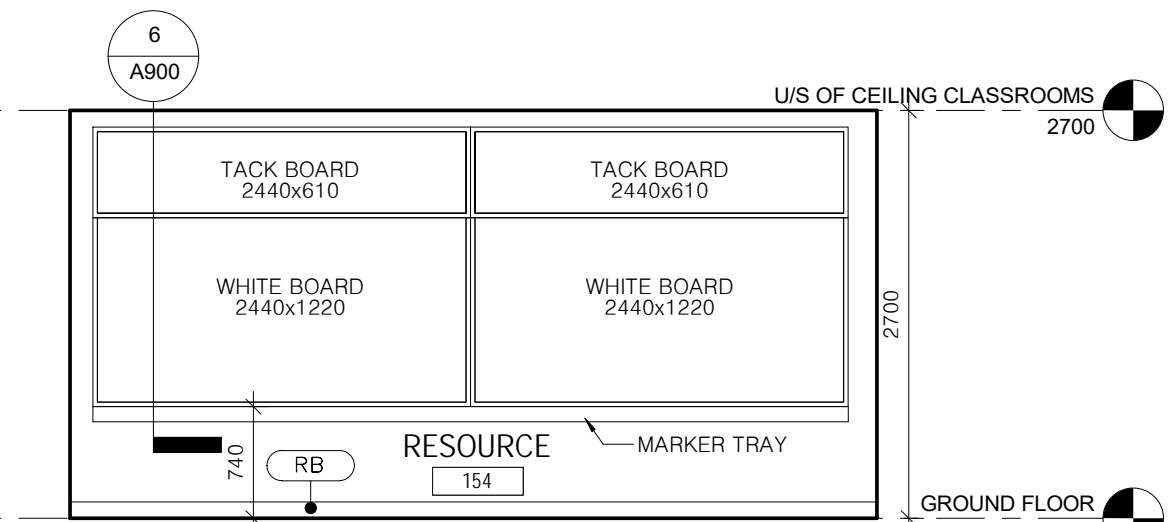
8 INTERIOR ELEVATION  
SCALE 1:50



7 INTERIOR ELEVATION  
SCALE 1:50

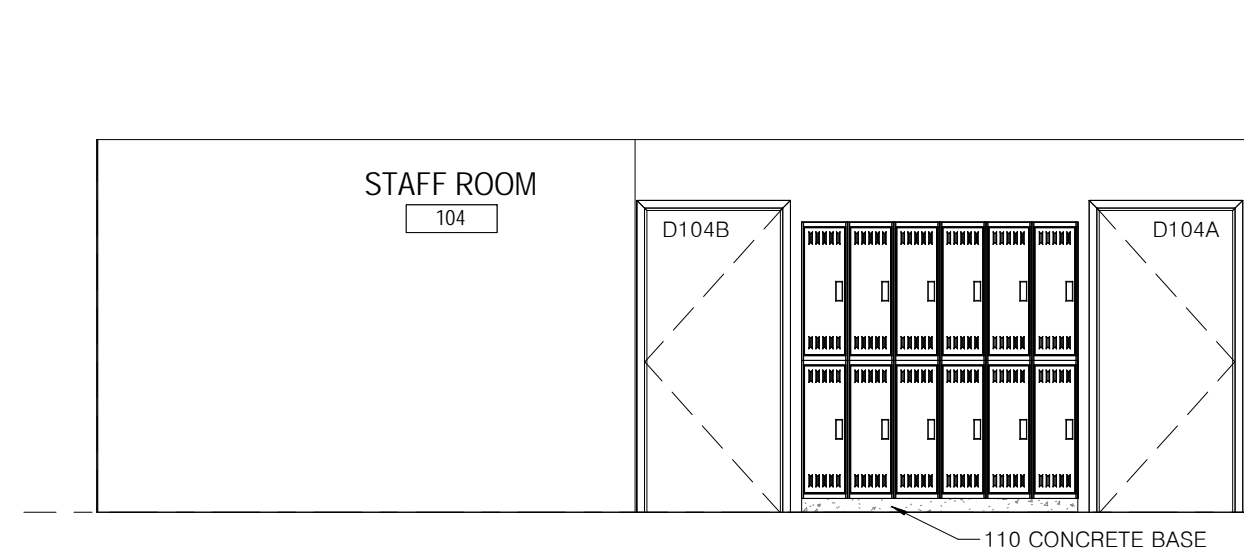


6 INTERIOR ELEVATION  
SCALE 1:50

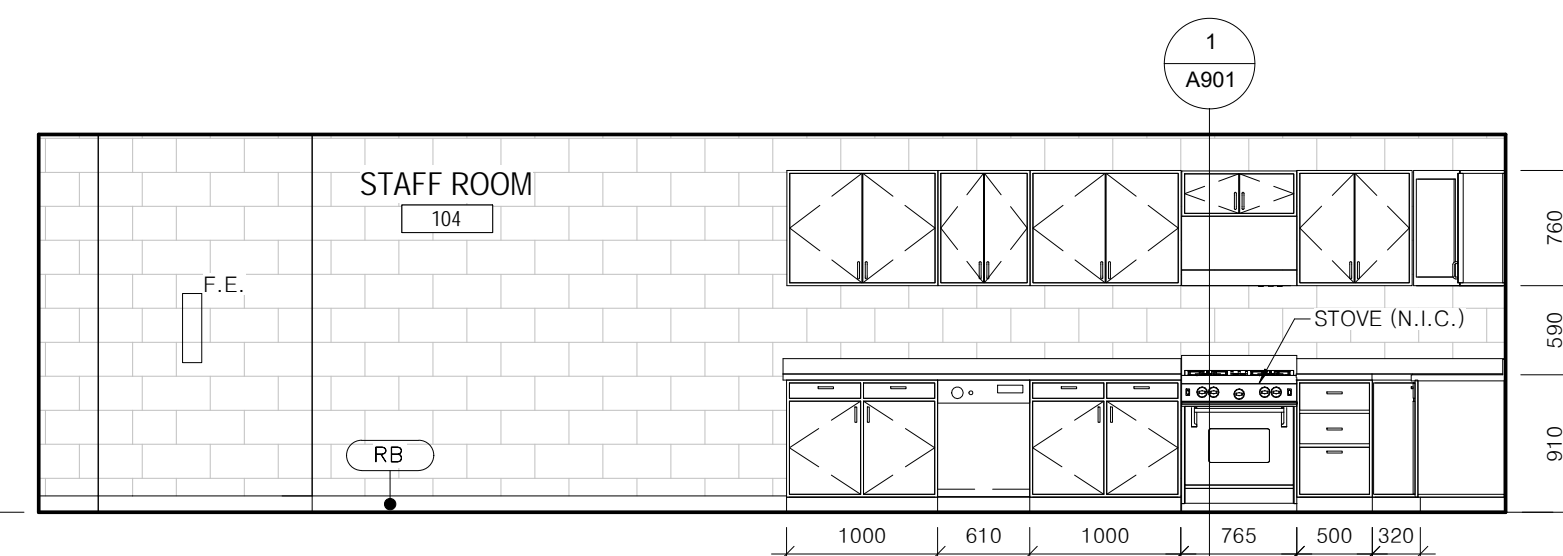


5 INTERIOR ELEVATION  
SCALE 1:50

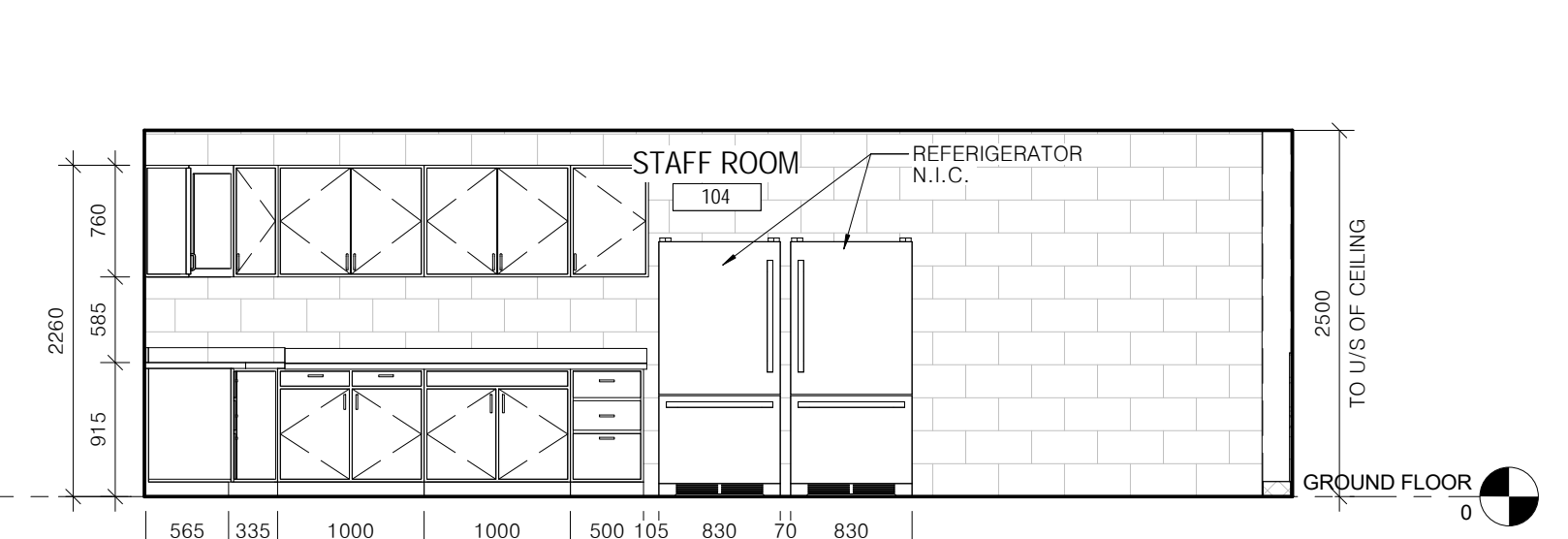
NOTE: ALL CEILING AS HIGH AS POSSIBLE FROM THE NOTED ELEVATIONS TO MATCH T/O WINDOW HEIGHT.



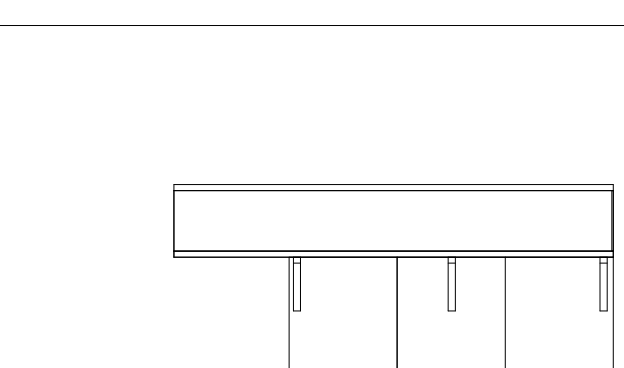
12 INTERIOR ELEVATION  
SCALE 1:50



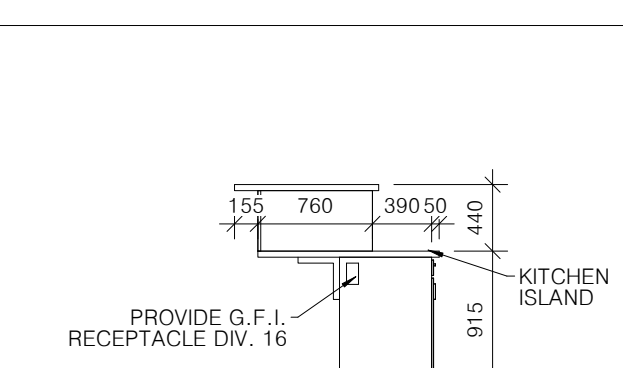
11 INTERIOR ELEVATION  
SCALE 1:50



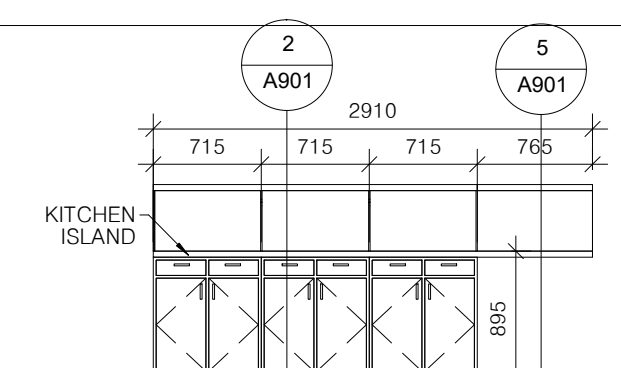
10 STAFF ROOM CLOSET ELEVATION  
SCALE 1:50



15 INTERIOR ELEVATION  
SCALE 1:50

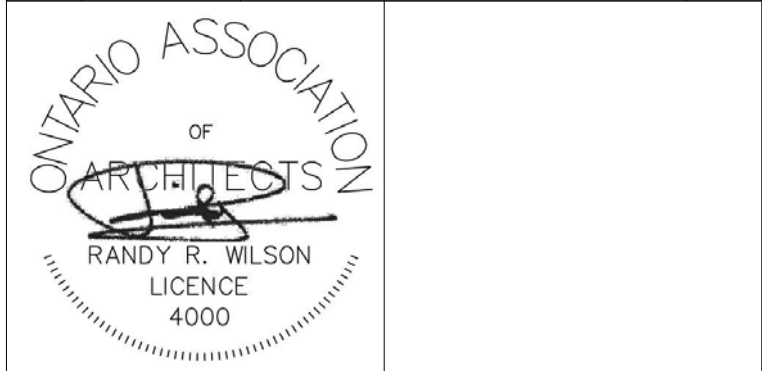


14 INTERIOR ELEVATION  
SCALE 1:50



13 INTERIOR ELEVATION  
SCALE 1:50

No.	DATE	ISSUED FOR TENDER & PERMIT	DESCRIPTION	REV. No.
1	02/19/2020			

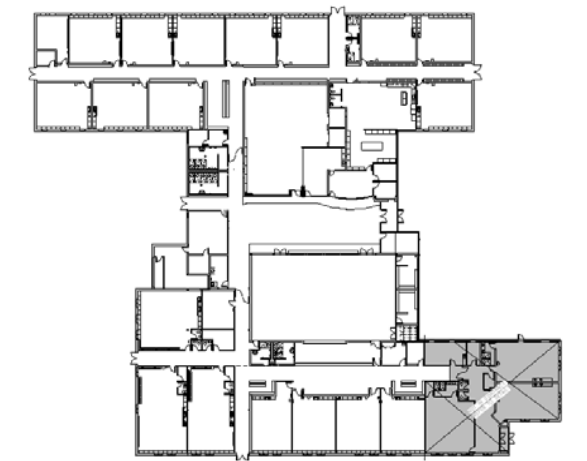


PROJECT TITLE

OUR LADY OF FATIMA

DRAWING TITLE  
KINDERGARTEN AND KITCHENETTE INTERIOR ELEVATIONS

DATE PLOTTED	DRAWN BY	DRAWING No.
19/02/2020 11:54:29 AM	TJV	
SCALE	CHECKED BY	
1:50	RRW	A802
PROJECT No.	1901	

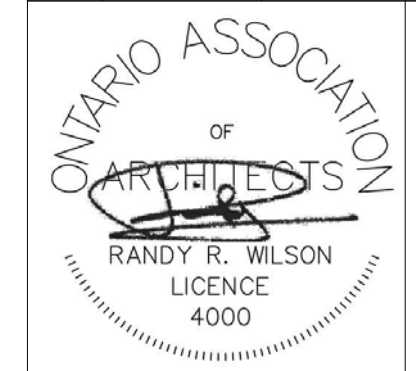


KEY PLAN

NOTES

LEGEND

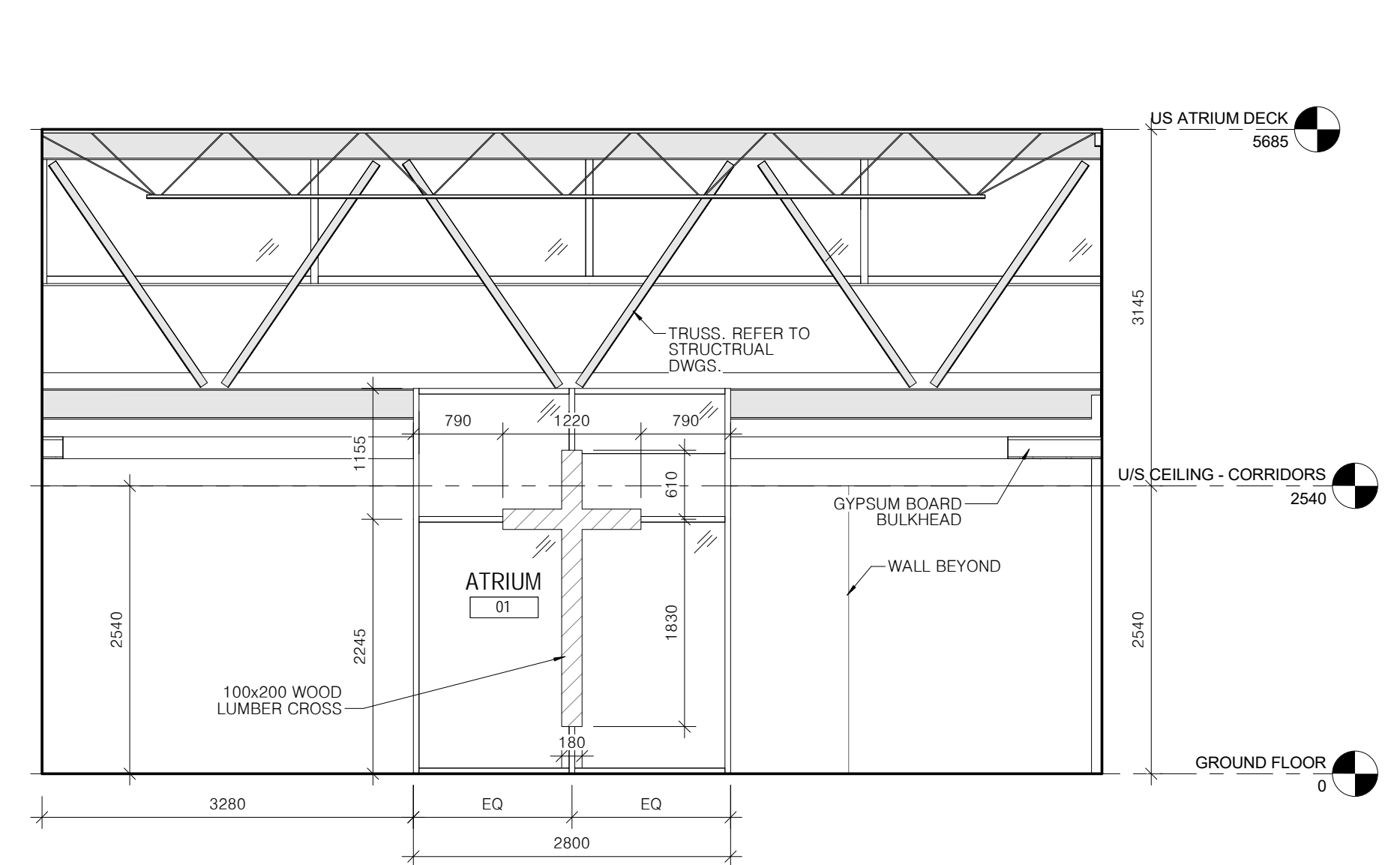
No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



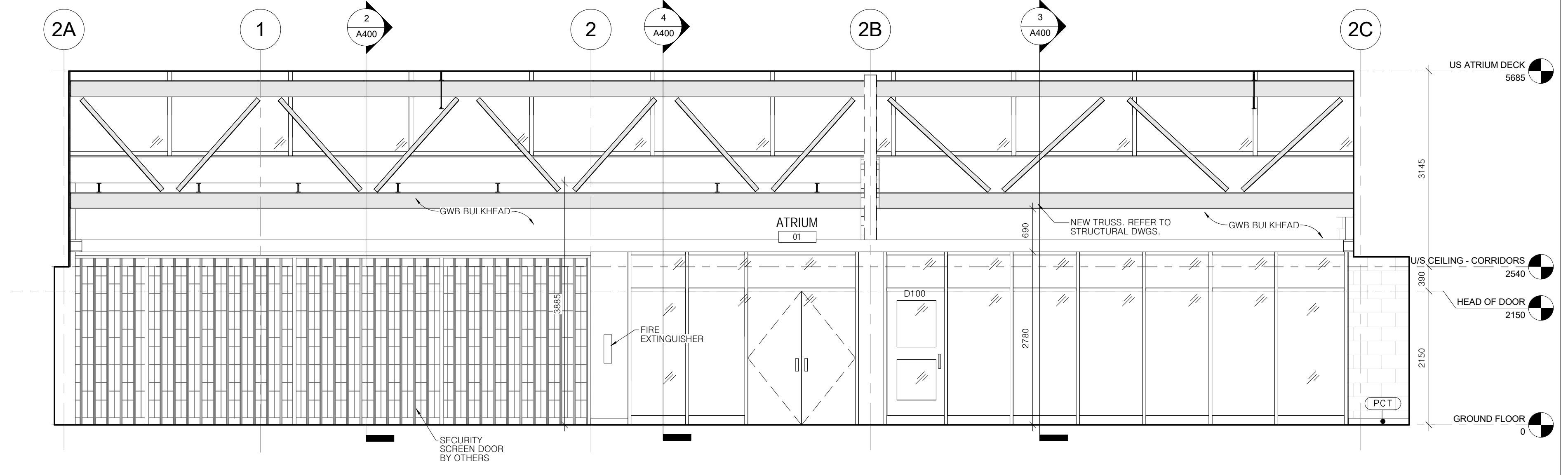
PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**INTERIOR ELEVATIONS - ATRIUM**

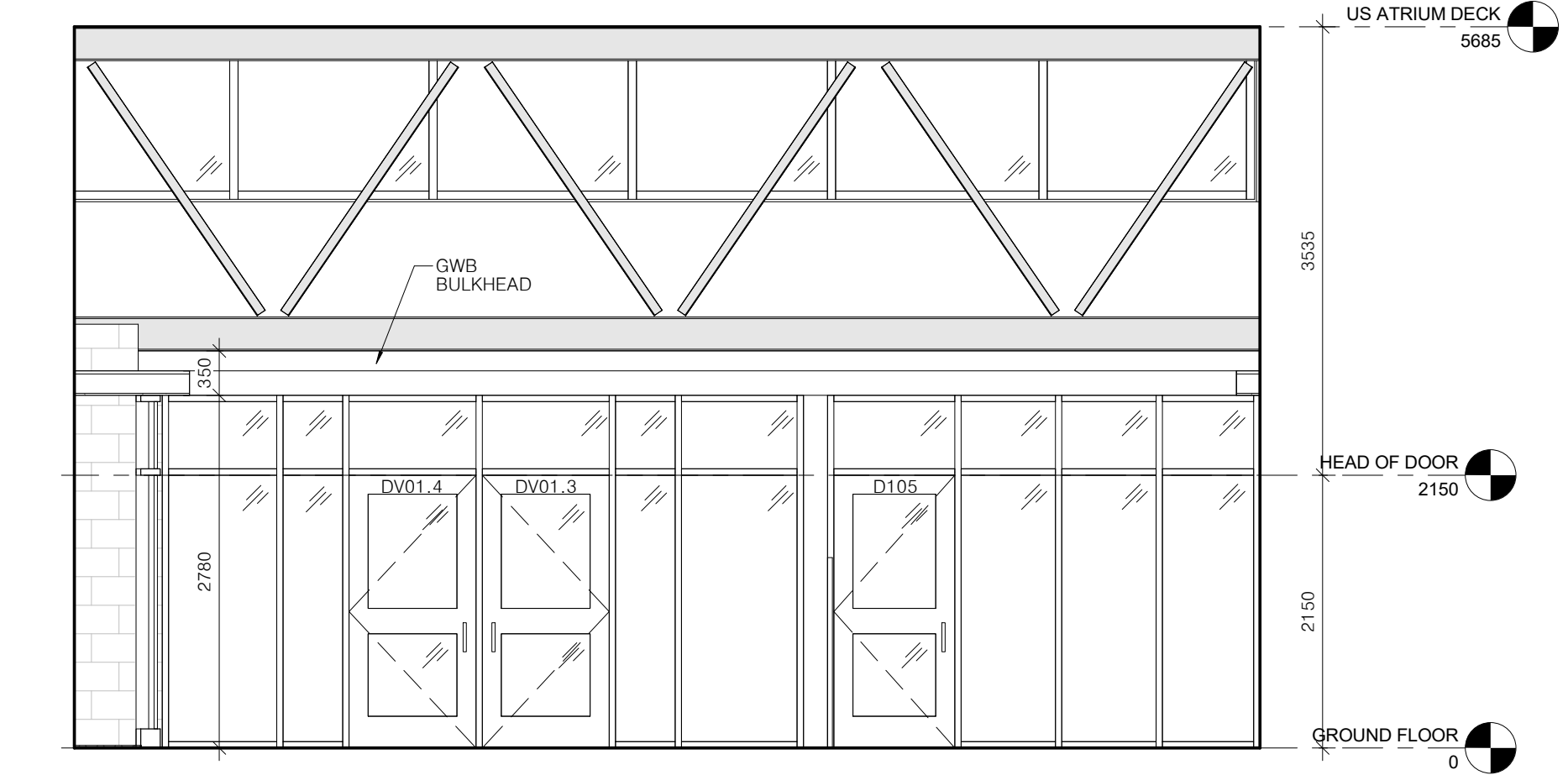
DATE PLOTTED 19/02/2020 11:54:45 AM	DRAWN BY TJV	DRAWING No. <b>A803</b>
SCALE 1:50	CHECKED BY RRW	
PROJECT No. 1901		



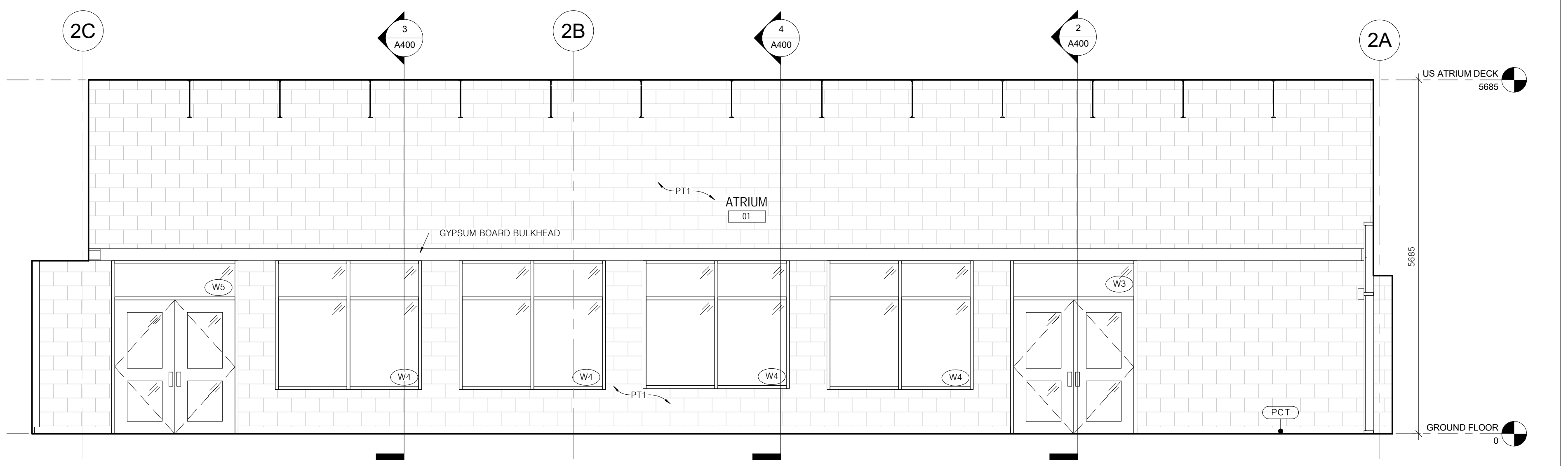
1 INTERIOR ELEVATION AT ATRIUM  
 SCALE 1:50



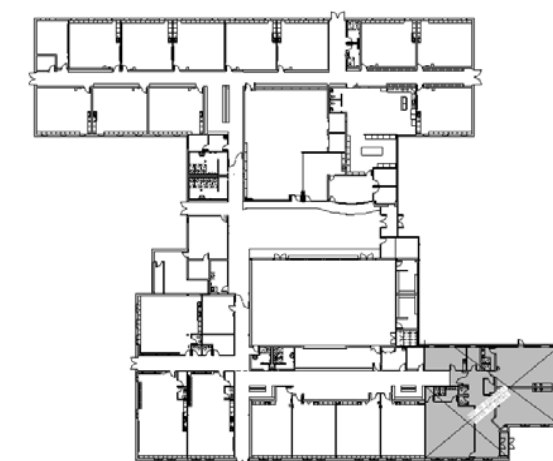
2 INTERIOR ELEVATION AT ATRIUM  
 SCALE 1:50



3 INTERIOR ELEVATION AT ATRIUM  
 SCALE 1:50



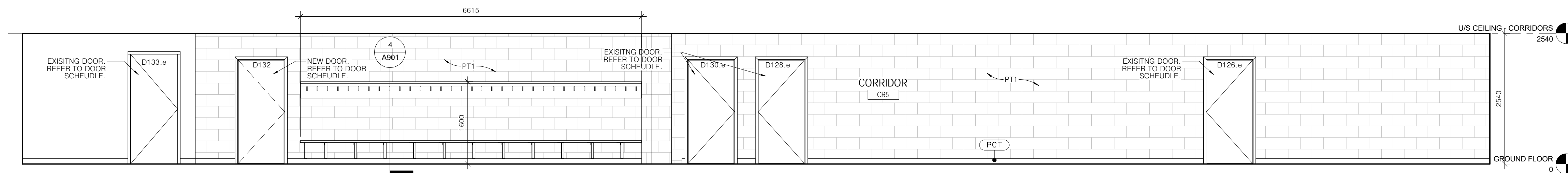
4 INTERIOR ELEVATION AT ATRIUM  
 SCALE 1:50



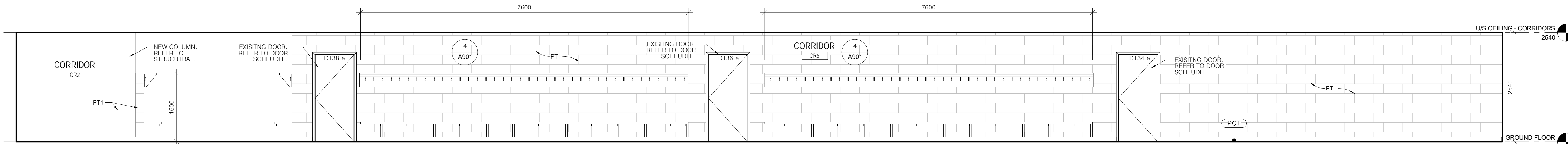
KEY PLAN

NOTES

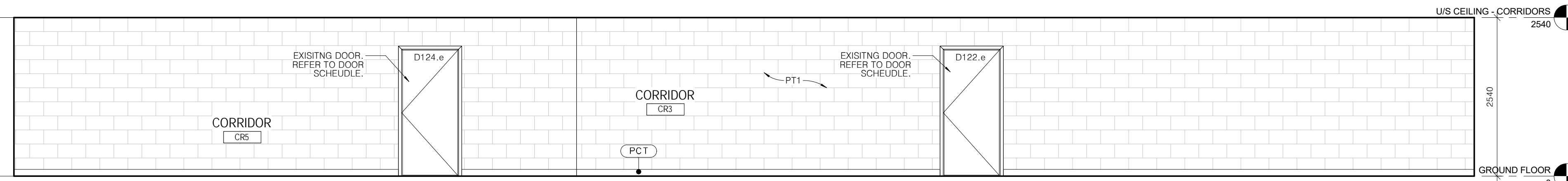
LEGEND



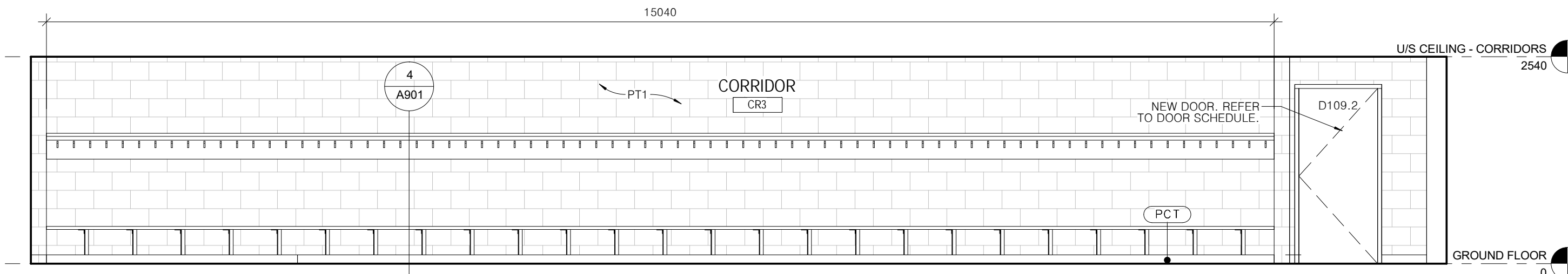
1 CORRIDOR ELEVATION CR5  
SCALE 1:50



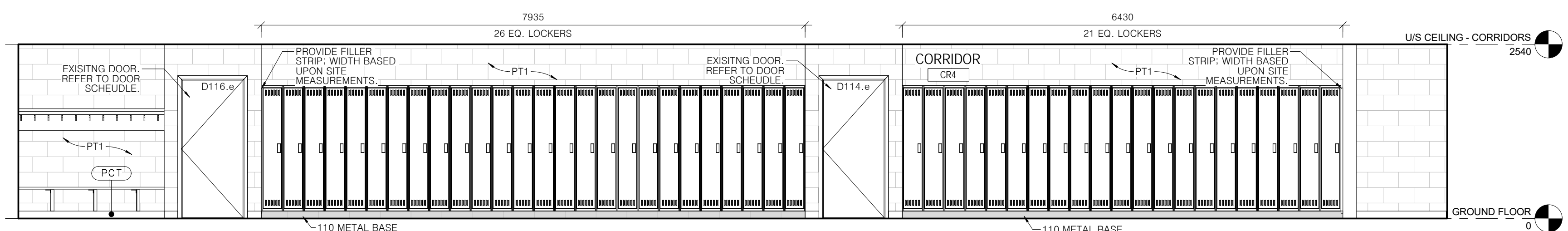
2 CORRIDOR ELEVATION CR5  
SCALE 1:50



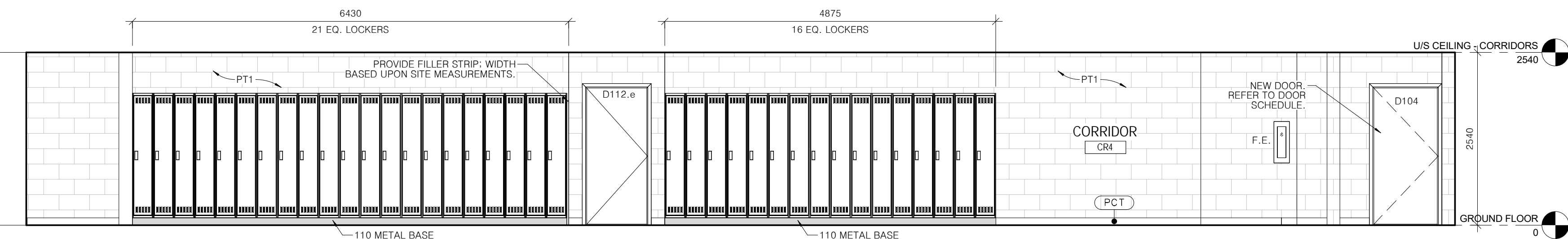
3 CORRIDOR ELEVATION CR3  
SCALE 1:50



4 CORRIDOR ELEVATION CR3  
SCALE 1:50

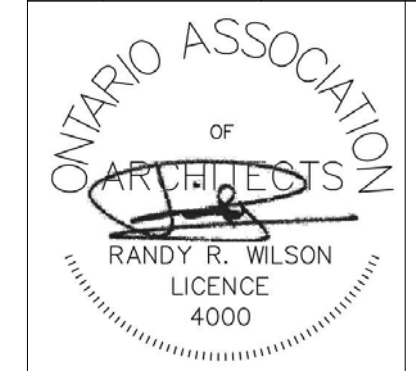


5 CORRIDOR ELEVATION CR4  
SCALE 1:50



6 CORRIDOR ELEVATION CR4  
SCALE 1:50

No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



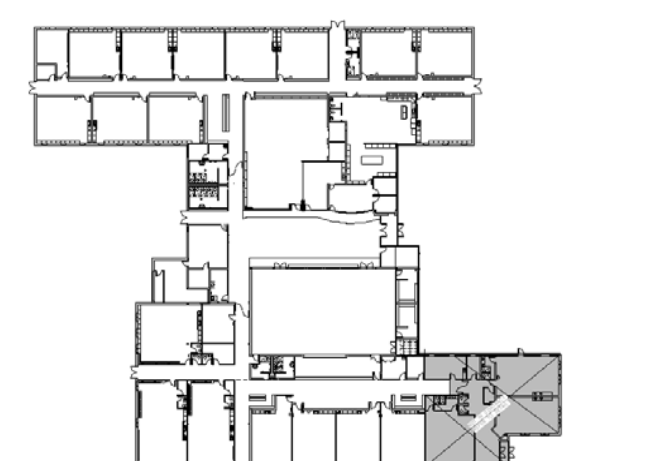
PROJECT TITLE

OUR LADY OF FATIMA

DRAWING TITLE

INTERIOR ELEVATIONS -  
CORRIDOR

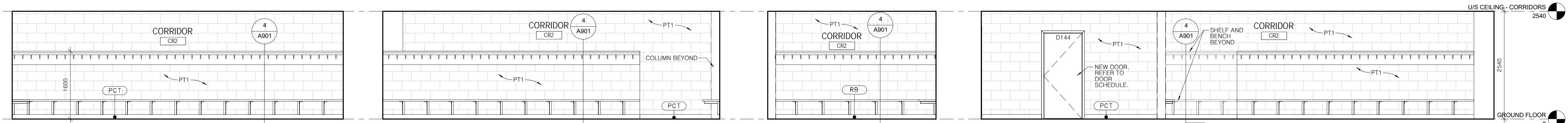
DATE PLOTTED 19/02/2020 11:54:55 AM	DRAWN BY TJV	DRAWING No.
SCALE 1:50	CHECKED BY RRW	A804
PROJECT No. 1901		



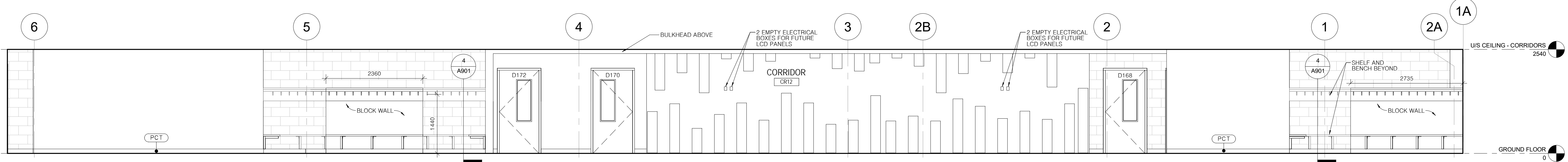
KEY PLAN

NOTES

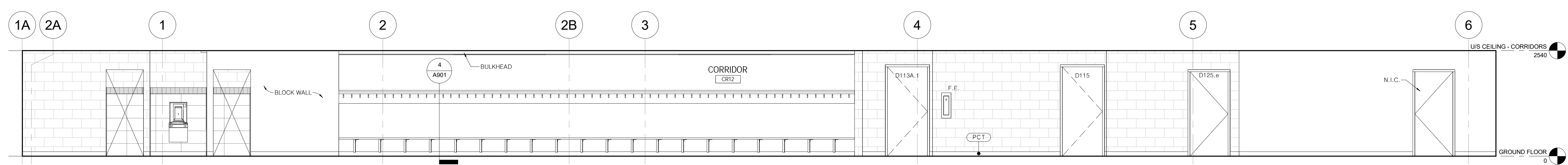
LEGEND



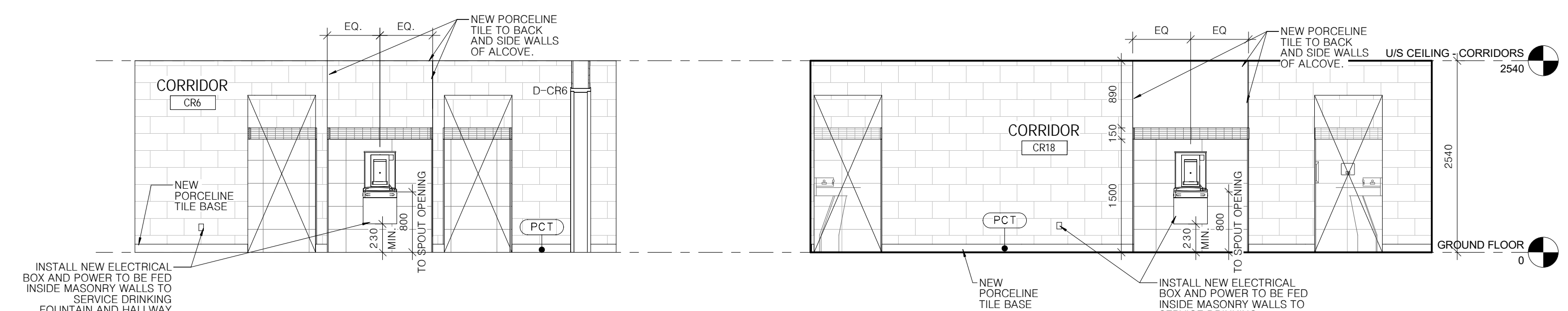
4 CORRIDOR ELEVATION CR2 SCALE 1:50      3 CORRIDOR ELEVATION CR2 SCALE 1:50      2 CORRIDOR ELEVATION CR2 SCALE 1:50      1 CORRIDOR ELEVATION CR2 SCALE 1:50



5 CORRIDOR ELEVATION CR12 SCALE 1:50

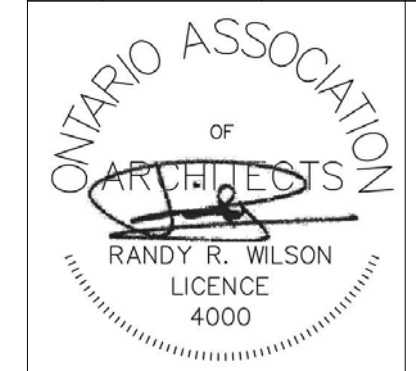


6 CORRIDOR ELEVATION CR12 SCALE 1:50



8 CORRIDOR ELEVATION CR6 SCALE 1:50      7 CORRIDOR ELEVATION CR18 SCALE 1:50

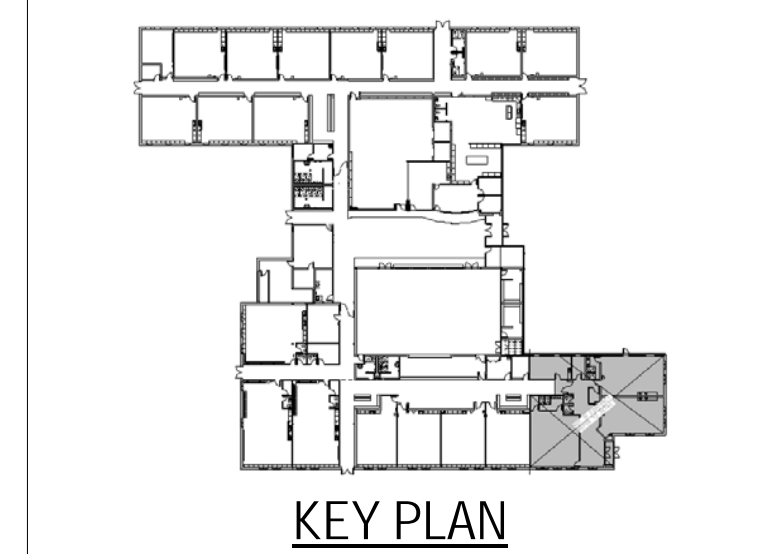
No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**INTERIOR ELEVATIONS - CORRIDOR**

DATE PLOTTED 19/02/2020 11:55:03 AM	DRAWN BY TJV	DRAWING No. A805
SCALE 1:50	CHECKED BY RRW	
PROJECT No. 1901		

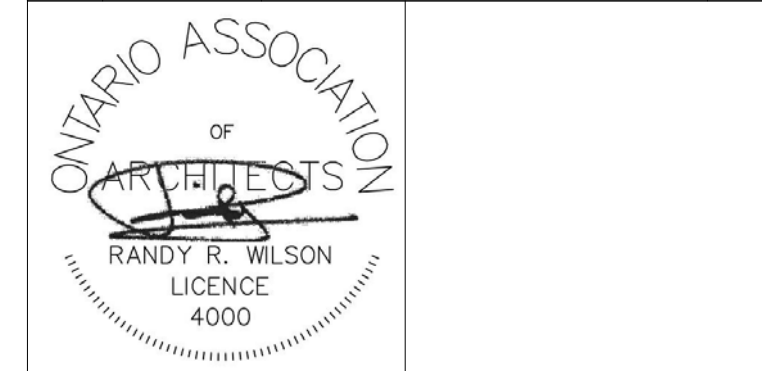


KEY PLAN

NOTES

LEGEND

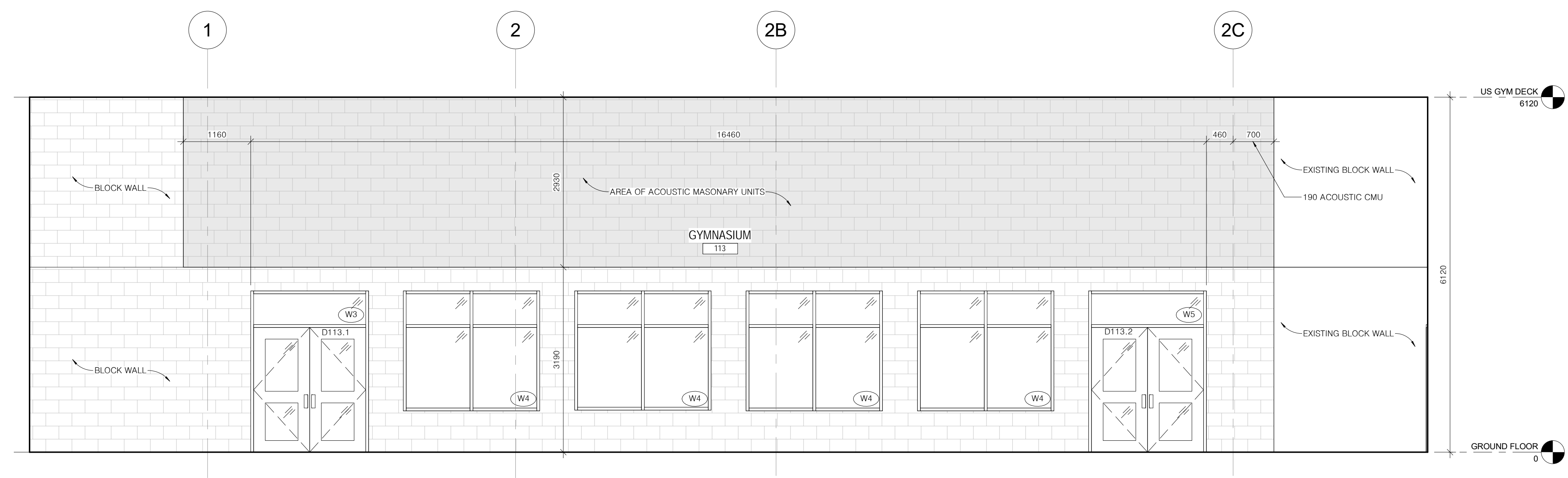
No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



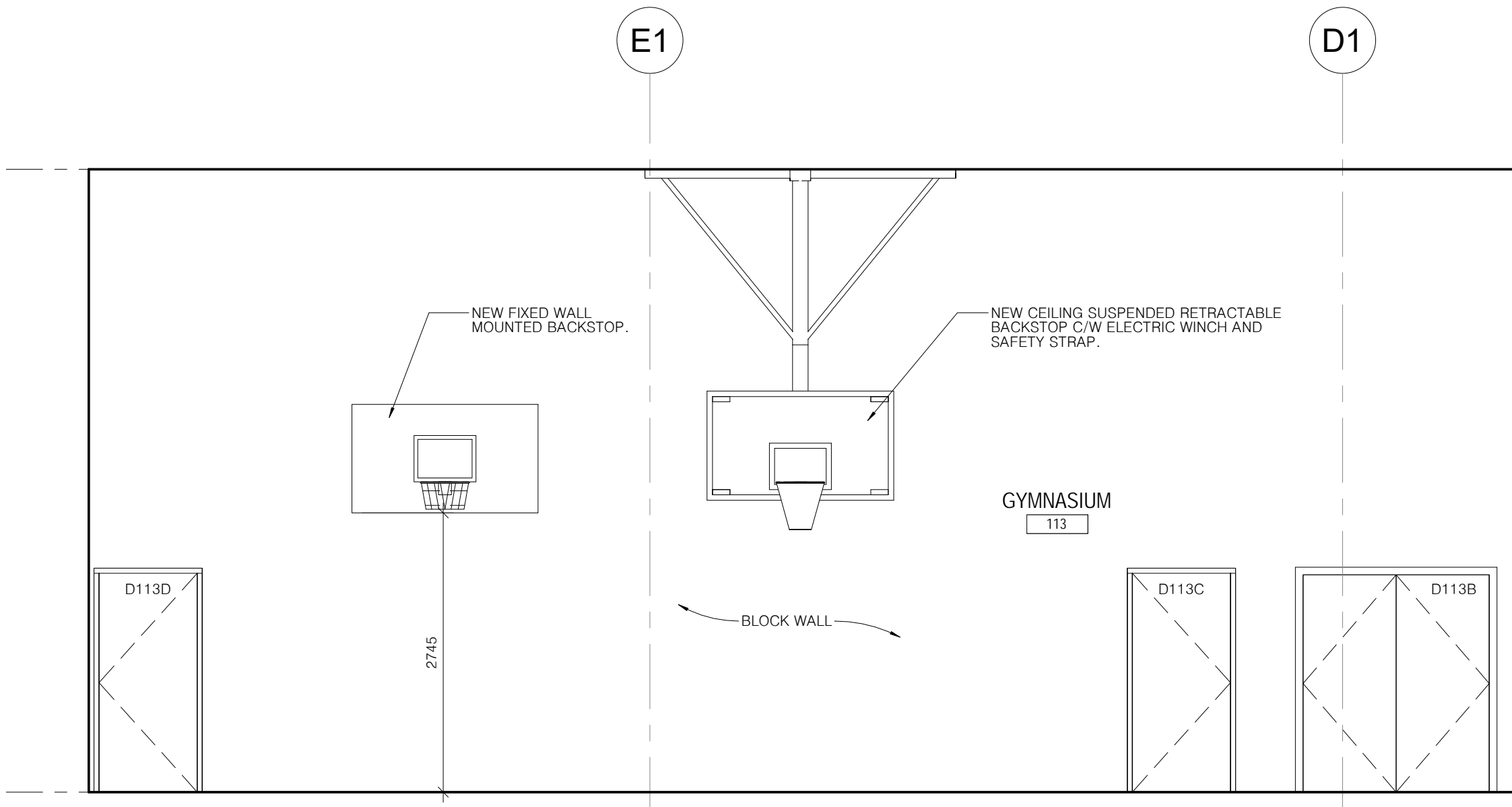
PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**INTERIOR ELEVATIONS - GYMNASIUM**

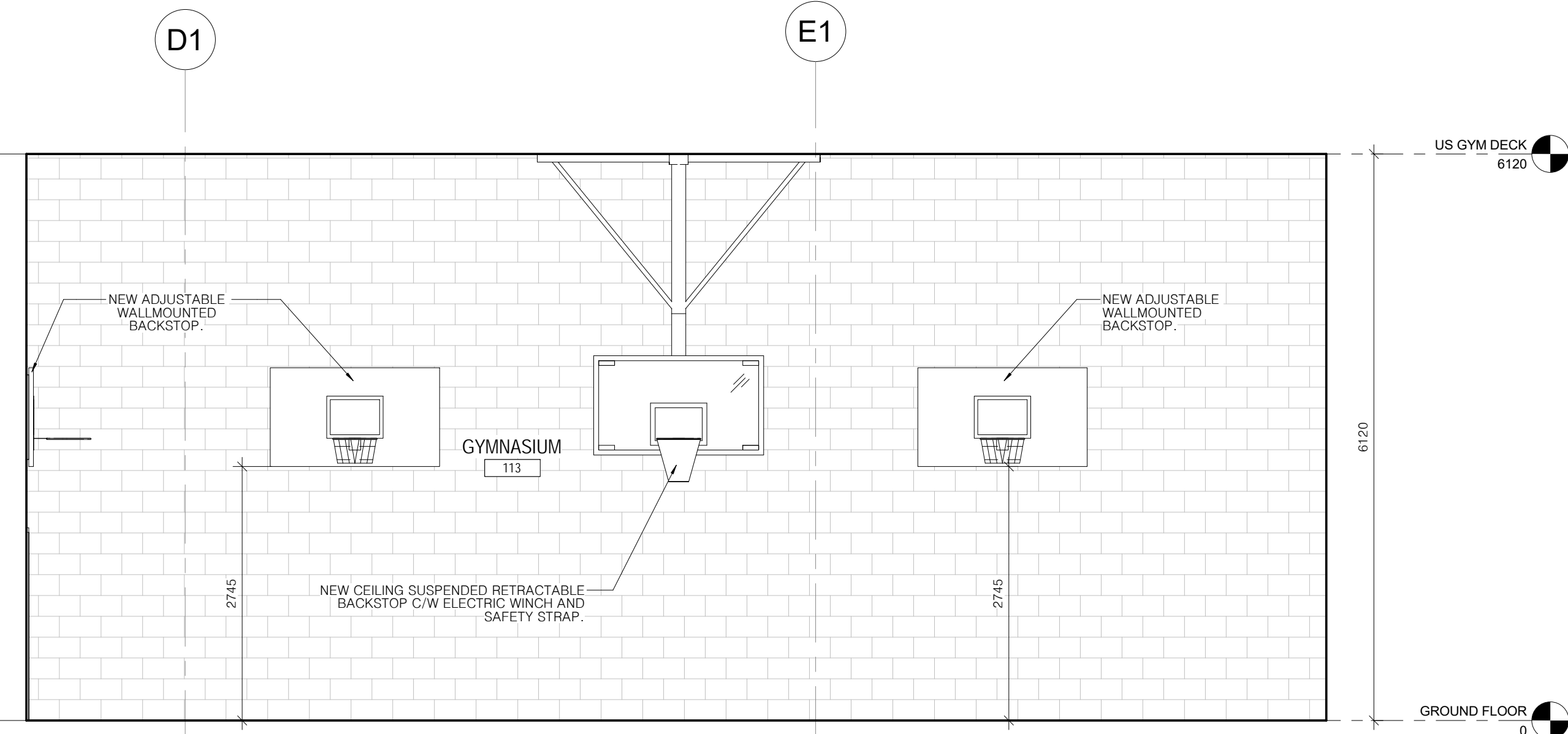
DATE PLOTTED 19/02/2020 11:55:13 AM	DRAWN BY PC	DRAWING No. <b>A806</b>
SCALE 1:50	CHECKED BY RRW	
PROJECT No. 1901		



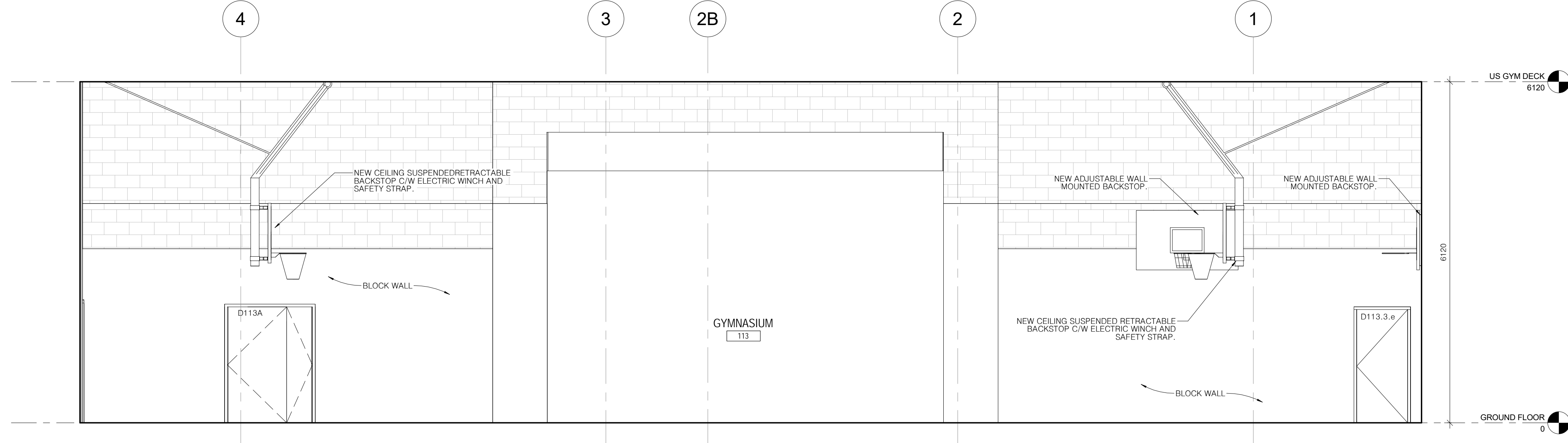
1 INTERIOR ELEVATION AT GYMNASIUM  
SCALE 1:50



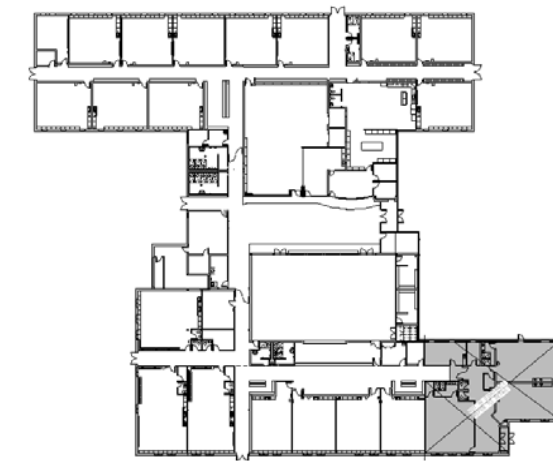
4 INTERIOR ELEVATION AT GYMNASIUM  
SCALE 1:50



2 INTERIOR ELEVATION AT GYMNASIUM  
SCALE 1:50



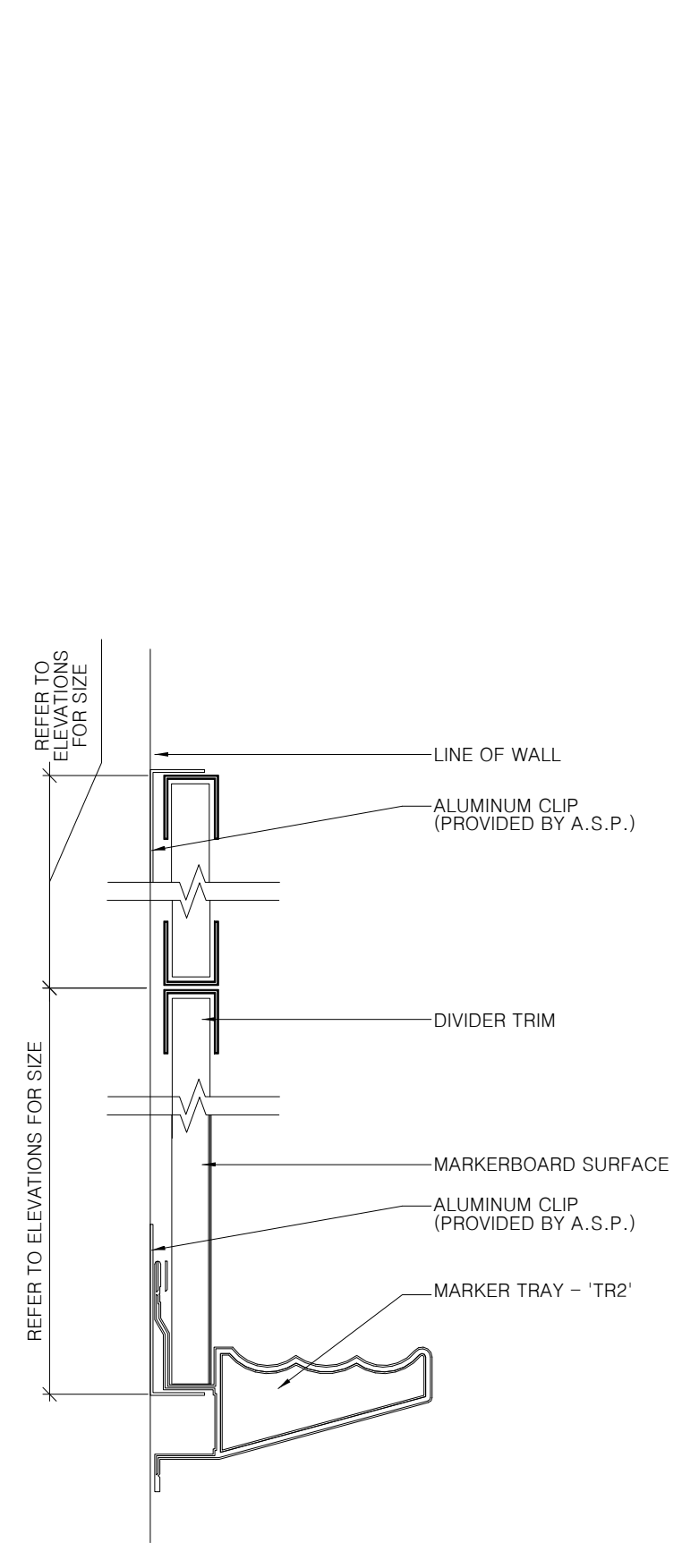
3 INTERIOR ELEVATION AT GYMNASIUM  
SCALE 1:50



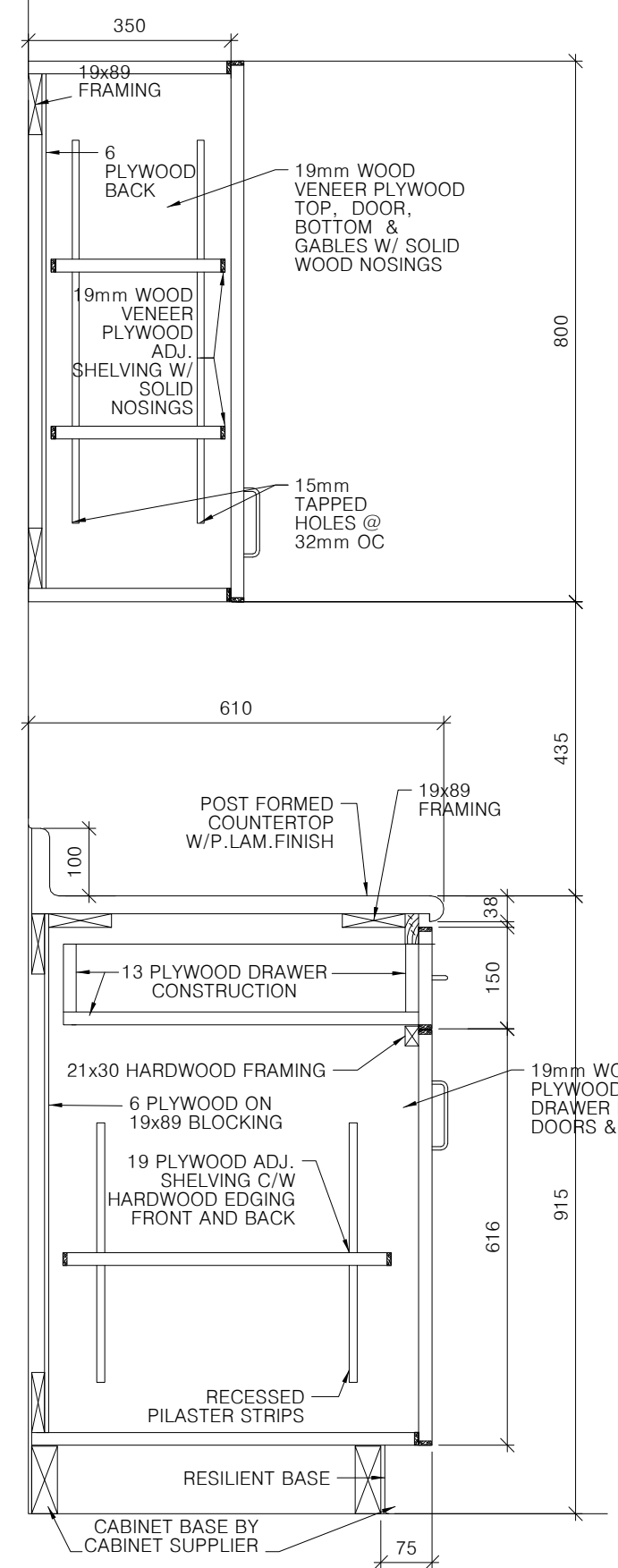
KEY PLAN

NOTES

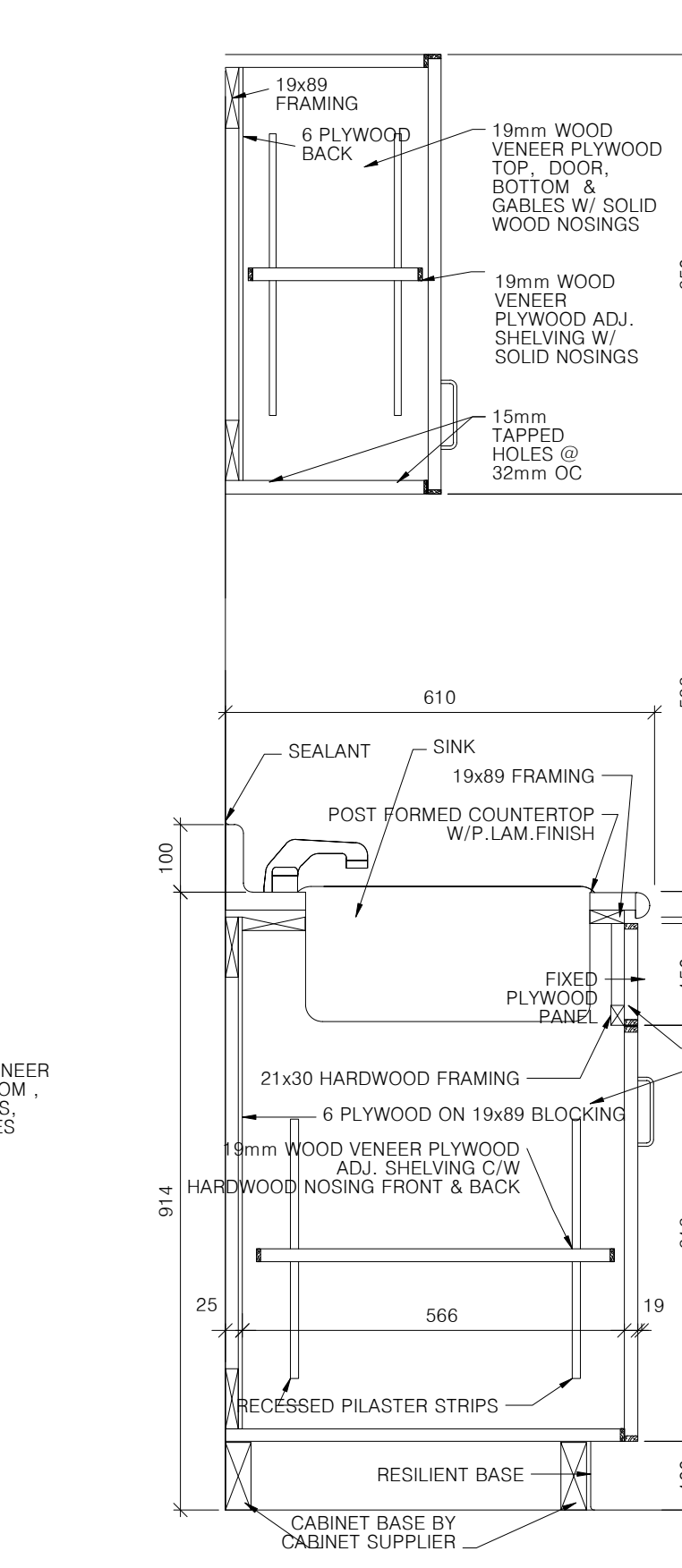
LEGEND



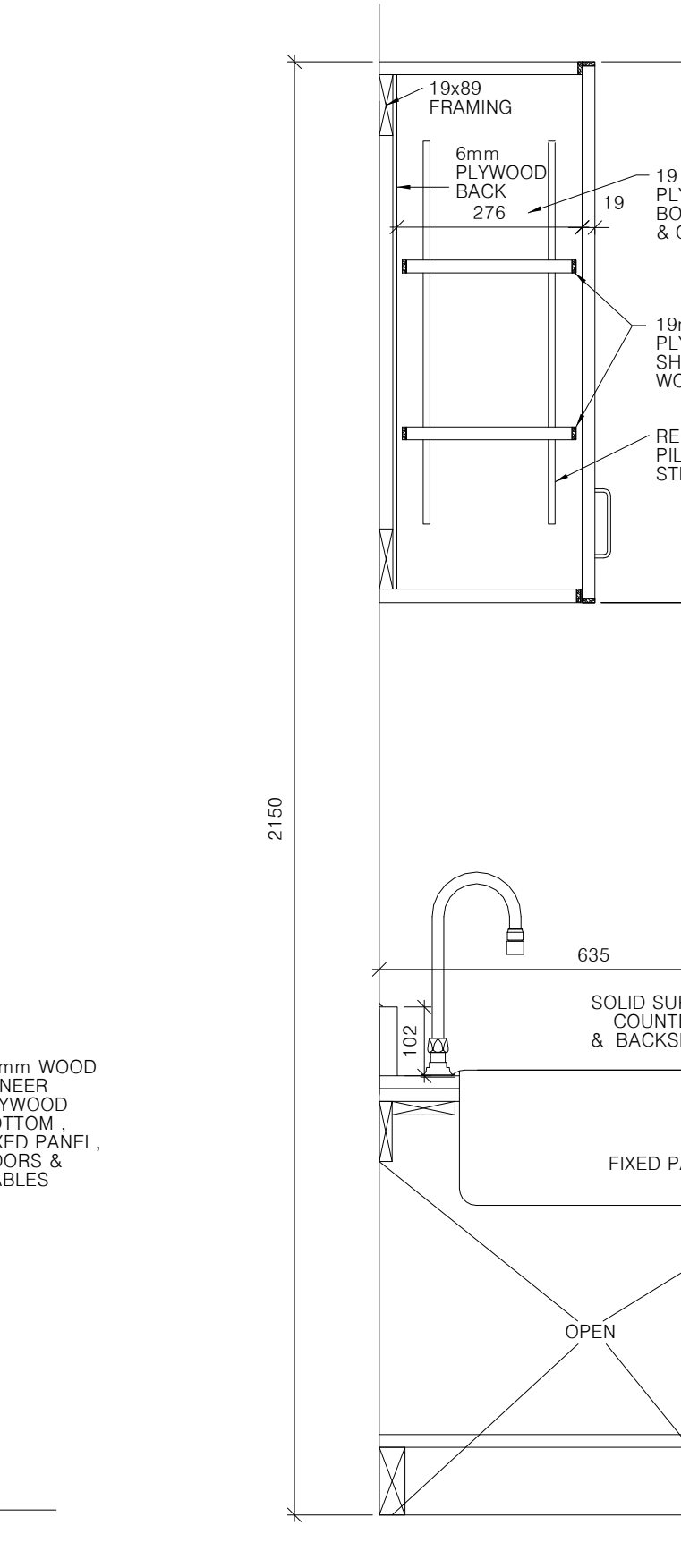
6 MARKER TRAY  
SCALE 1:2



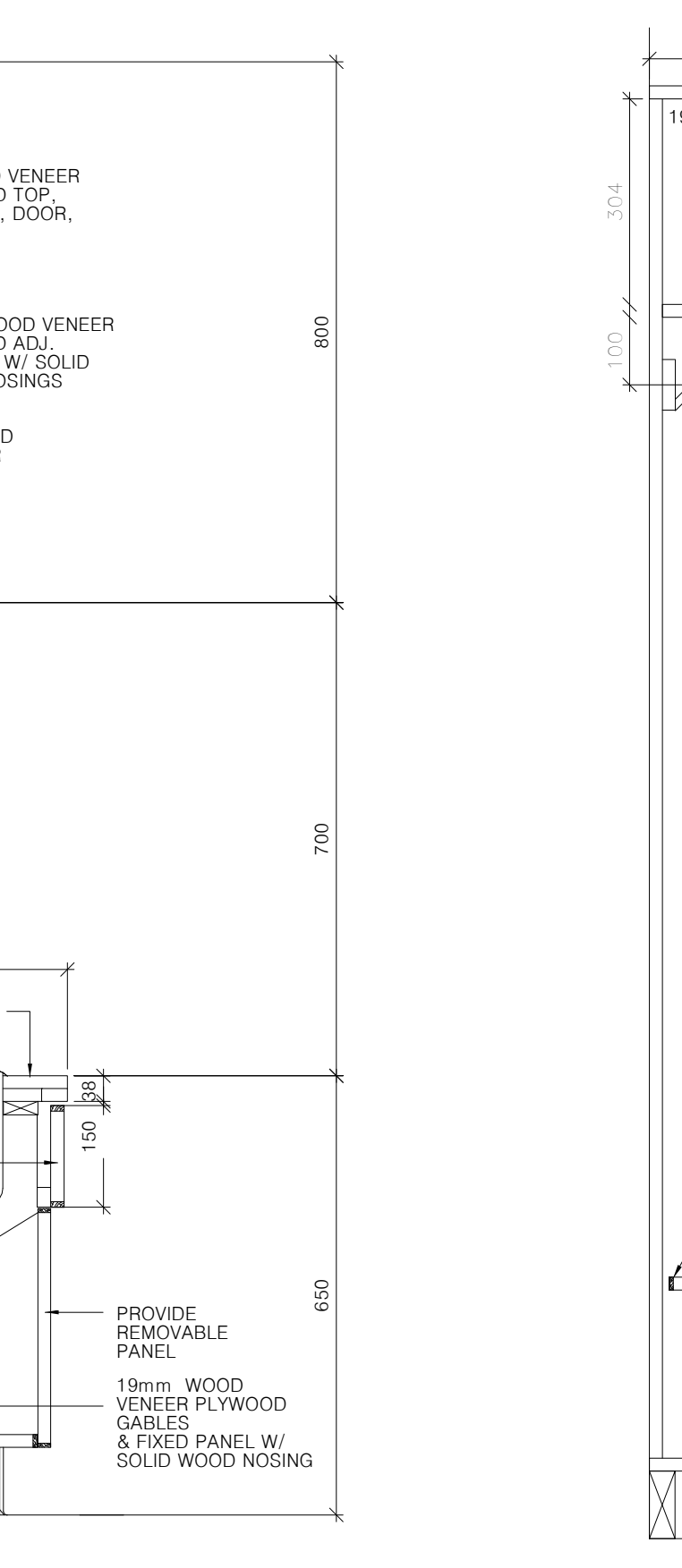
5 1 DRAWER W/ UPPER CAB  
SCALE 1:10



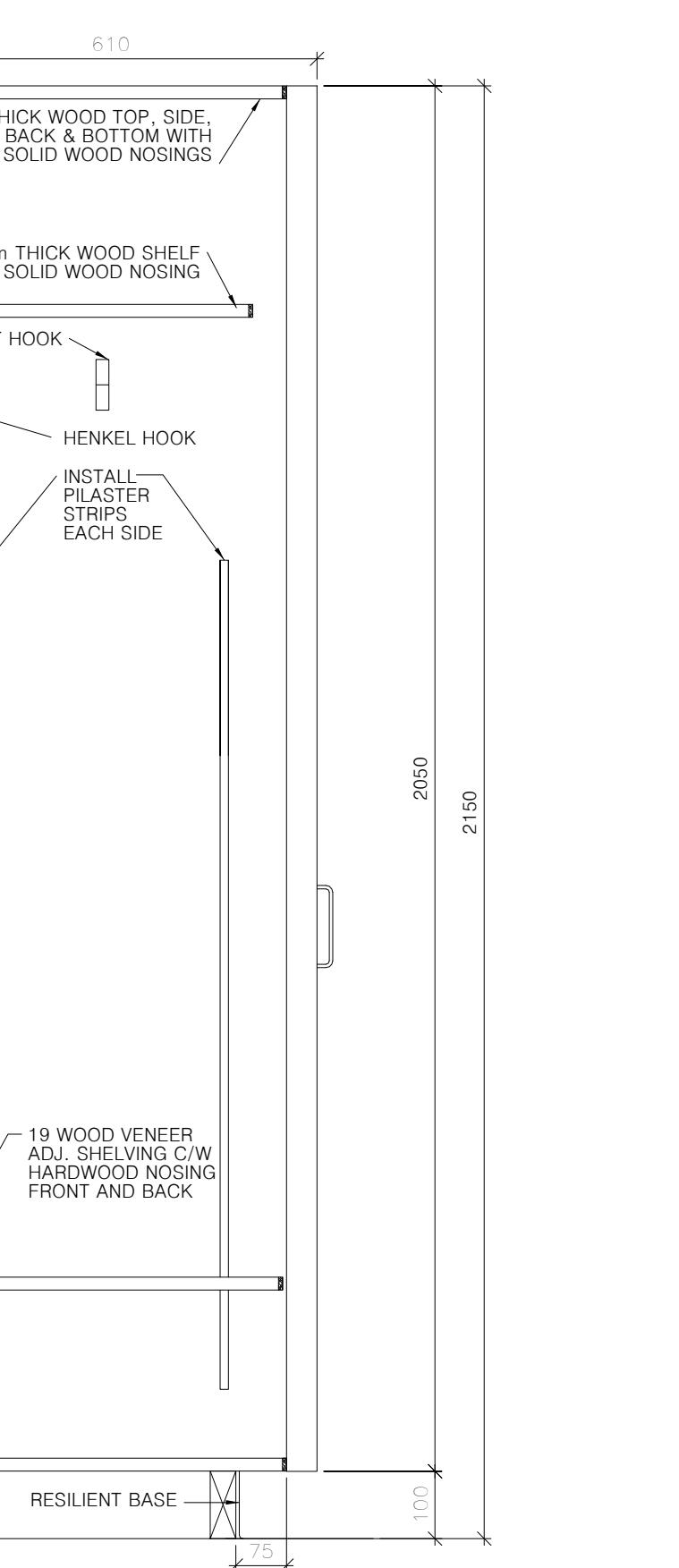
4 MILLWORK @ SINK DETAILS  
SCALE 1:10



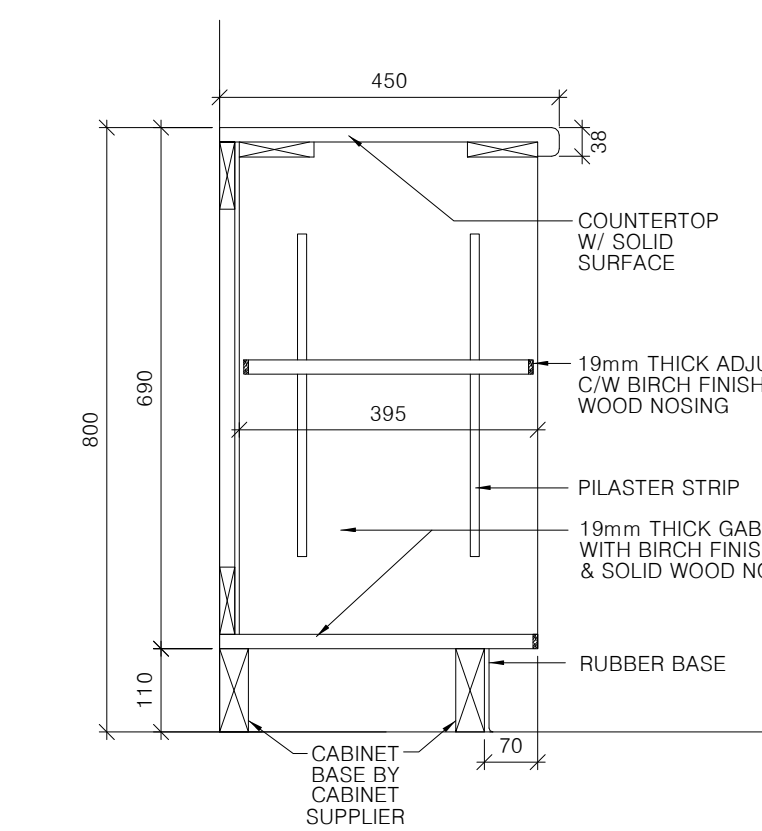
3 KINDERGARTEN LOWER SINK CABINET  
SCALE 1:10



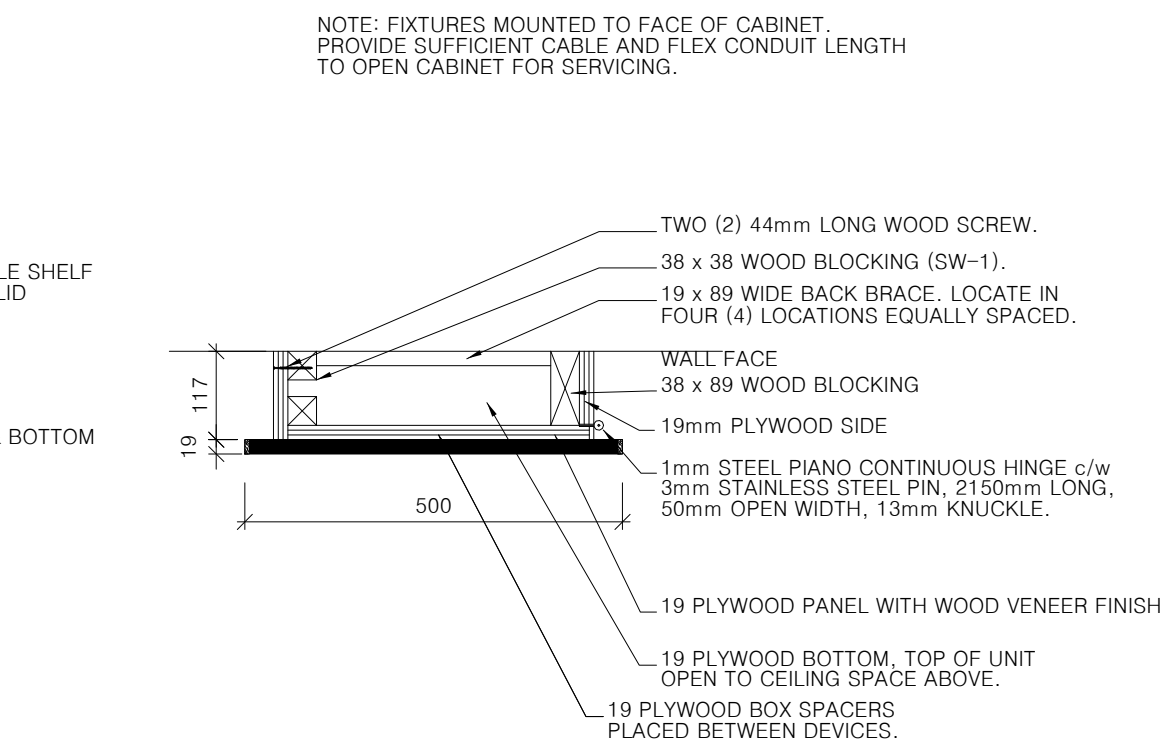
2 TEACHER'S SINGLE CABINET  
SCALE 1:10



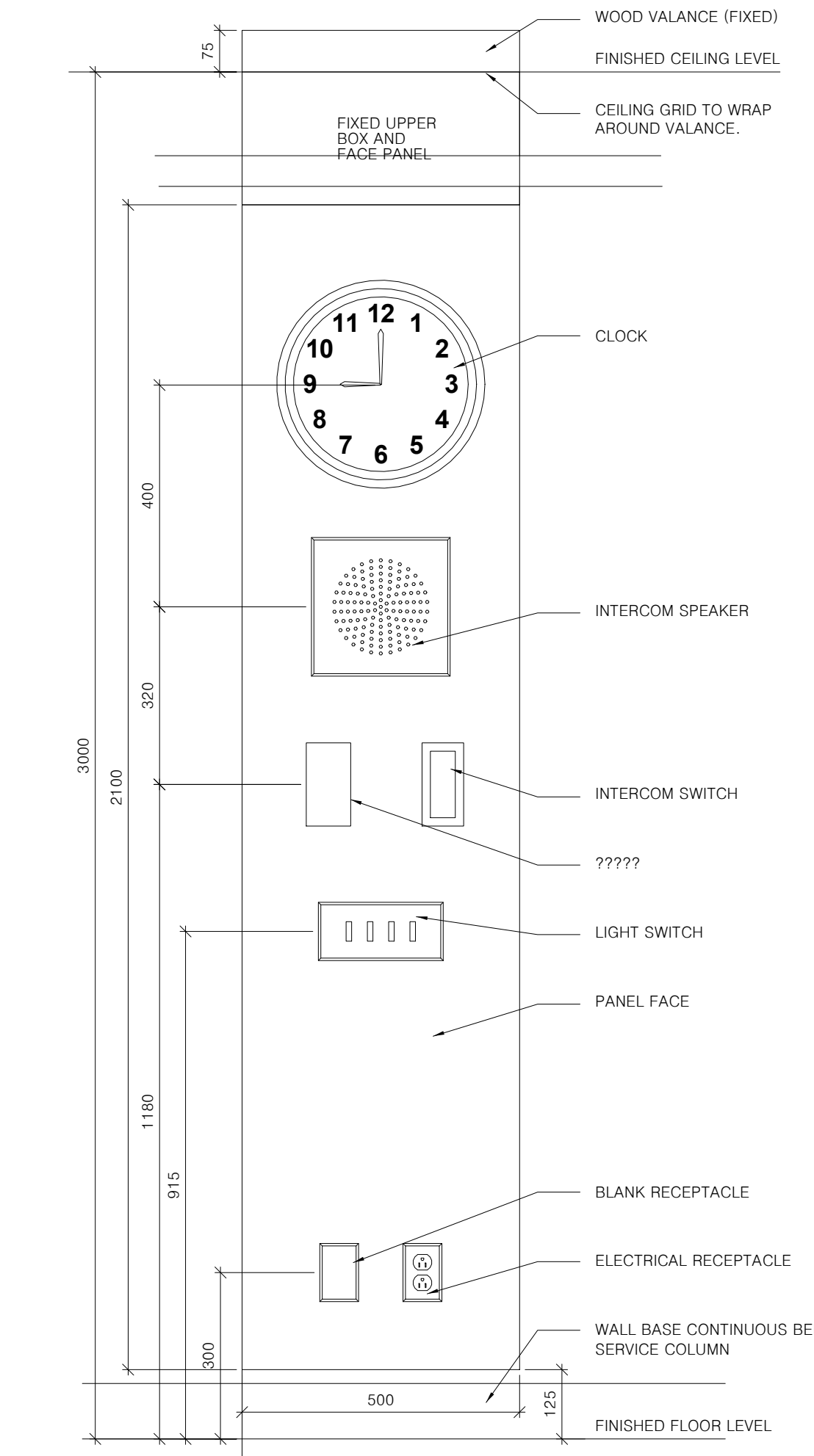
1 TEACHER'S DOUBLE CABINET  
SCALE 1:10



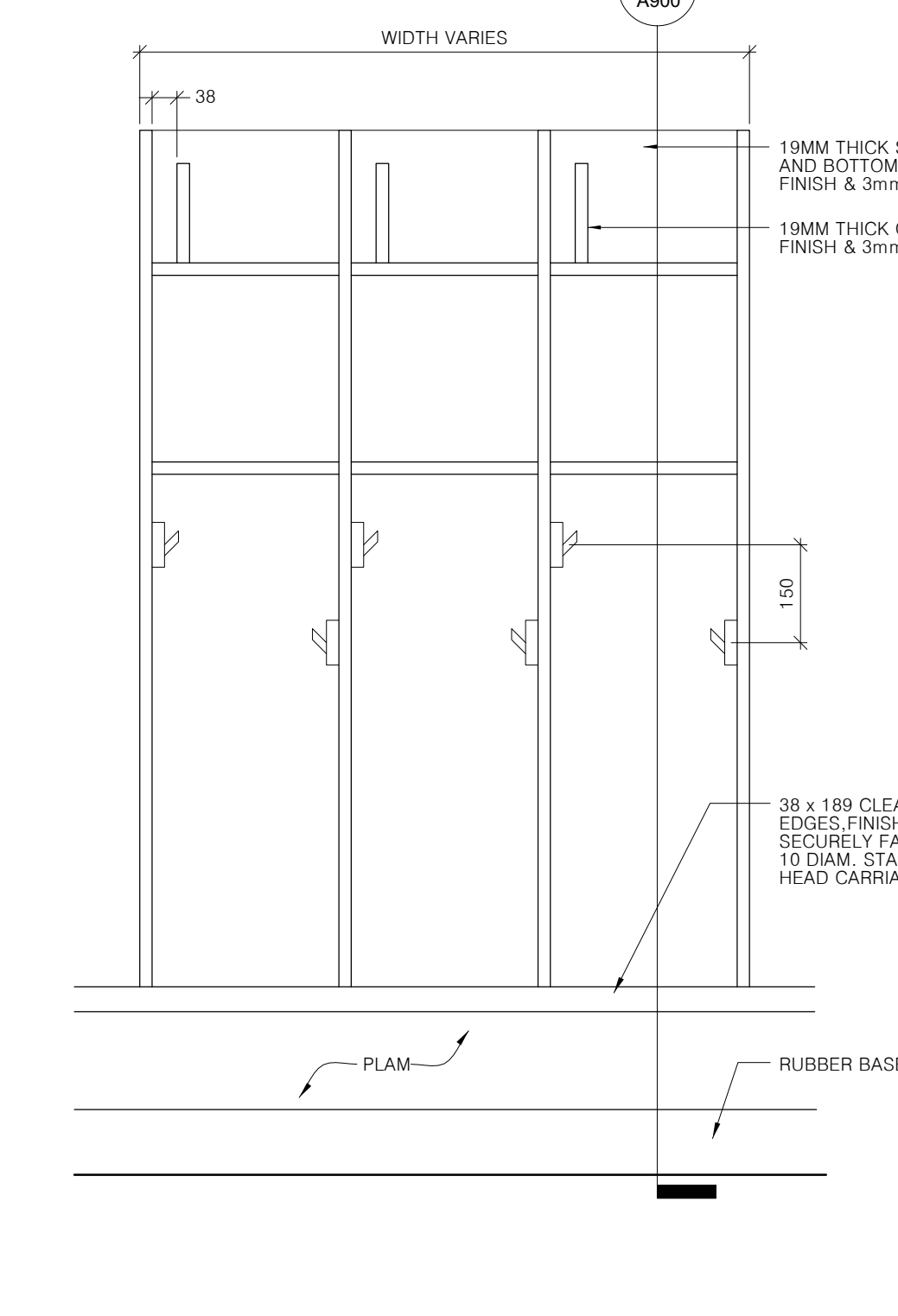
11 LOWER SHELF CABINET  
SCALE 1:10



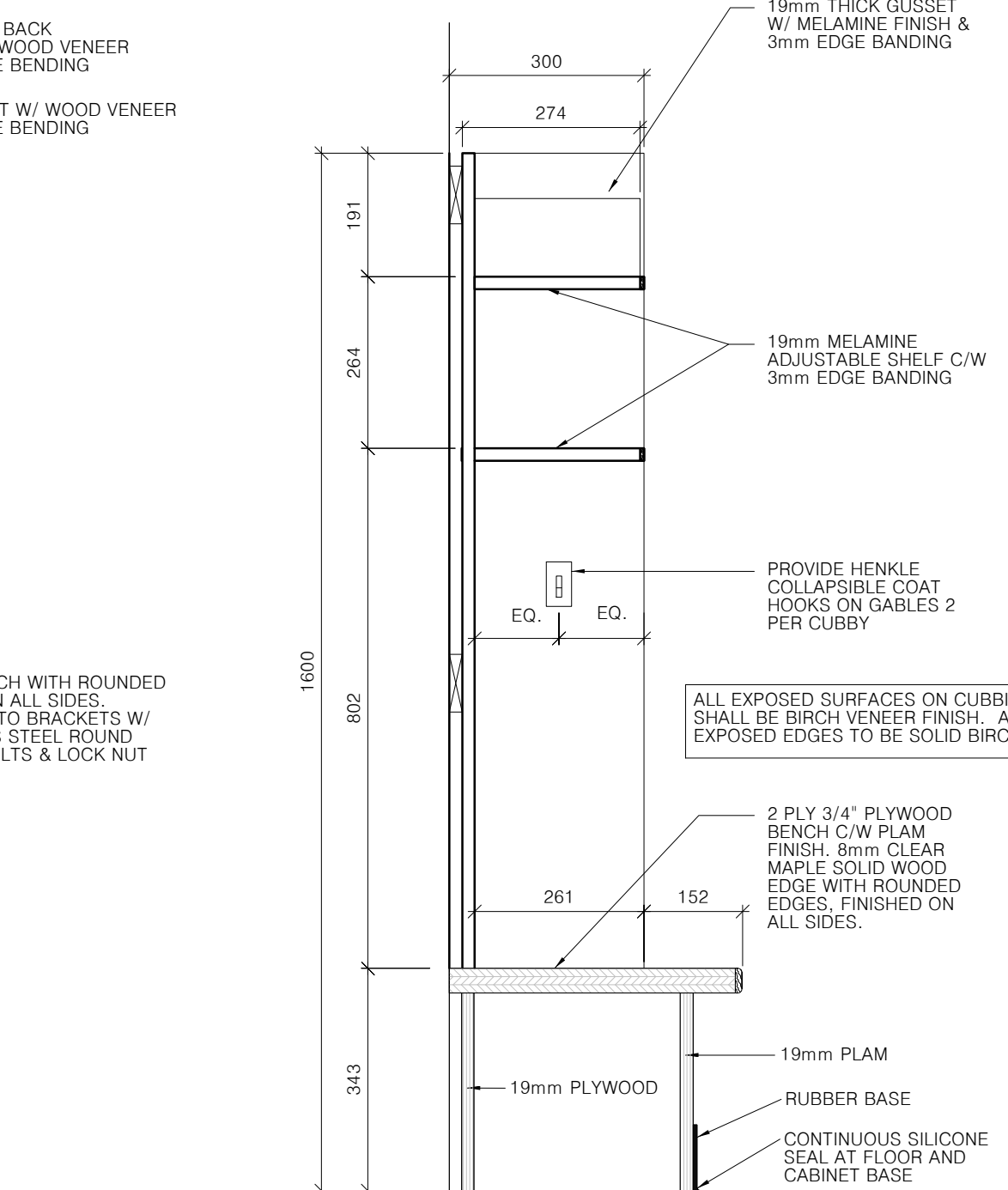
10 SERVICE COLUMN PLAN DETAIL  
SCALE 1:10



9 CLASSROOM INTERCOM PANEL  
SCALE 1:10

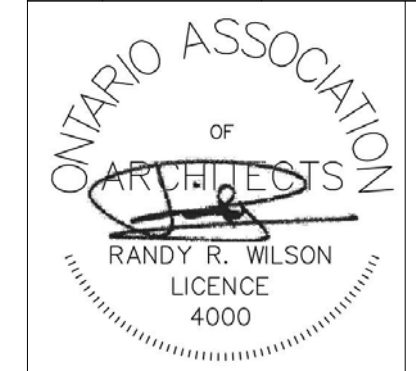


8 KINDERGARTEN CUBBIES - TYPICAL BANK  
SCALE 1:10



7 KINDERGARTEN CUBBIES - TYPICAL SECTION  
SCALE 1:10

No.	DATE	DESCRIPTION	REV.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	

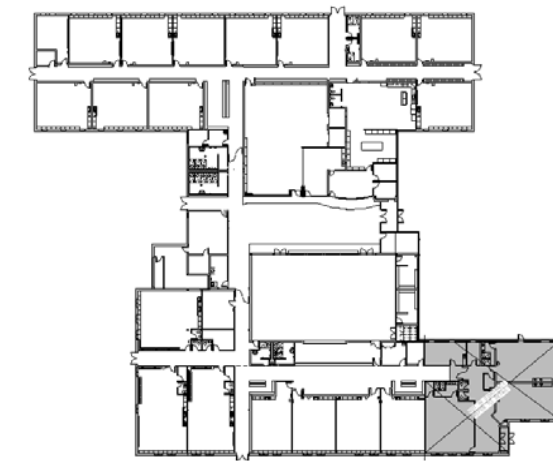


OUR LADY OF FATIMA

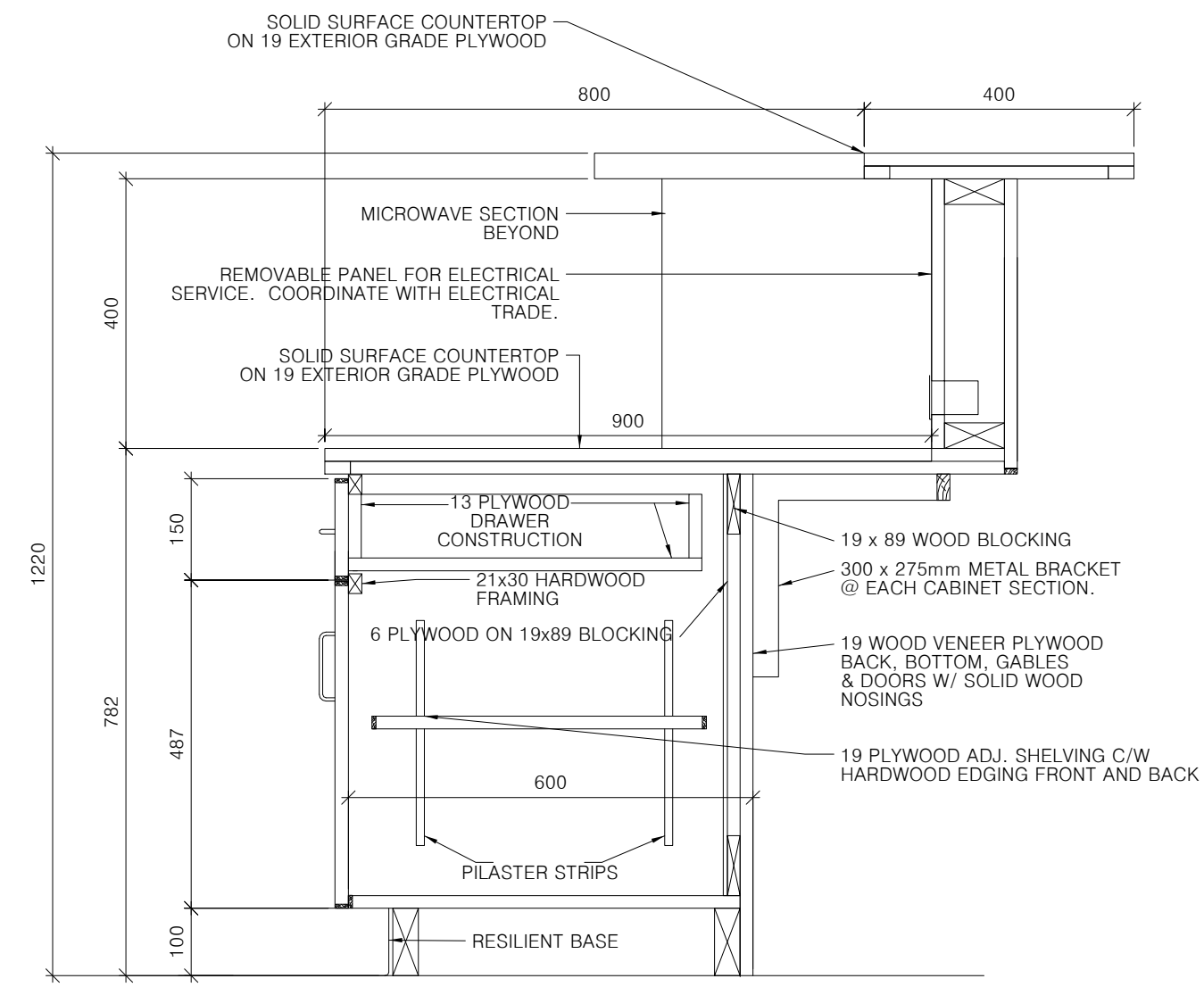
MILLWORK DETAILS

DATE PLOTTED 19/02/2020 11:55:15 AM	DRAWN BY TJV	DRAWING No. A900
SCALE As indicated	CHECKED BY RRW	
PROJECT No. 1901		

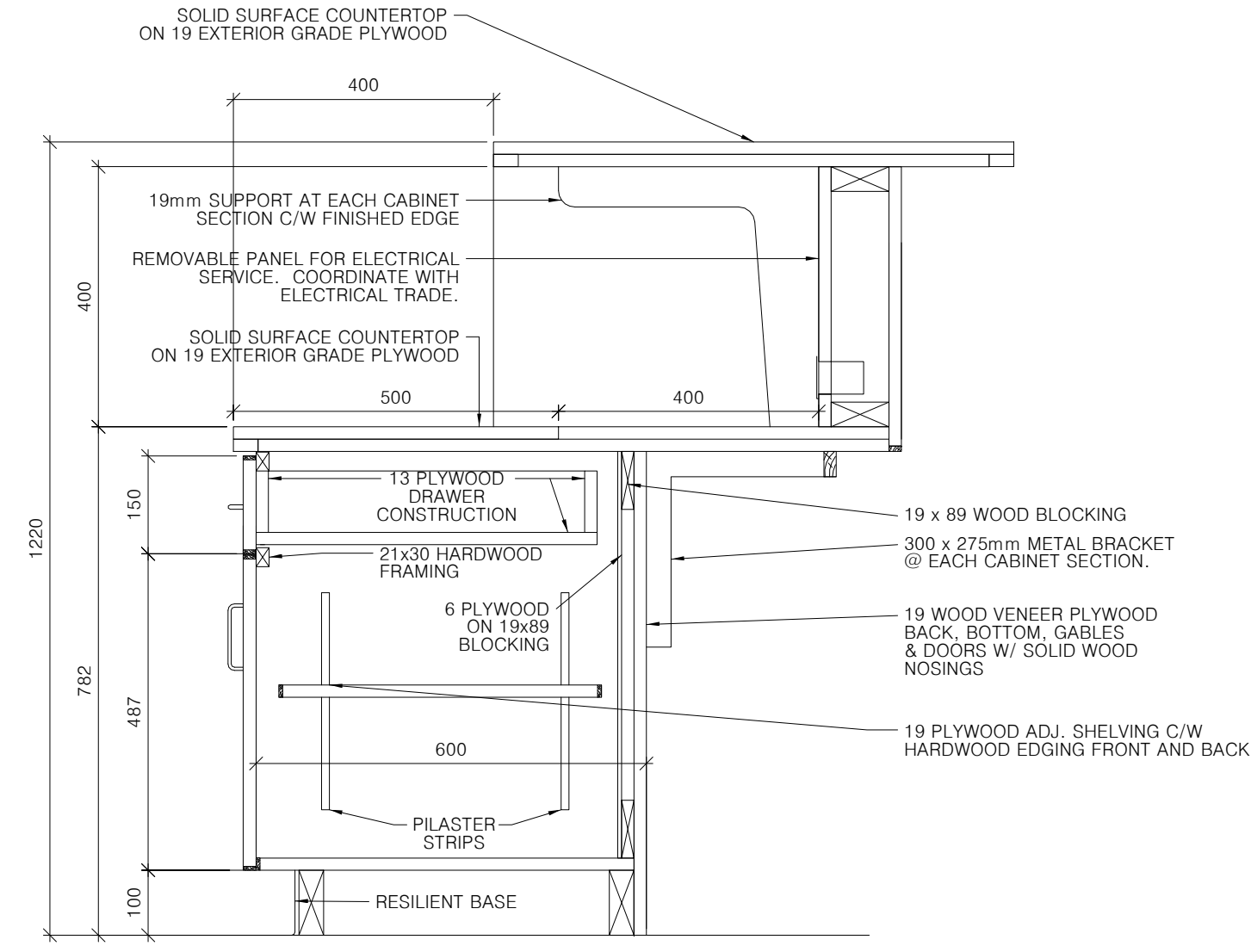




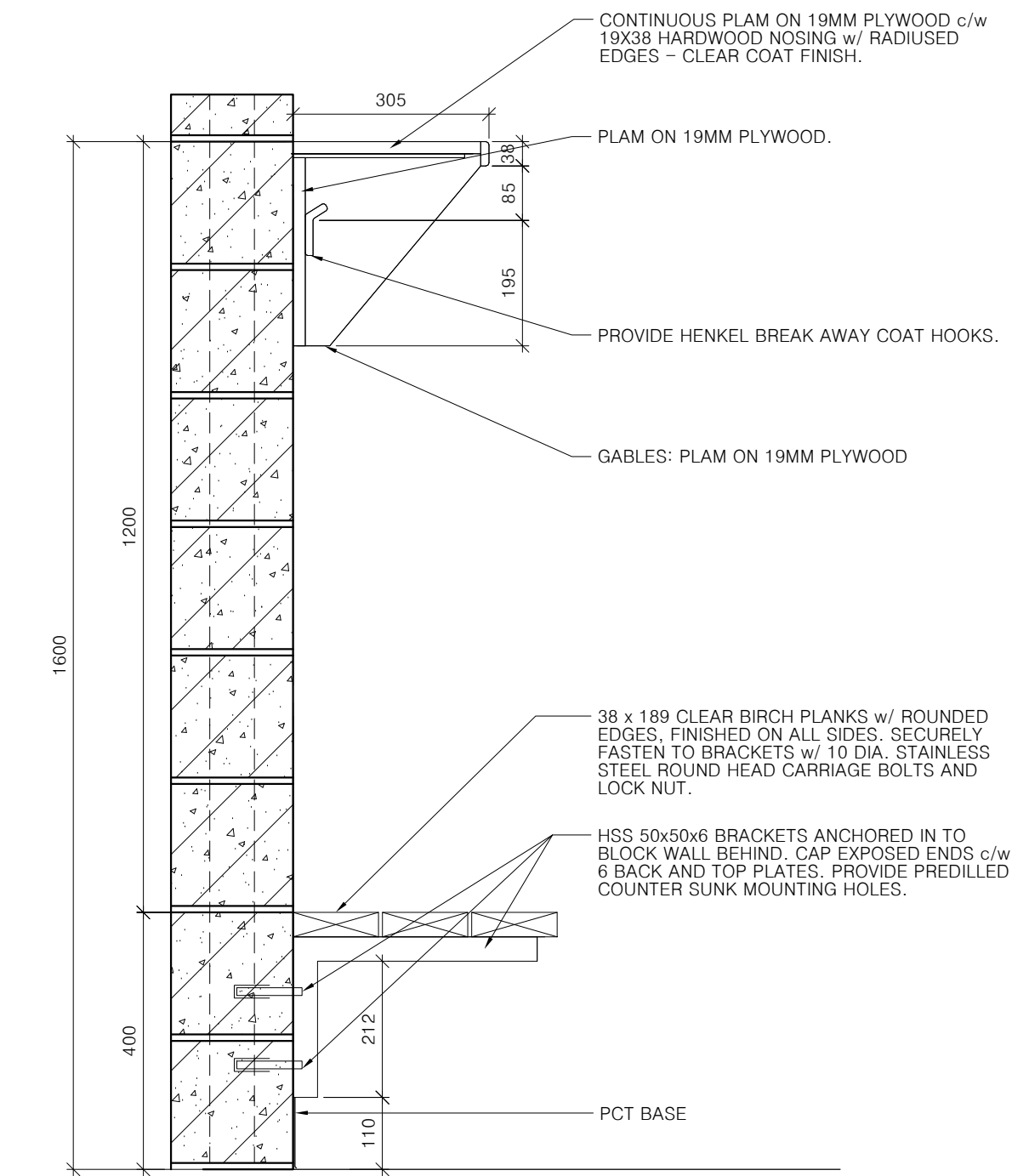
KEY PLAN



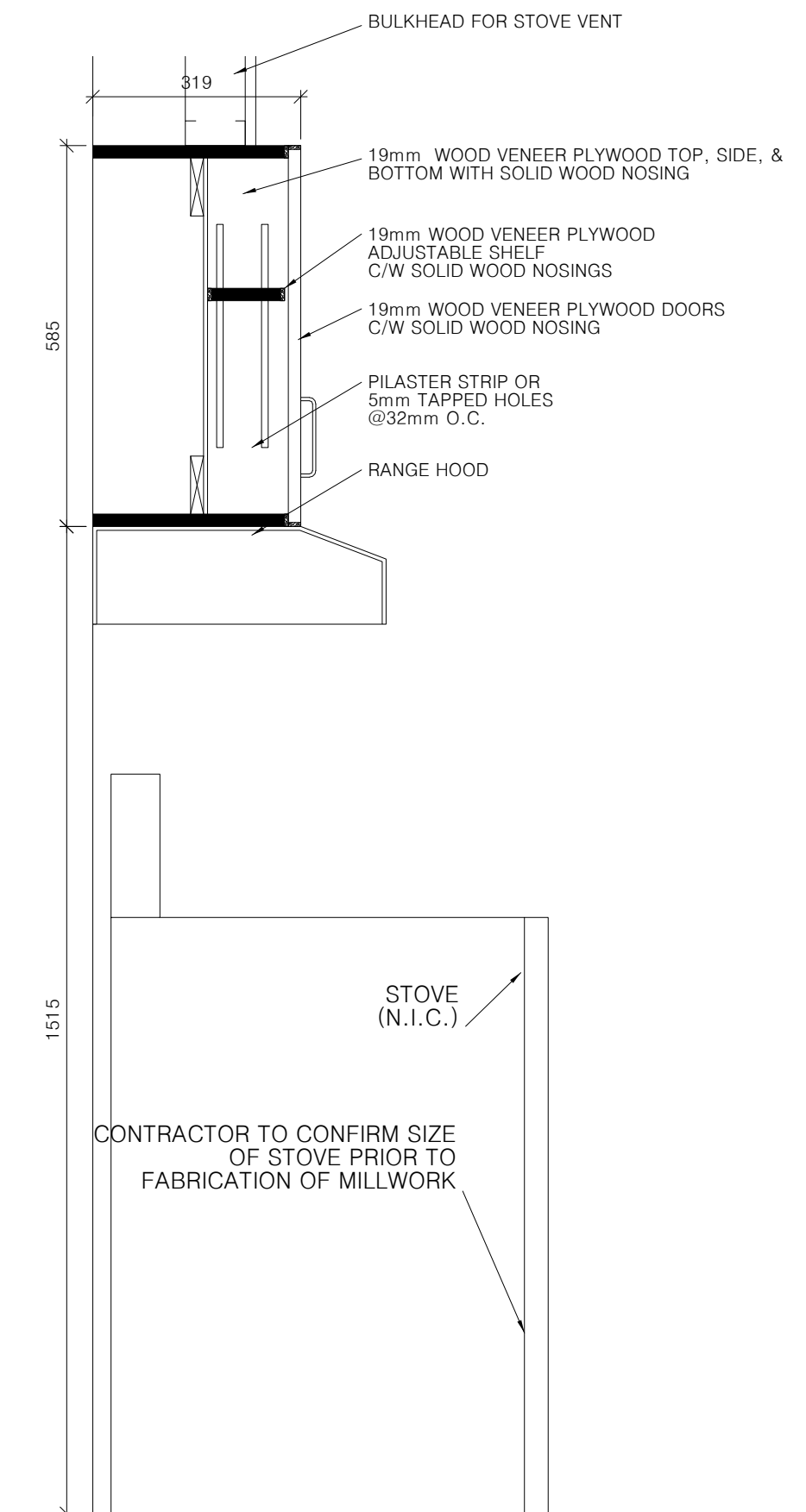
5 KITCHENETTE ISLAND SECTION  
SCALE 1:10



2 KITCHENETTE ISLAND SECTION  
SCALE 1:10



4 SHELF DETAIL  
SCALE 1:10

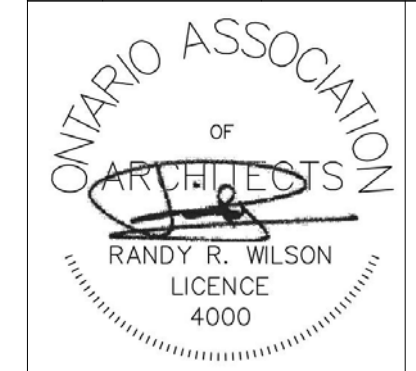


1 CUPBOARD @ RANGE HOOD  
SCALE 1:10

NOTES

LEGEND

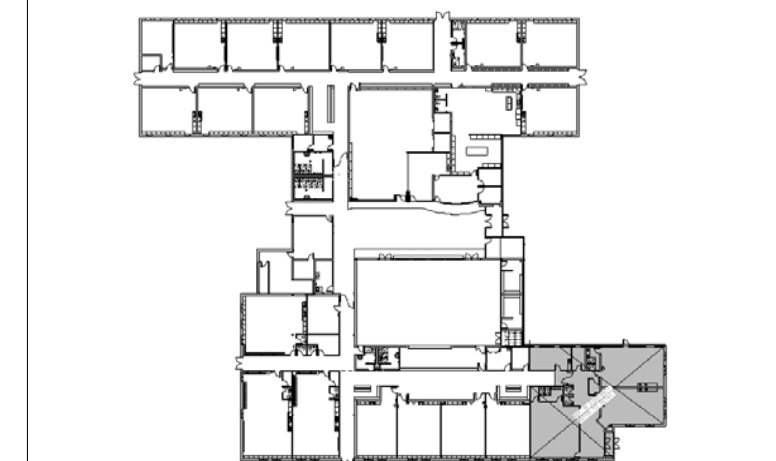
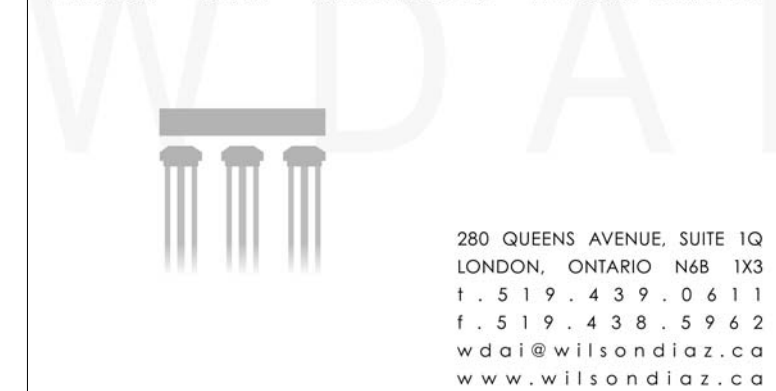
No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**MILLWORK DETAILS**

DATE PLOTTED 19/02/2020 11:55:17 AM	DRAWN BY TJV	DRAWING No.
SCALE 1:10	CHECKED BY RRW	<b>A901</b>
PROJECT No. 1901		



KEY PLAN

NOTES
1. G.C. TO SITE VERIFY ALL DOOR DIMENSIONS.

LEGEND

OUR LADY OF FATIMA
SCHEDULES

Table with columns: No., DATE, DESCRIPTION, REV. No.



PROJECT TITLE: OUR LADY OF FATIMA
DRAWING TITLE: SCHEDULES

Table with columns: DATE PLOTTED, DRAWN BY, DRAWING No., SCALE, CHECKED BY

As indicated RRR A1000

PROJECT No. 1901

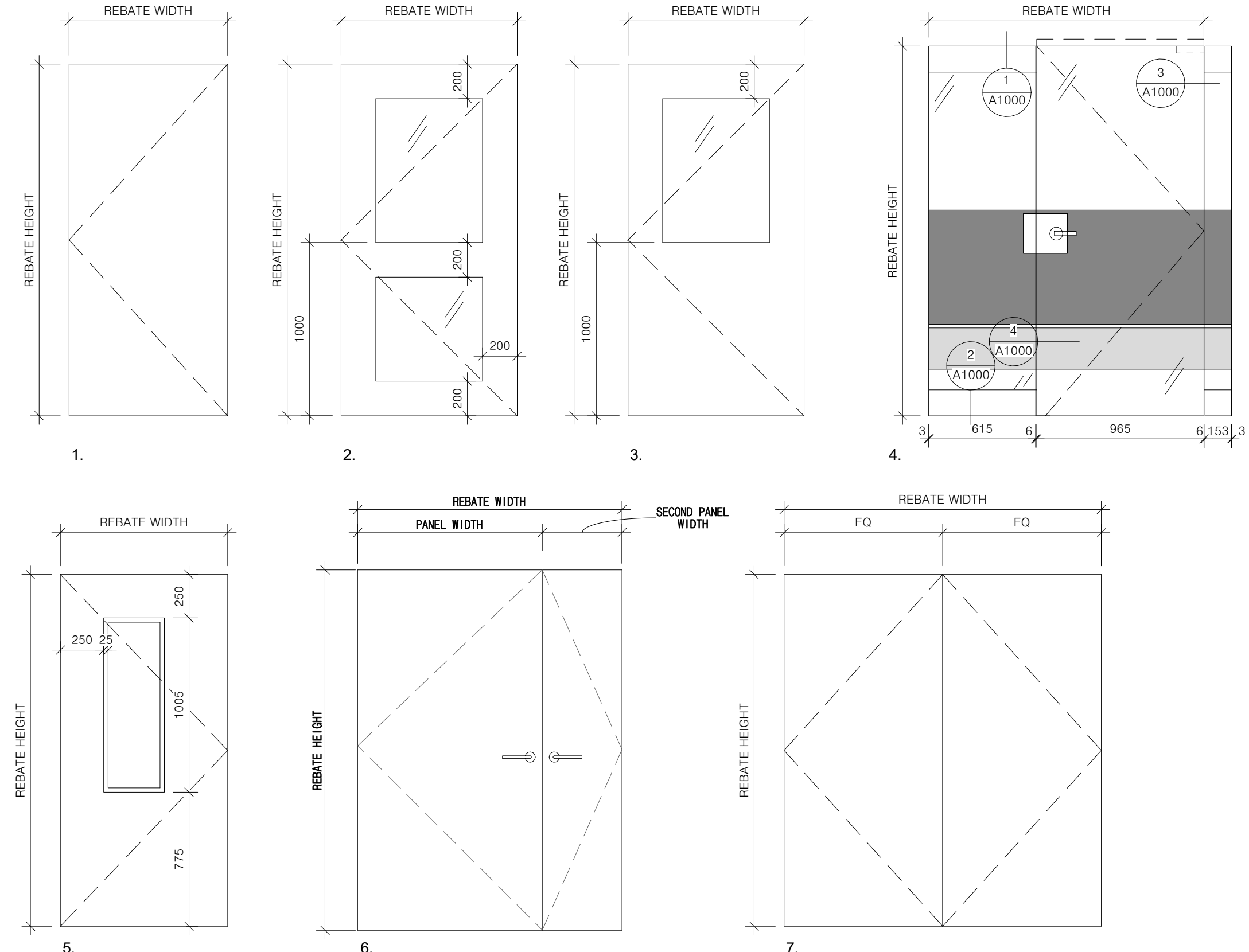
DOOR SCHEDULE - PHASE 4

Main door schedule table with columns: Door No., From Room: Number, To Room: Number, Width, Height, Rebate, Panel Width, Secondary Panel Width, Type, Material, Finish, Glass, Frame, Profile, Comments

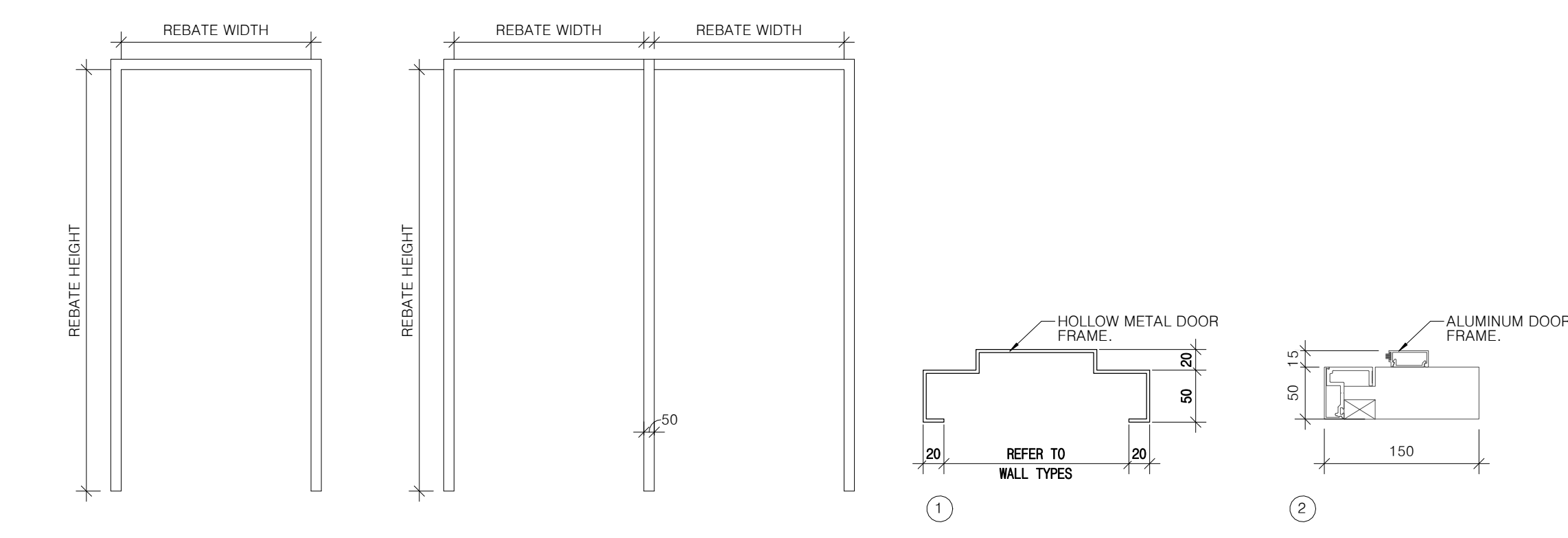
DOOR SCHEDULE - ALTERNATE PRICE

Alternate price door schedule table with columns: Door No., From Room: Number, To Room: Number, Width, Height, Rebate, Type, Material, Finish, Glass, Frame, Profile, Comments

NOTE: NEW DOOR IN EXISTING FRAMES IN NORTH WING CLASSROOMS AS ALTERNATE PRICE.

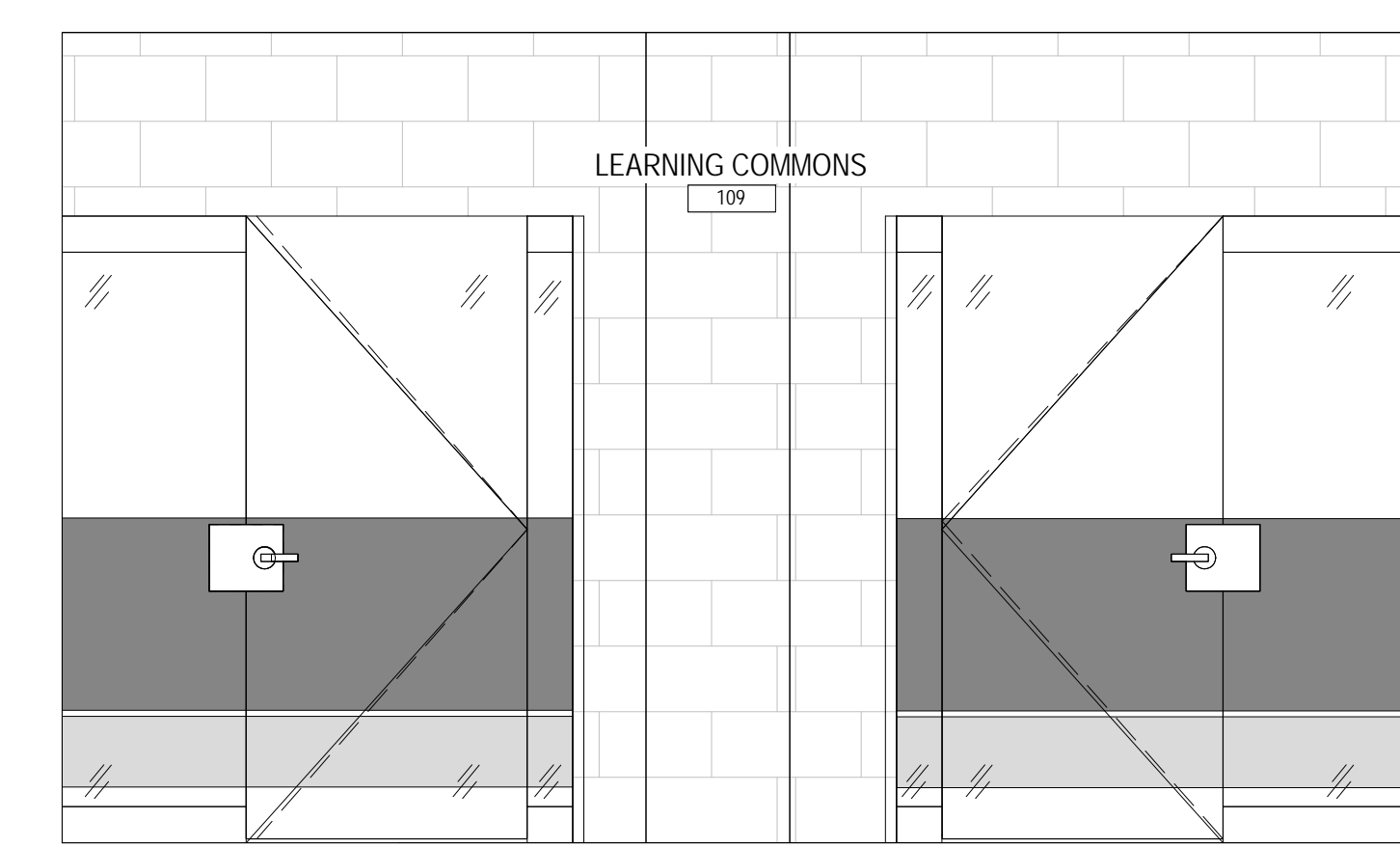


1 DOOR TYPES
SCALE 1 : 25

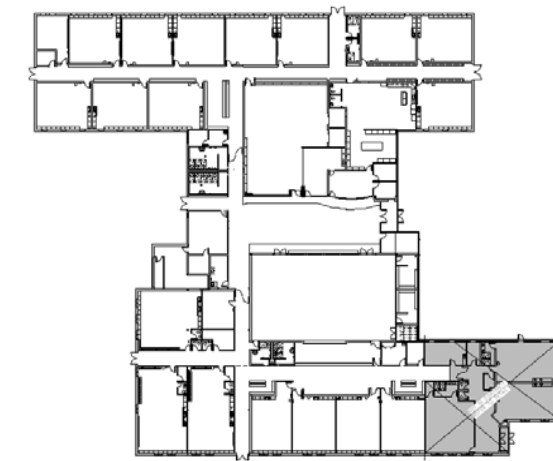


3 FRAME TYPES
SCALE 1 : 25

2 FRAME PROFILE
SCALE 1 : 5



4 INTERIOR ELEVATION AT STUDY ROOMS
SCALE 1 : 25



KEY PLAN

NOTES

LEGEND

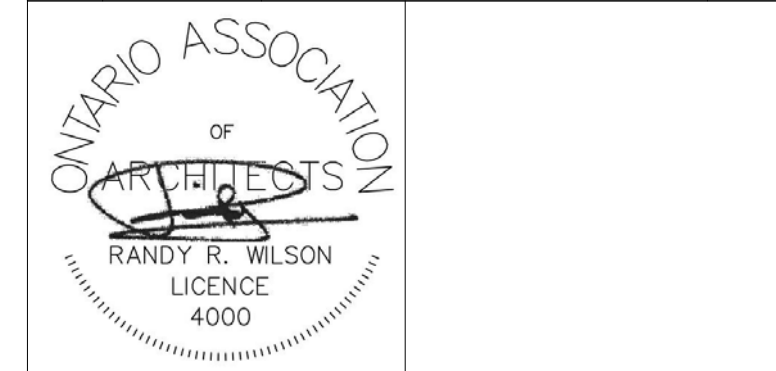
ROOM FINISH SCHEDULE DATE - JANUARY 2020

ST. CLAIR CATHOLIC DISTRICT SCHOOL BOARD  
OUR LADY OF FATIMA

WILSON DIAZ ARCHITECTS INCORPORATED

Number	Name	Floor		Wall Finish								Ceiling Material	Ceiling Finish	Comments
		Floor Finish	Base Finish	North		East		South		West				
				Wall Material North	Wall Finish North	Wall Material East	Wall Finish East	Wall Material South	Wall Finish South	Wall Material West	Wall Finish West			
01	ATRIUM	PCT	PCT	GYP	PT	GYP	PT	GYP	PT	GYP	PT	EXP.	-	
100	RECEPTION	PCT	PCT	GYP	PT	GYP	PT	-	-	BLK.	PT	ACT	-	
100A	VP OFFICE	PCT	PCT	GYP	PT	-	-	BLK.	PT	GYP & BLK.	PT	ACT	-	
101	CONFERENCE	PCT	PCT	GYP	PT	BLK.	PT	-	-	GYP	PT	ACT	-	
102	PRINC.	PCT	PCT	GYP	PT	-	-	GYP	PT	GYP	PT	ACT	-	
103	WORK ROOM	PCT	PCT	BLK.	PT	-	-	GYP	PT	BLK.	PT	ACT	-	
104	STAFF ROOM	PCT	PCT	BLK.	PT	BLK.	PT	BLK.	PT	GYP & BLK.	PT	ACT	-	
104A	WR	PCT	PCT	BLK.	PT	BLK.	PT	GYP	PT	GYP	PT	ACT	-	
104B	WR	PCT	PCT	GYP	PT	GYP	PT	GYP	PT	GYP	PT	ACT	-	
105	MEETING RM	PCT	PCT	BLK.	PT	-	-	BLK.	PT	-	-	ACT	-	
109	LEARNING COMMONS	PCT	PCT	BLK.	PT	GYP & BLK.	PT	GYP	PT	BLK.	PT	ACT2	-	
109A	STUDY RM.	PCT	PCT	BLK.	PT	BLK.	PT	GYP	PT	BLK.	PT	ACT	-	
109B	STUDY RM.	PCT	PCT	BLK.	PT	BLK.	PT	GYP	PT	BLK.	PT	ACT	-	
112	CLASSROOM	QT	RUB	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
113	GYMNASIUM	CSH	RUB	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	EXP.	-	
113A	GYM STOR.	PCT	PCT	GYP & BLK.	PT	GYP	PT	GYP	PT	GYP	PT	ACT	-	
113B	CHAIR STORAGE	PCT	PCT	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
113C	CHANGE RM	PCT	PCT	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
113D	CHANGE RM	PCT	PCT	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
114	CLASSROOM	QT	RUB	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
115	CUST.	PCT	PCT	BLK.	PT	BLK.	PT	GYP	PT	GYP	PT	ACT	-	
116	CLASSROOM	QT	RUB	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
117	WC	PCT	PCT	BLK.	PT	GYP	PT	GYP	PT	GYP	PT	ACT	-	
118	WR	PCT	PCT	GYP	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
119	WR	PCT	PCT	BLK.	PT	GYP	PT	GYP	PT	GYP	PT	ACT	-	
120	WR	PCT	PCT	BLK.	PT	BLK.	PT	GYP	PT	BLK.	PT	ACT	-	
122	CLASSROOM	QT	RUB	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
124	CLASSROOM	QT	RUB	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
126	CLASSROOM	QT	RUB	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
126	RESOURCE	PCT	PCT	BLK.	PT	GYP	PT	GYP	PT	BLK.	PT	ACT	-	
128	CLASSROOM	QT	RUB	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
130	CLASSROOM	QT	RUB	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
132	RESOURCE	PCT	PCT	BLK.	PT	BLK.	PT	GYP & BLK.	PT	BLK.	PT	ACT	-	
134	CLASSROOM	QT	RUB	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
136	CLASSROOM	QT	RUB	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
138	CLASSROOM	QT	RUB	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
150	MECHANICAL	PCT	PCT	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	EXP.	-	
150A	ELECTRICAL	PCT	PCT	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	EXP.	-	
150B	MECH.	PCT	PCT	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	EXP.	-	
154	RESOURCE	PCT	PCT	BLK.	PT	GYP	PT	GYP	PT	GYP	PT	ACT	-	
156	WR	PCT	PCT	TILE & GYP	PT	TILE & GYP	PT	TILE & GYP	PT	TILE & GYP	PT	ACT	-	
157	WR	PCT	PCT	GYP	PT	TILE & GYP	PT	TILE & GYP	PT	TILE & GYP	PT	ACT	-	
159	STORAGE	PCT	PCT	GYP	PT	GYP	PT	GYP	PT	GYP	PT	ACT	-	
159A	STAFF WR	PCT	PCT	GYP	PT	GYP	PT	GYP	PT	GYP	PT	ACT	-	
160	FDK CLASSROOM	QT	RUB	GYP	PT	GYP	PT	GYP	PT	GYP	PT	ACT	-	
160A	WR	PCT	PCT	GYP	PT	GYP	PT	GYP	PT	GYP	PT	ACT	-	
160B	STAFF WR	PCT	PCT	GYP	PT	GYP	PT	GYP	PT	GYP	PT	ACT	-	
162	FDK CLASSROOM	QT	RUB	GYP	PT	GYP	PT	GYP	PT	GYP	PT	ACT	-	
164	FDK CLASSROOM	QT	RUB	GYP	PT	GYP	PT	GYP	PT	GYP	PT	ACT	-	
164A	CLOSET	PCT	PCT	GYP	PT	BLK.	PT	GYP	PT	GYP	PT	ACT	-	
166	CLASSROOM	QT	PCT	GYP	PT	GYP	PT	GYP	PT	GYP	PT	ACT	-	
168	CLASSROOM	QT	RUB	GYP	PT	GYP	PT	GYP	PT	GYP	PT	ACT	-	
170	CLASSROOM	QT	RUB	GYP	PT	GYP	PT	GYP	PT	GYP	PT	ACT	-	
172	CLASSROOM	QT	RUB	GYP	PT	GYP	PT	GYP	PT	GYP	PT	ACT	-	
CR2	CORRIDOR	PCT	PCT	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
CR3	CORRIDOR	PCT	PCT	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
CR4	CORRIDOR	PCT	PCT	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
CR5	CORRIDOR	PCT	PCT	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
CR6	CORRIDOR	PCT	PCT	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
CR10	CORRIDOR	PCT	PCT	BLK.	PT	BLK.	PT	BLK.	PT	GYP	PT	ACT	-	
CR12	CORRIDOR	PCT	PCT	BLK.	PT	BLK.	PT	BLK.	PT	BLK.	PT	ACT	-	
CR12	CORRIDOR	PCT	PCT	GYP	PT	GYP	PT	TILE & GYP.	PT	GYP	PT	ACT. & WD	-	
V01	VESTIBULE	PCT	PCT	BLK.	PT	-	-	BLK.	PT	-	-	GYP.	PT	
V06	VESTIBULE	PCT	PCT	BLK.	PT	BLK.	-	BLK.	PT	-	-	ACT	-	

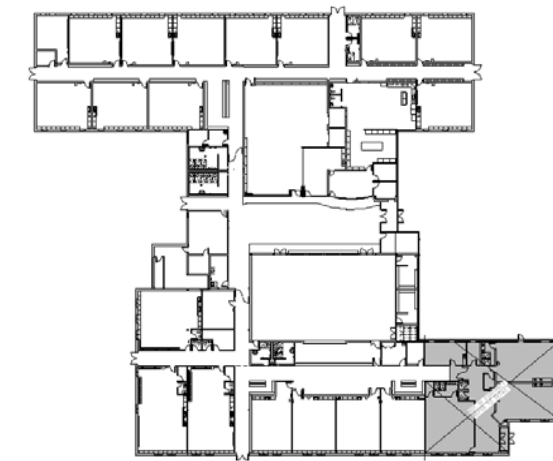
No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



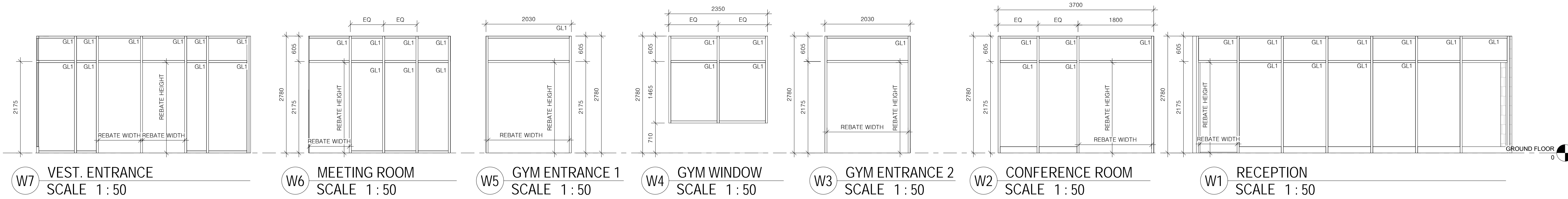
PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**ROOM FINISH SCHEDULE**

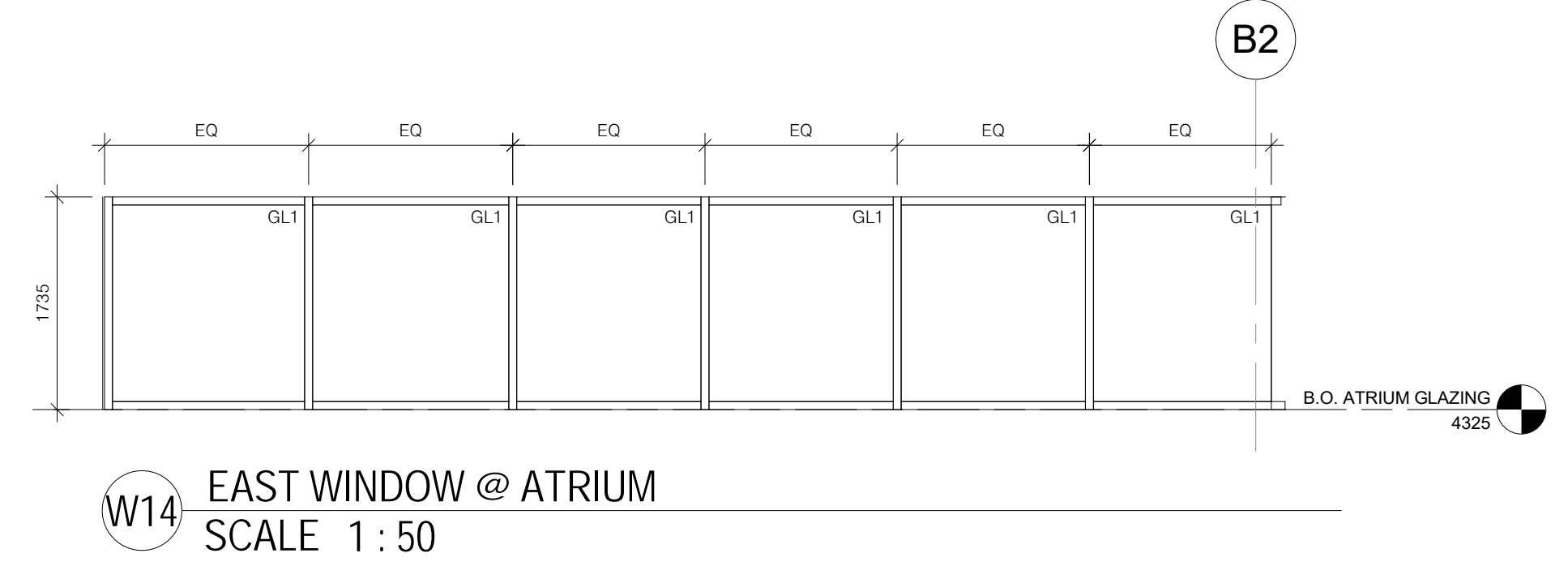
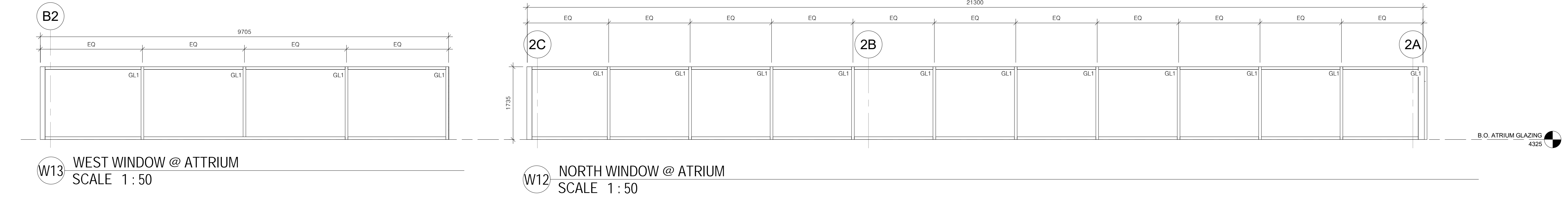
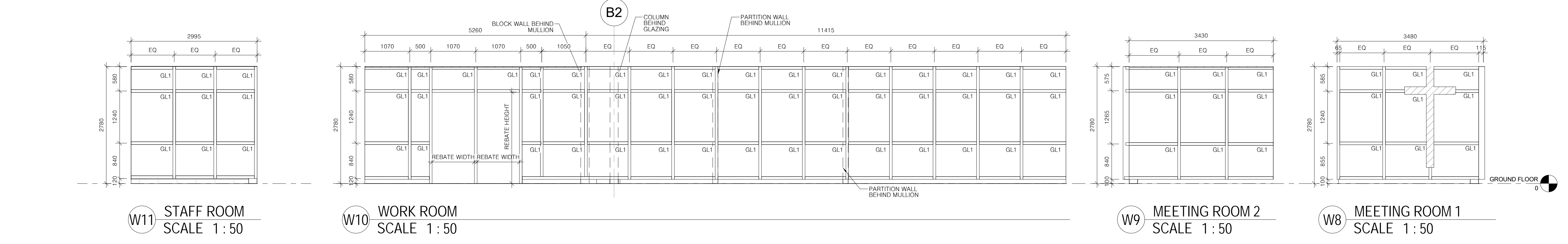
DATE PLOTTED 19/02/2020 11:55:25 AM	DRAWN BY TJW/PC	DRAWING No.
SCALE	CHECKED BY RRW	<b>A1001</b>
PROJECT No. 1901		



KEY PLAN



INTERIOR ALUMINUM FRAMED CURTAIN WALL ELEVATIONS

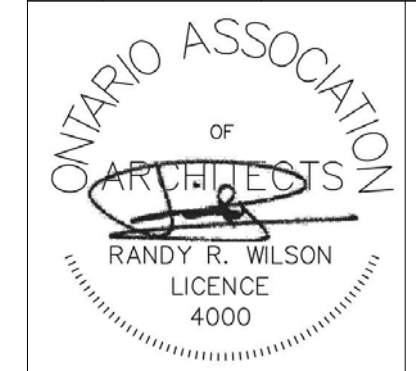


EXTERIOR ALUMINUM FRAMED CURTAIN WALL ELEVATIONS

NOTES

LEGEND

No.	DATE	DESCRIPTION	REV. No.
1	02/19/2020	ISSUED FOR TENDER & PERMIT	



PROJECT TITLE  
**OUR LADY OF FATIMA**

DRAWING TITLE  
**GLAZING ELEVATIONS**

DATE PLOTTED 19/02/2020 11:55:33 AM	DRAWN BY TJV	DRAWING No.
SCALE 1:50	CHECKED BY RRW	<b>A1002</b>
PROJECT No. 1901		

OUR LADY OF FATIMA CATHOLIC SCHOOL  
FFF = 180.32

REMOVE EXISTING SANITARY IN CONFLICT WITH BUILDING ADDITION AND WYE FITTING. NEW SANITARY TO ALIGN WITH INTERNAL MECHANICAL REVISIONS. CONSTRUCT NEW SANITARY, REVISE EXISTING CLEANOUT TO SUIT NEW ALIGNMENT, AND ELIMINATE EXISTING WYE AT REMOVED SANITARY LOCATION. SIZES TO MATCH EXISTING.

REMOVE AND REPLACE SIDEWALK AS NECESSARY FOR SANITARY WORKS. REPLACE TO MATCH EXISTING. MINIMUM 100mm CONCRETE ON 100mm GRANULAR 'A'.

CONSTRUCT 100mm CONCRETE SIDEWALK ON 100mm GRANULAR 'A'. REFER TO SITE PLAN.

BUILDING ADDITION. REFER TO SITE PLAN AND ARCHITECTURAL PLANS.

RELOCATED 150mm WW 150mm WM INCLUDING FITTINGS, 90° BEND AND RESTRAINTS. CONNECT TO EXISTING WHERE WW RELOCATED FROM.

EX. 150mm WM TO BE REMOVED  
EX. 100mm WM TO BE REMOVED  
EX. WWS TO BE RELOCATED  
EX. 150mm WM  
EX. 100mm WM

150X100 TEE. CONNECT TO EXISTING 150mm WM.  
RELOCATED 100mm WW  
100mm WM INCLUDING BENDS, FITTINGS, RESTRAINTS. CONNECT TO EXISTING OUTSIDE FOUNDATION WALL.

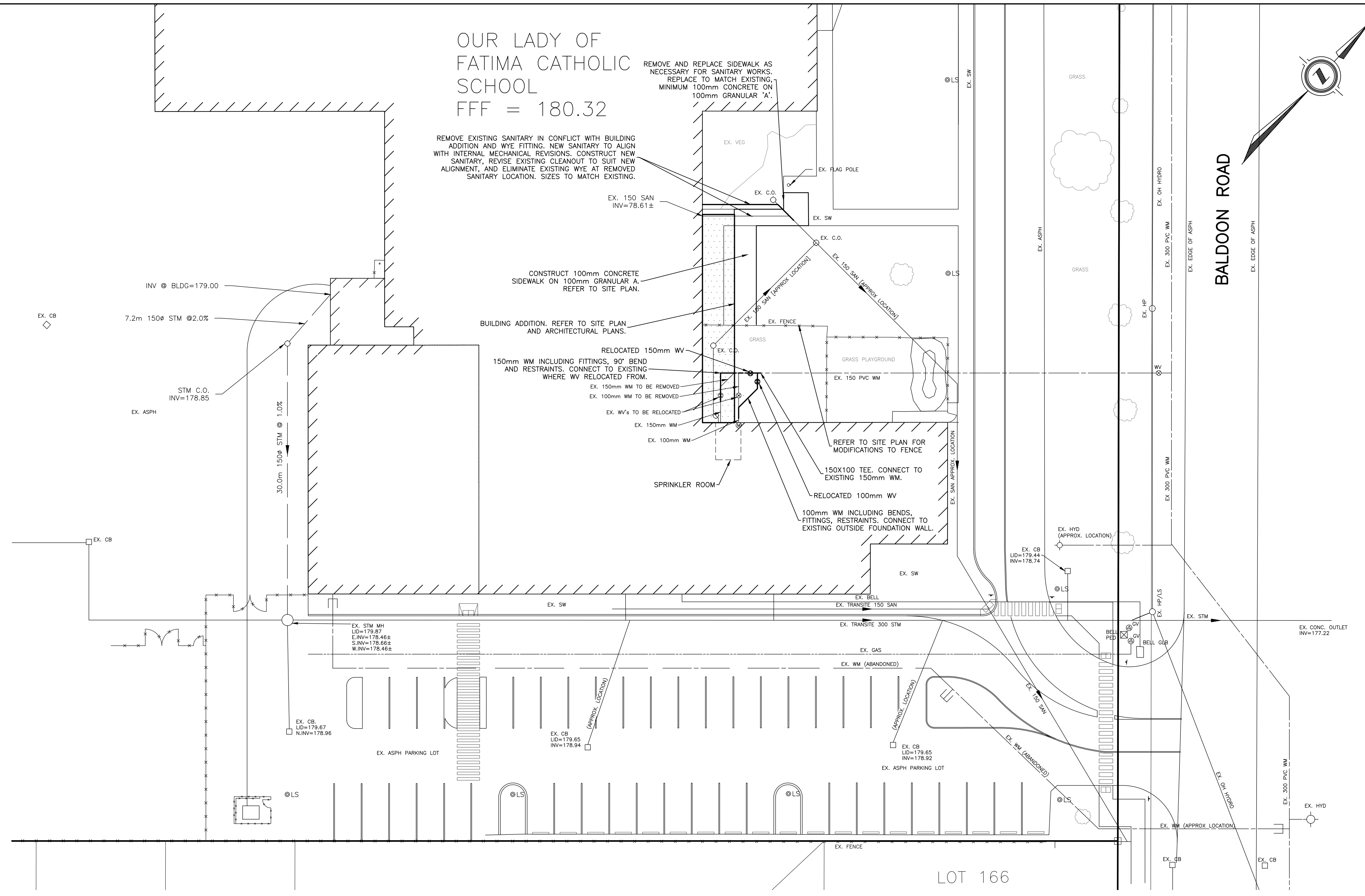
REFER TO SITE PLAN FOR MODIFICATIONS TO FENCE

SPRINKLER ROOM

LEGEND

- EX. FH EXISTING HYDRANT
- EX. WV EXISTING VALVE
- EX. 300# WM EXISTING WATERMAIN
- EX. GM EXISTING GAS METER
- EX. GV EXISTING GAS VALVE
- EX. GM EXISTING GAS MAIN
- EX. BP @HP EXISTING BELL POLE
- EX. B.PED EXISTING BELL PEDESTAL
- EX. BMH EXISTING BELL MANHOLE
- EX. BC EXISTING BELL CABLE
- EX. EC EXISTING ELECTRICAL CABLE
- EX. HP/LS @HP EXISTING HYDRO POLE/LIGHT STANDARD
- EX. HP @HP EXISTING HYDRO POLE
- EX. SS EXISTING SANITARY SEWER
- EX. SS EXISTING STORM SEWER
- EX. STMH EXISTING STORM MANHOLE
- EX. CB EXISTING CATCHBASIN
- C.O. EXISTING CLEANOUT
- EX. TR EXISTING TREE
- 37.2-150 ST-1.0% PROPOSED STORM SEWER
- C.O. PROPOSED CLEANOUT
- LIMITS OF ASPHALT REMOVAL/RESTORATION
- LIMITS OF ASPHALT REMOVAL
- LS PROPOSED LIGHT STANDARD

EXISTING SITE SURFACE WORKS DISPLAYED ARE BASED ON PROPOSED CONDITION OF PREVIOUS SITE DEVELOPMENT AS CONSTRUCTED IN 2018 IN LIEU OF DETAILED TOPOGRAPHIC SURVEY. THE OWNER'S CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH THE CURRENT STATE OF THE SITE PRIOR TO CONSTRUCTION.



F:\mh Feb 06/20-12:50pm DEL18-011-C3D-BASE PHASE 4.dwg

EXISTING SERVICES	DRAWING #, SOURCE	DATE	AS CONSTRUCTED SERVICES	COMPLETION	DETAILS	No.	REVISIONS	DATE	CONSULTANT
					DESIGN BY JSC/DH DRAWN BY JSC CHECKED BY DH	1	ISSUED FOR TENDER/APPROVAL	FEB. 06, 2020	DEVENG

CONSULTANT OR DIVISION

London Office  
41 Adelaide St. N., Unit 71  
(519) 672-8310

Paris Office  
31 Mechnic St., Unit 301  
(519) 442-1441

CONSULTING CIVIL ENGINEERS

ENGINEER'S STAMP

LICENSED PROFESSIONAL ENGINEER

J. R. SMITH  
100144789

Feb 6/20

PROVINCE OF ONTARIO

SCALE

SCALE - 1:250

OUR LADY OF FATIMA CATHOLIC SCHOOL  
515 BALDOON ROAD  
CHATHAM, ONTARIO

SITE SERVICING AND GRADING PLAN

PROJECT No.  
DEL18-011

SHEET No.  
P4-SE1

PLAN FILE No.

### GENERAL CONSTRUCTION NOTES

- All existing underground utilities, either shown or not shown, are to be located and marked prior to commencing construction within the site and on existing abutting road allowance. Any utilities damaged or disturbed during construction shall be repaired or replaced to the satisfaction of the governing body at the sole expense of the Owner's Contractor.
- The Owner's Contractor is to meet all the requirements of the owners of the utilities on this plan, and must make satisfactory arrangements with the utility companies for crossing their installations and for providing adequate protection during construction. All existing underground plant (ie. telephone duct, gas mains, sewers, watermain) that will be crossed under during the installation of services for this development shall be supported by a support beam or by other methods as may be required by the Owners of the plant being crossed under. All temporary support measures required during the construction phase shall be the responsibility of the Owner's Contractor and independent engineering review/certifications shall be undertaken where necessary at no extra cost to the contractor.
- All existing boulevards and road surfaces disturbed during construction shall be restored to a condition at least as good as original (pre-construction condition), all to the satisfaction of the Municipal Engineer.
- Prior to commencing ANY construction, the Owner's Contractor must verify all outlet information, benchmarks, elevations and dimensions and report any discrepancies immediately to the Engineer.
- Prior to commencing any work on the installation of services, an approved set of plans must be available on the job site and shall remain there until work is completed.
- The Owner's Contractor is responsible for the control of surface and subsurface water.
- The Developer's Consulting Engineer shall provide full-time inspection and a Certificate of Compliance upon completion for all works to be constructed on existing Municipal streets.
- The Developer shall have its Professional Engineer provide adequate inspection during construction on the site and a Certificate of Completion of works upon completion of all works which are to be assumed by the owner.
- The Owner's Contractor shall take all necessary precautions to prevent the spilling or dumping of hazardous materials while fueling and maintaining vehicles and equipment.
- If in the opinion of the Engineer a zone is contaminated through neglect and/or deliberate mishandling of toxic materials by the Owner's Contractor, the Owner's Contractor shall at no expense to the Owner excavate and dispose of all contaminated materials to an approved disposal site and provide soil remediation.
- At least 48 hours prior to commencing construction on any existing road allowance maintained by the Municipality of Chatham/Kent, the Owner's Contractor is to obtain the appropriate work approval permit from the Municipality of Chatham/Kent Engineering Department.
- The Owner's Contractor is responsible for notifying the Municipality of Chatham/Kent for all building inspection requirements and keep them informed as to their schedule.
- Existing servicing and topographic information was obtained by Hook & Todgham Surveying Incorporated, dated January 24, 2017.
- For geotechnical information and recommendations respecting construction, refer to geotechnical report prepared by \_\_\_\_\_, dated \_\_\_\_\_, Report No. \_\_\_\_\_.
- For complete building information and architectural details, refer to drawings by WILSON DIAZ ARCHITECTS INC.
- For complete mechanical/electrical plan details, refer to drawings by CHORLEY AND BISSET.

### CONSTRUCTION NOTES FOR THE SERVICING CONTRACTOR

- The Contractor shall take precautions to avoid damage to existing servicing and surfaces not designated for removal. Any damage shall be repaired and restoration completed at the expense of the Owner's Contractor.
- Prior to initiating site works, the Owner's Contractor shall obtain locates for all existing underground utilities within the area of construction. The Owner's Contractor shall be responsible for the cost of repair or replacement of any utilities damaged or disturbed during construction, and shall immediately contact the appropriate utility owner upon such occurrence.
- Where utility crossings are required, the Owner's Contractor shall undertake appropriate measures for the temporary support of such utilities in accordance with the requirements of the utility owner until such time as backfilling and compaction are complete.
- Prior to construction, an approved set of plans and specifications shall be available on the job site and shall remain on-site for the duration of construction. The Owner's Contractor shall verify with the Contract Administrator that the most current drawings are in circulation.
- The Owner's Contractor shall be responsible for protection of all survey markers and monuments during construction. Any legal survey monuments which are disturbed during construction shall be replaced at the expense of the Owner's Contractor.
- All works shall be undertaken in accordance with current Occupational Health and Safety Act requirements.
- Prior to undertaking on-site earth works, the Owner's Contractor shall install all sediment controls relevant to the area of site disturbance.
- The Owner's Contractor shall be responsible for regular monitoring and cleanup of tracked mud/debris on adjacent lands and public roads to the satisfaction of the Engineer and Municipality.
- The Owner's Contractor shall take all reasonable measures to avoid mixing topsoil with subsoil where required for reuse on-site.
- On-site surface drainage shall be maintained by the Owner's Contractor at all times. Erosion and sediment controls shall be applied where necessary to prevent uncontrolled release of sediment off-site. Where excavation dewatering is necessary, pump discharge shall be directed to stable, vegetated areas or dedicated sediment traps (OPSD 219.24) to the satisfaction of the Engineer.
- The Owner's Contractor shall maintain an operations log of erosion & sediment control structure inspections throughout the project, with particular emphasis on control measures after rainfall events of 12mm or greater. Periodic removal of accumulated sediment shall be undertaken as necessary or at the expressed direction of the Engineer. All collected sediment shall be disposed of at an approved location at no extra cost to the contractor.
- Unless otherwise noted on the plans, geotextile for erosion control measures shall be non-woven to meet class 1-OPSS 1860.07.02 (i.e. Terrafix 270R, or approved equivalent) with 300mm min. overlaps.
- Topsoil windrows shall be constructed separately from subsoil stockpiles, and shall be located no closer than two (2) metres from any adjacent property boundary. Windrow Slopes shall generally be flatter than 3:1 (horizontal to vertical) and should generally not exceed 6 metres in height.
- Temporary intercepter swales to be 600mm wide (min.) with 3:1 side slopes, and maintained until site pregrade is stabilized with temporary vegetation to the satisfaction of the engineer.
- Sediment controls shall be implemented by the Owner's Contractor in localized areas, as warranted, during construction phases, upon the direction of the engineer. Control approaches should be adaptable to reflect variable site conditions and circumstances.
- The Owner's Contractor shall prevent wind blown dust by periodic application of water.
- All substitutions are subject to approval by the Engineer.

### SEWER (SERVICE) NOTES

- All sewers and watermain are to be installed in accordance with the minimum requirements of the latest revision of the Ontario Provincial Standard Specifications, the Ontario Building Code and the Municipality of Chatham/Kent Engineering Department.
- Unless labelled specifically on the plans, all sewer pipe shall be as follows:
  - All pipe less than 200mm dia. shall be PVC SDR 28 (CSA B182.2)
  - Products shall be as per the approved list of manufacturers provided by the Municipality of Chatham/Kent
  - HDPE is not permissible for use unless specified otherwise
- The Owner's Contractor shall be responsible for protecting the pipe during construction in the event that protective cover depths are not met due to interim conditions.
- Service bedding:** Pipe bedding spec. per bedding detail. (on this plan). Localized base improvement may be required for services bedded in loose, wet or dilatant silty/sandy subsoils, subject to the recommendations of the Geotechnical Engineer. Such improvement could include overexcavation and recompaction or crushed stone bedding wrapped in a geotextile (terrafix 270R or approved equivalent with min. 0.45m overlap) as directed by the Geotechnical Engineer. Any trench water shall be removed when pipe laying is in progress.
- When stone bedding is used for concrete pipe bedding, cover and bedding must be wrapped in a geotextile (terrafix 270R or approved equivalent with min. 0.45m overlap).
- Backfill for service trenches:** Services shall be backfilled with select native material or reclaimed granulars that are, in the opinion of the Geotechnical Engineer, suitable as backfill material and compacted to 95% SPMD. Select natural on-site excavated subsoil can be used as trench backfill, provided the material is within 3 percent of the optimum moisture content. Otherwise, backfill material shall be imported Granular "C" compacted to 95% SPMD. Backfill must be clean and compactible and free from organics and other undesirable contaminants. Service trench backfill material shall be placed in uniform layers not exceeding 300 mm in thickness, loose measurement, for the full width of the trench, and each layer shall be compacted according to OPSS 501 before a subsequent layer is placed. Backfill material shall be placed to a minimum depth of 300 mm above the crown of the pipe before power operated tractors or rolling equipment shall be used for compacting.
- The above noted backfill shall be compacted to the standard Proctor density specified in the soils report, or as approved by the Municipal Engineer.
- No connection of weeping tiles will be allowed to the sanitary sewer system. No gravity connection of weeping tiles to the storm sewer will be allowed unless the system has the capacity.
- The Owner's Contractor is responsible for:
  - connecting any existing sewer or drain encountered during construction to a new sewer or into another existing sewer;
  - ensuring that there is no interruption of any surface or subsurface drainage flow that would adversely affect neighbouring properties or the safety of the construction site.
- The rate of infiltration into storm and sanitary sewers shall not be greater than 34 litres per millimetre of internal diameter per kilometre of line length per day.
- The Owner's Contractor shall construct temporary measures to control silt entering the storm drainage system. These measures are to remain in place until construction has been completed all to the specifications of the Municipal Engineer. Geotextile and straw bale filters shall be installed around all existing and new CB's and CBMH's immediately upon installation in accordance with the detail. Straw bales are to remain in place until paving and/or sodding is complete.
- The structural design of sewers is based upon the transition width unless otherwise noted.
- All work shall be done in accordance with the minimum standards and specifications of the Municipality of Chatham/Kent Engineering Department including proper finishing off and parging of pipes in manholes and catchbasins and proper benching and manhole steps. Upon completion of sewer works, the Owner's Contractor is responsible for flushing and cleaning the sewers, manholes, catchbasin manholes and catchbasins and for successfully pulling a "PIG" through the flexible sewer pipes. The Owner's Contractor shall undertake suitable mandrel tests for installed flexible sewer pipes in accordance with OPSS 410, and full video inspection of all sewers per OPSS 409 to the satisfaction of the Engineer.
- All sewers and watermain are to be installed in accordance with the minimum requirements of the latest revision of the Ontario Provincial Standard Specifications and the Municipality of Chatham/Kent Engineering Department. The Engineer will conduct periodic inspections to ensure that the proper standards are being met.
- Any proposed substitutions are subject to approval by the Engineer.

### WATERMAIN (SERVICE) NOTES

- The Contractor shall provide 48 hours advanced notice to the Municipal Water Operations Division prior to undertaking any work on the water system.
- The watermain shall be AWWA C900 CL150 DR18 PVC (CSA B137.3) or AWWA C909 CL150 PVC (CSA B137.3) installed to a minimum depth of cover of 1.7m unless shown otherwise on the plan. Watermain and services shall be bedded in granular material (19mm max.) All PVC service pipe and fittings shall be mechanically restrained to City Standards, with 12 gauge tracer wire secured at 3.0 metre spacing and looped at each valve box. Corrosion protection shall be constructed per Municipality of Chatham/Kent Standard W-CS-25 and 441.05.16.
- Where cover is less than 1.7m (even temporary conditions), the watermain/service shall be adequately insulated over the affected length.
- Upon completion of water service installation, the Contractor is responsible for flushing, hydrostatic testing, disinfection and bacteriological testing of the water service in accordance with Municipality of Chatham-Kent specifications.
- All water meters shall incorporate remote registers on the exterior of the building for ease of Municipal access
- All work shall meet the minimum standards and specifications of the Municipality of Chatham-Kent.
- All watermain are to be installed in accordance with the minimum requirements of the latest revision of the Ontario Provincial Standard Specifications, the Ontario Building Code and the Municipality of Chatham-Kent.
- Service bedding:** Pipe bedding spec. per bedding detail. Localized base improvement may be required for services bedded in loose, wet or dilatant silty/sandy subsoils, subject to the recommendations of a Geotechnical Engineer. Such improvement could include overexcavation and recompaction or crushed stone bedding wrapped in a geotextile (terrafix 270R or approved equivalent with min. 0.45m overlap) as directed by the Geotechnical Engineer. Any trench water shall be removed when pipe laying is in progress.
- Backfill for service trenches:** Services shall be backfilled with select native material or reclaimed granulars that are, in the opinion of the Geotechnical Engineer, suitable as backfill material and compacted to 95% SPMD. Select natural on-site excavated subsoil can be used as trench backfill, provided the material is within 3 percent of the optimum moisture content. Otherwise, backfill material shall be imported Granular "C" compacted to 95% SPMD. Backfill must be clean and compactible and free from organics and other undesirable contaminants.
- The above noted backfill shall be compacted to the standard Proctor density specified in the soils report, or as approved by the Municipal Engineer.

### GENERAL NOTES:

- NOT ALL UTILITIES MAY BE SHOWN. CONTRACTOR SHALL OBTAIN LOCATES FOR, EXPOSE AND CONFIRM LOCATION AND ELEVATION OF ALL EXISTING SERVICES AND UTILITIES PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL SUPPORT EXISTING UNDERGROUND UTILITIES AS REQUIRED DURING CONSTRUCTION.
- SEWER INSTALLATION METHODS SHALL BE AT THE CONTRACTOR'S DISCRETION AND MAY INCLUDE THE USE OF TRENCH LINERS WHERE REQUIRED TO MINIMIZE DISRUPTION TO EXISTING SEWERS/UTILITIES AND SURFACE FEATURES. PROTECTION AGAINST SLOPE STABILITY SHALL BE CONSIDERED AS REFERENCED IN THE GEOTECHNICAL REPORT.
- THE CONTRACTOR SHALL KEEP THE EXISTING STORM AND SANITARY SEWERS LIVE DURING CONSTRUCTION OF PROPOSED SERVICES. STORM/SANITARY FLOWS MAY NEED TO BE TEMPORARILY CONTROLLED AND PUMPED FROM THE SEWER SYSTEM TO A DOWNSTREAM MANHOLE TO FACILITATE CONSTRUCTION OF THE PROPOSED SEWERS. ANY SUCH TEMPORARY MEASURES SHALL BE CONDUCTED AT NO EXTRA COST TO THE CONTRACT AND BE BASED UPON THE CONTRACTOR'S WORK PLAN, WHICH SHALL BE SUBMITTED TO THE CONTRACT ADMINISTRATOR/ENGINEER PRIOR TO CONSTRUCTION. OFF HOUR CONSTRUCTION OR BY-PASS PUMPING MAY BE CONSIDERED SUBJECT TO APPROVAL BY THE ENGINEER/OWNER.
- THE CONTRACTOR SHALL MAKE EVERY EFFORT TO ENSURE NO TREES ARE DAMAGED OR REMOVED DURING CONSTRUCTION UNLESS SPECIFICALLY DESIGNATED.

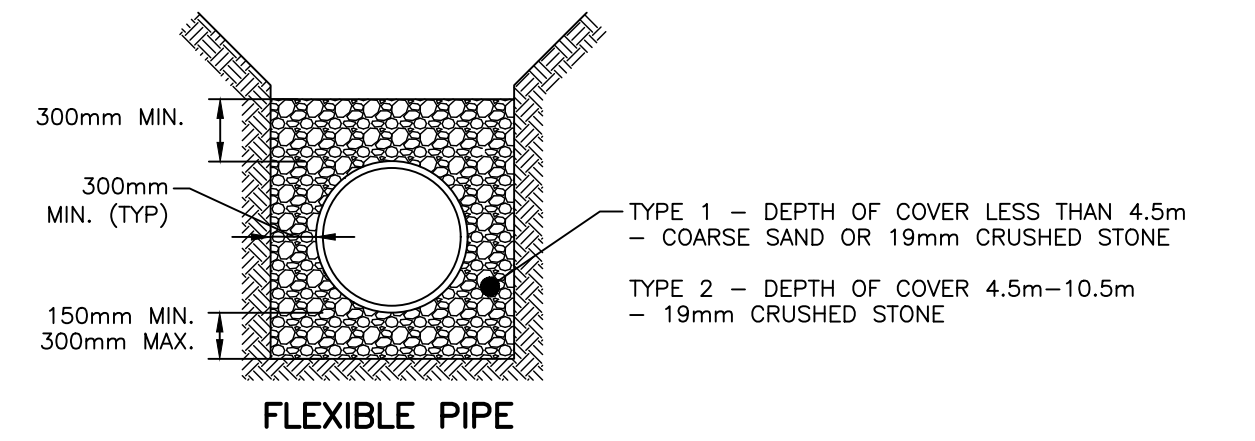
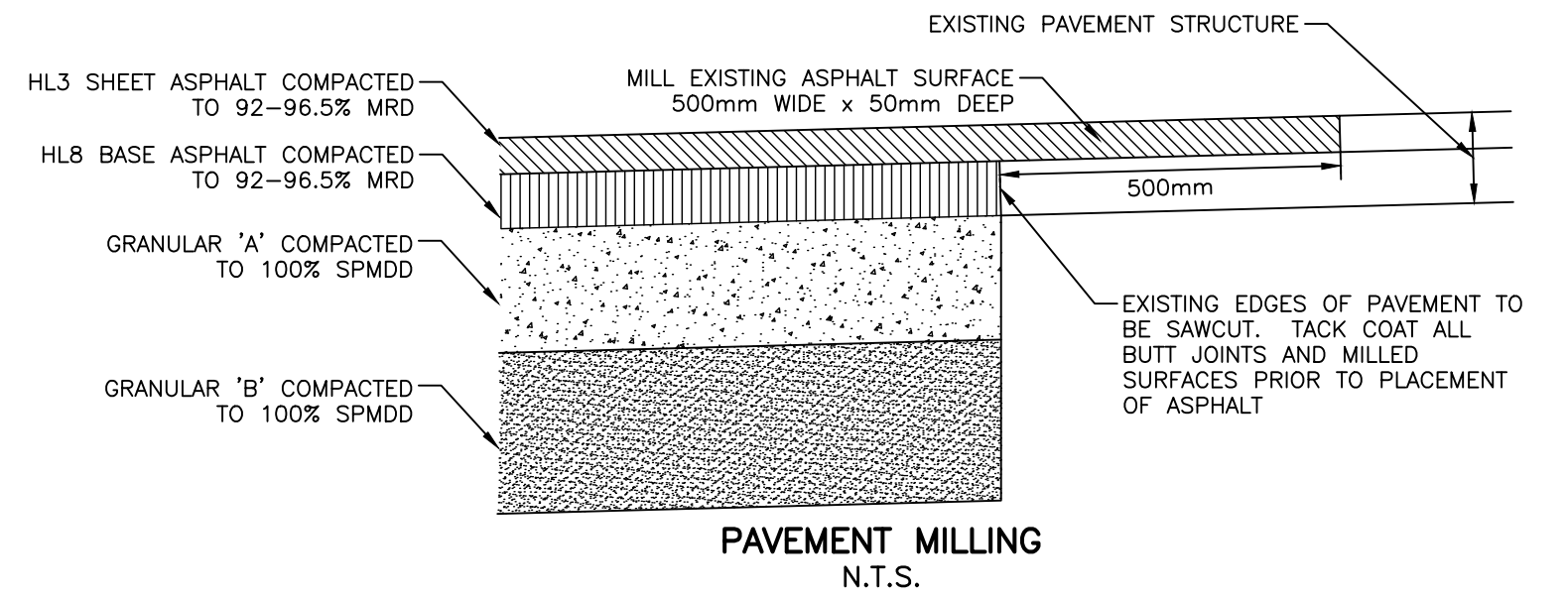
### RESTORATION NOTES:

- SAWCUT & MILL ASPHALT PER DETAIL ON THIS SHEET. RESTORE AREAS DISTURBED AS FOLLOWS:
- 40mm HLB SURFACE ASPHALT COMPACTED TO 97% M.R.D.
  - 50mm HLB BINDER ASPHALT COMPACTED TO 97% M.R.D.
  - 150mm GRANULAR 'A' COMPACTED TO 100% SPMD
  - 300mm GRANULAR 'B' COMPACTED TO 100% SPMD

THE PAVEMENT STRUCTURE SHALL BE REVIEWED BY A GEOTECHNICAL ENGINEER AND BASED ON THE APPROVAL OF THE NEWLY ESTABLISHED SUBGRADE.

### SEDIMENT AND EROSION CONTROL NOTES

- Protect all exposed surfaces and control all runoff during construction.
- All erosion control measures to be in place before starting construction and remain in place until restoration is complete.
- Maintain erosion control measures during construction.
- All collected sediment to be disposed of at an approved location.
- Minimize area disturbed during construction. All dewatering to be disposed of in an approved sedimentation basin.
- Protect all catchbasins, manholes and pipe ends from sediment intrusion with geotextile (Terrafix 270R or approved equivalent).
- Prevent wind-blown dust.
- Obtain approval from UTRCA before construction for works which are in, or adjacent to floodlines, fill lines and hazardous slopes.
- All silt fencing and details are at the minimum to be constructed in accordance with the Ministry of Natural Resources Guidelines on Erosion and Sediment Control for Urban Construction Sites.
- All of the above notes and any sediment and erosion control measures are at the minimum to be in accordance the Ministry of Natural Resources Guidelines on Erosion and Sediment Control for Urban Construction Sites.



- NOTES:
- PROPERLY CONSOLIDATED AND COMPACTED 19mm CRUSHED STONE BEDDING TO BE EXCLUSIVELY UTILIZED AS BEDDING MATERIAL WITHIN 5.0m OF ALL MANHOLES.
  - FOR SERVICES BEDDED IN LOOSE, WET OR DILATANT SILTY/SANDY SUBSOILS, CRUSHED STONE BEDDING TO BE WRAPPED IN A GEOTEXTILE (TERRAFIX 270R OR APPROVED EQUIVALENT WITH MIN. 0.45m OVERLAP) AS DIRECTED BY THE GEOTECHNICAL ENGINEER.

### BEDDING STANDARD FOR GRAVITY AND PRESSURE PIPE NTS

EXACT LIMITS OF EXCAVATION MAY VARY DEPENDENT UPON CONTRACTOR'S CHOSEN CONSTRUCTION METHODS AND CONDITIONS ENCOUNTERED IN THE FIELD. THE CONTRACTOR IS RESPONSIBLE FOR FOR RESTORING ALL SURFACES DISTURBED DURING CONSTRUCTION (CURB, SIDEWALK, PAVEMENT, LANDSCAPING, ETC.) TO THE SATISFACTION OF THE CONTRACT ADMINISTRATOR.

PRIOR TO CONSTRUCTION THE OWNER'S CONTRACTOR SHALL OBTAIN LOCATES FOR, EXPOSE AND CONFIRM LOCATION AND ELEVATION OF ALL EXISTING UNDERGROUND UTILITIES WITHIN THE LIMIT OF CONSTRUCTION. THE OWNER'S CONTRACTOR SHALL SUPPORT EXISTING UNDERGROUND UTILITIES AS REQUIRED.

THE OWNERS CONSULTING ENGINEER IS REQUIRED TO INSPECT THE INSTALLATION OF SERVICES INCLUDED IN THIS PROJECT, IN ACCORDANCE WITH THE GENERAL REVIEW COMMITMENT CERTIFICATION PROCESS. THE OWNER'S CONTRACTOR IS TO ADVISE DEVELOPMENT ENGINEERING (LONDON) LTD. (519-672-8310) AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION ON THE SITE SERVICES.

TOPOGRAPHICAL INFORMATION AND SITE BENCHMARK AS PROVIDED HOOK & TODGHAM SURVEYING INC. (JAN. 24, 2017). DEVELOPMENT ENGINEERING (LONDON) LIMITED ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE SURVEY.

F:\msh Feb 06\20-12:50pm DEL18-011-CSD-BASE PHASE 4.dwg

EXISTING SERVICES	DRAWING #, SOURCE	DATE	AS CONSTRUCTED SERVICES	COMPLETION	DETAILS	No.	REVISIONS	DATE	CONSULTANT	CONSULTANT OR DIVISION	ENGINEER'S STAMP	SCALE	OUR LADY OF FATIMA CATHOLIC SCHOOL 515 BALDOON ROAD CHATHAM, ONTARIO	PROJECT No. DEL18-011
					DESIGN BY JSC/DH DRAWN BY JSC CHECKED BY DH	1	ISSUED FOR TENDER/APPROVAL	FEB. 06, 2020	DEVENG	London Office 41 Adelaide St. N., Unit 71 (519) 672-8310 Paris Office 31 Mechanic St., Unit 301 (519) 442-1441			NOTES AND DETAILS	SHEET No. P4-SE2 PLAN FILE No.
FILE: DEL18-011-CSD-BASE PHASE 4.DWG														

NOTES

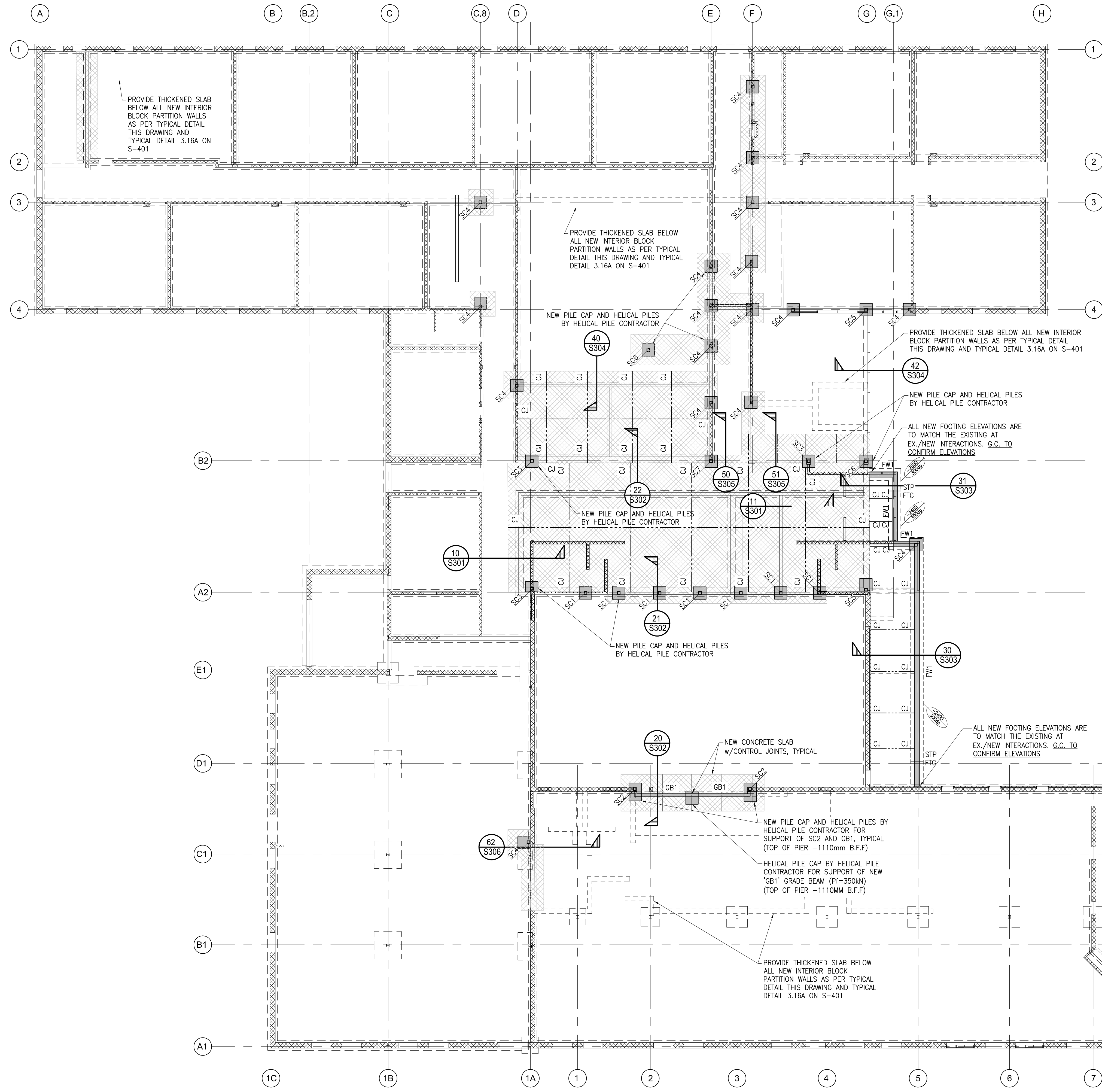
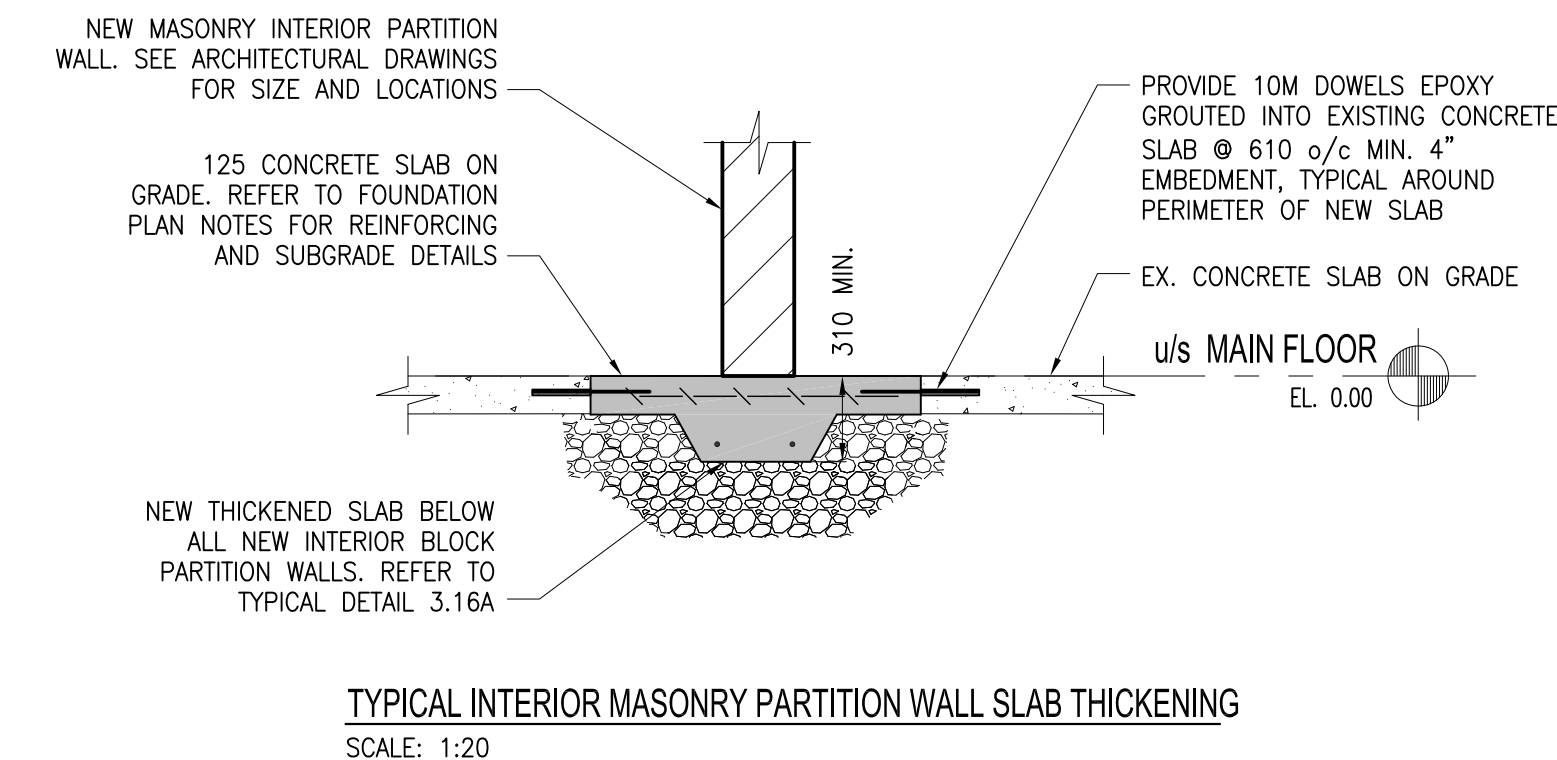



**VanBoxmeer & Stranges Ltd.**  
STRUCTURAL ENGINEERS  
458 Queens Ave, London, ON, Canada N6B 1X9  
tel. (519) 433-4661  
E-mail vbands@vbands.com

LEGEND

FOUNDATION PLAN NOTES

- TOP OF SLAB ON GRADE IS AT ELEVATION 0mm (GEODETIC 190.35m). THE REMAINDER IS CROSSED AS NOTED FROM FINISHED FLOOR ELEVATION.
- NEW FOUNDATIONS HAVE BEEN DESIGNED FOR THE USE OF HELICAL PILES FOR AN ALLOWABLE SLS BEARING PRESSURE OF 200kN/HELICAL PILE DOWN TO A MINIMUM DEPTH OF 12 METERS. REFER TO SOILS REPORT BY PETO MACCALLUM LTD. FILE: 19LF005. ALL NEW SHALLOW FOOTINGS HAVE BEEN DESIGNED FOR A SLS OF 40kPa AND ULS OF 60kPa. ALLOWABLE SAFE BEARING PRESSURES ARE TO BE VERIFIED BY A GEOTECHNICAL ENGINEERS INVESTIGATION AND REPORTED TO THE STRUCTURAL CONSULTANT (VB&S).
- UNDERSIDE OF ALL FOOTINGS TO BE A MINIMUM 1400mm BELOW FINISHED GROUND FLOOR ELEVATION 0mm UNLESS NOTED OTHERWISE. UNDERSIDE OF CONTINUOUS STRIP FOOTING ELEVATION OTHER THAN 1400mm BELOW FINISHED GROUND FLOOR IS ON PLAN AS THUS BELOW FINISHED FLOOR ELEVATION 0mm. SEE COLUMN AND FOOTING SCHEDULE FOR UNDERSIDE OF PAD FOOTING ELEVATION.
- UNLESS NOTED OTHERWISE, TOP OF WALL FOOTINGS TO BE POURED FLUSH WITH TOP OF ADJACENT PAD FOOTING WITH LOWEST TOP OF FOOTING ELEVATION. (SEE TYPICAL DETAILS)
- TYPICAL SLAB ON GRADE CONSTRUCTION: 125mm CONCRETE SLAB WITH 152x152 MW18.7xMW18.7 WELDED WIRE FABRIC ON 200mm OF 19mm CRUSHED CLEAR STONE AS PER SOILS REPORT. PROVIDE VAPOUR BARRIER AS PER ARCHITECTURAL
- DEPRESS TOP OF CONCRETE FOUNDATION WALLS 200mm AT ALL DOOR SCREEN OPENINGS.
- CENTRE ALL CONCRETE PIERS UNDER STEEL COLUMN BASE PLATES UNLESS NOTED OTHERWISE. SEE ARCHITECTURAL DRAWINGS FOR COLUMN OFFSETS FROM GRID LINES.
- SEE ARCHITECTURAL DRAWINGS FOR SLOPES TO DRAINS IN FLOOR AREAS. MAINTAIN ALL STRUCTURAL THICKNESS SHOWN.
- PROVIDE EPOXY COATED REINFORCING BARS AT ALL HORIZONTAL SURFACES EXPOSED TO WEATHERING.
- AT ALL LOCATIONS NOTED THUS  $\text{---} \text{---}$  ON PLAN, PROVIDE EITHER A SAW CUT CONTROL JOINT (SEE TYPICAL DETAILS) OR A CONSTRUCTION JOINT. PROVIDE CONTROL JOINT AT ALL DOOR OPENINGS OVER FOUNDATION WALLS. FINAL LOCATIONS OF CONTROL JOINTS MUST BE COORDINATED BETWEEN THE CONCRETE CONTRACTOR AND THE FLOOR FINISHING CONTRACTOR THROUGH THE GENERAL CONTRACTOR.
- UNLESS NOTED OTHERWISE, USE 2-20mm $\phi$  x 400mm LONG + 50mm HOOK ANCHOR BOLTS FOR EACH STEEL COLUMN BASE PLATE CAST INTO TOP OF CONCRETE PIER OR WALL. PROVIDE MINIMUM 50mm GROUT BELOW EACH BASE PLATE UNLESS NOTED OTHERWISE.
- THICKEN SLAB ON GRADE UNDER ALL CONCRETE BLOCK PARTITION WALLS. SEE DRAWING S401 FOR TYPICAL SLAB THICKENING DETAILS AND INSET SKETCH ON THIS DRAWING. COORDINATE LOCATION OF CONCRETE BLOCK PARTITION WALLS WITH ARCHITECTURAL DRAWINGS. NON-LOAD BEARING WALLS TO BE REINFORCED AS INDICATED ON DRAWING S403 - TYPICAL DETAIL 4.10.
- PROVIDE CONCRETE LOCKER BASES ON CONCRETE SLAB ON GRADE AS INDICATED ON THE ARCHITECTURAL DRAWINGS.
- CONCRETE CONTRACTOR TO COORDINATE WITH ALL TRADES THE LOCATION OF PIPE SLEEVES THROUGH THE FOUNDATION WALL. PIPE SLEEVES MAY NOT BE PLACED WITHIN FOOTINGS. FOUNDATIONS MUST BE STEPPED DOWN TO SUIT ELEVATION OF PIPE SLEEVES. REPORT ANY DISCREPANCIES TO THE STRUCTURAL CONSULTANT.
- COORDINATE SIZE AND LOCATION OF SLAB ON GRADE DEPRESSIONS AT PORCELAIN/CERAMIC FLOOR TILE LOCATIONS WITH THE ARCHITECTURAL DRAWINGS.



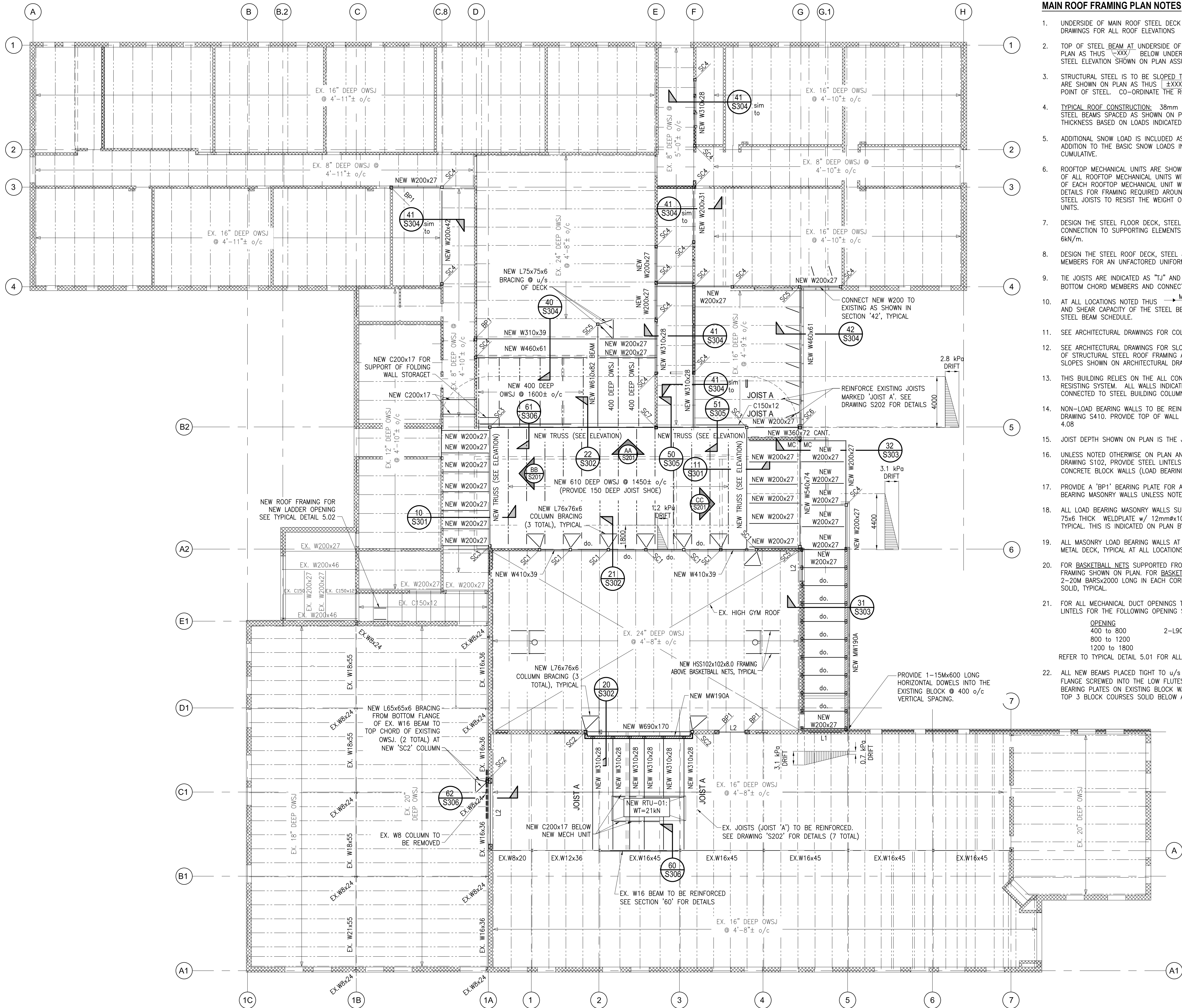
FOUNDATION PLAN  
SCALE=1:150

Date	Description	No.
JAN 17, 2020	ISSUED FOR 90% REVIEW	1
FEB 10, 2020	ISSUED FOR PERMIT AND TENDER	2

PROJECT TITLE  
OUR LADY OF FATIMA PHASE 4 RENEWAL

DRAWING TITLE  
FOUNDATION PLAN

DATE	DRAWN BY	DRAWING No.
11/27/2019	BCS	S100
As Indicated	GVB	
PROJECT No. 19232		



**ROOF FRAMING PLAN**  
SCALE=1:150

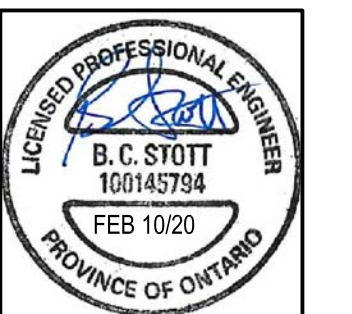
**MAIN ROOF FRAMING PLAN NOTES**

- UNDERSIDE OF MAIN ROOF STEEL DECK AT +3440 AT HIGH POINT. SEE ARCHITECTURAL DRAWINGS FOR ALL ROOF ELEVATIONS.
- TOP OF STEEL BEAM AT UNDERSIDE OF SLOPING STEEL ROOF DECK UNLESS NOTED ON PLAN AS THUS  $\sim$ XXX $\sim$  BELOW UNDERSIDE OF SLOPING STEEL ROOF DECK. TOP OF STEEL ELEVATION SHOWN ON PLAN ASSUMES 100mm DEEP JOIST SHOE.
- STRUCTURAL STEEL IS TO BE SLOPED TO ACHIEVE SLOPES TO ROOF DRAINS. ROOF SLOPES ARE SHOWN ON PLAN AS THUS [XXX] WHICH INDICATES A SPOT ELEVATION FROM HIGH POINT OF STEEL. CO-ORDINATE THE ROOF SLOPES WITH THE ARCHITECTURAL DRAWINGS.
- TYPICAL ROOF CONSTRUCTION:** 38mm STEEL ROOF DECK SUPPORTED BY STEEL JOISTS OR STEEL BEAMS SPACED AS SHOWN ON PLAN. STEEL FABRICATOR TO DESIGN STEEL DECK THICKNESS BASED ON LOADS INDICATED ON PLAN.
- ADDITIONAL SNOW LOAD IS INCLUDED AS "DRIFT" ON PLAN. SNOW DRIFT LOADS ARE IN ADDITION TO THE BASIC SNOW LOADS INDICATED ON PLAN. SNOW DRIFT LOADS ARE CUMULATIVE.
- ROOFTOP MECHANICAL UNITS ARE SHOWN ON PLAN. COORDINATE LOCATION, SIZE AND WEIGHT OF ALL ROOFTOP MECHANICAL UNITS WITH THE MECHANICAL DRAWINGS. FRAME PERIMETER OF EACH ROOFTOP MECHANICAL UNIT WITH C150x12 SUPPORT CHANNELS. SEE TYPICAL DETAILS FOR FRAMING REQUIRED AROUND ALL OPENINGS IN STEEL ROOF DECK. DESIGN STEEL JOISTS TO RESIST THE WEIGHT OF MECHANICAL UNITS INCLUDING SNOW DRIFT AROUND UNITS.
- DESIGN THE STEEL FLOOR DECK, STEEL ROOF DECK AND STEEL JOISTS, INCLUDING THEIR CONNECTION TO SUPPORTING ELEMENTS FOR AN UNFACTORED DIAPHRAGM SHEAR FORCE OF 6kN/m.
- DESIGN THE STEEL ROOF DECK, STEEL JOISTS AND THEIR CONNECTION TO SUPPORTING MEMBERS FOR AN UNFACTORED UNIFORM UPLIFT PRESSURE OF 0.8kPa.
- TIE JOISTS ARE INDICATED AS "TJ" AND IS SHOWN ON PLAN. EXTEND BOTH TOP AND BOTTOM CHORD MEMBERS AND CONNECT THEM TO THE COLUMN/WALL.
- AT ALL LOCATIONS NOTED THUS  $\rightarrow$  MC PROVIDE MOMENT CONNECTION FOR FULL MOMENT AND SHEAR CAPACITY OF THE STEEL BEAM SECTION UNLESS NOTED OTHERWISE IN THE STEEL BEAM SCHEDULE.
- SEE ARCHITECTURAL DRAWINGS FOR COLUMN OFFSETS FROM GRID LINES.
- SEE ARCHITECTURAL DRAWINGS FOR SLOPES TO DRAINS IN ROOF AREAS. VARY ELEVATION OF STRUCTURAL STEEL ROOF FRAMING AS INDICATED ON THIS PLAN TO ACHIEVE ROOF SLOPES SHOWN ON ARCHITECTURAL DRAWINGS.
- THIS BUILDING RELIES ON THE ALL CONCRETE BLOCK WALLS AS THE LATERAL LOAD RESISTING SYSTEM. ALL WALLS INDICATED AS THUS  $\parallel$  ON PLAN ARE TO BE CONNECTED TO STEEL BUILDING COLUMNS.
- NON-LOAD BEARING WALLS TO BE REINFORCED AS SHOWN IN TYPICAL DETAIL 4.10 ON DRAWING S410. PROVIDE TOP OF WALL SUPPORT AS SHOWN IN TYPICAL DETAIL 4.06 TO 4.08.
- JOIST DEPTH SHOWN ON PLAN IS THE JOIST DEPTH MEASURED AT THE POINT OF BEARING.
- UNLESS NOTED OTHERWISE ON PLAN AND IN THE LOAD BEARING LINTEL SCHEDULE ON DRAWING S102, PROVIDE STEEL LINTELS AS INDICATED ON DRAWING S304 FOR ALL CONCRETE BLOCK WALLS (LOAD BEARING AND NON-LOAD BEARING) AND BRICK VENEER.
- PROVIDE A "BP1" BEARING PLATE FOR ALL STEEL BEAMS AND JOISTS BEARING ON LOADING BEARING MASONRY WALLS UNLESS NOTED OTHERWISE ON PLAN, TYPICAL.
- ALL LOAD BEARING MASONRY WALLS SUPPORT METAL DECK ARE TO HAVE A CONTINUOUS 75x6 THICK WELDPLATE w/ 12mm $\times$ 102 LONG ANCHORS w/ 50 HOOK @ 800 o/c (WF1), TYPICAL. THIS IS INDICATED ON PLAN BY THUS  $\sim$
- ALL MASONRY LOAD BEARING WALLS AT TO EXTEND UP TIGHT TO THE u/s OF THE ROOF METAL DECK, TYPICAL AT ALL LOCATIONS UNLESS NOTED OTHERWISE ON PLAN.
- FOR BASKETBALL NETS SUPPORTED FROM THE ROOF STRUCTURE PROVIDE HSS102x102 FRAMING SHOWN ON PLAN. FOR BASKETBALL NETS SUPPORTED FROM THE WALLS PLACE 2-20M BARS $\times$ 2000 LONG IN EACH CORE AT EVERY SUPPORT BRACKET AND GROUT CORES SOLID, TYPICAL.
- FOR ALL MECHANICAL DUCT OPENINGS THROUGH LOAD BEARING BLOCK WALLS PROVIDE LINTELS FOR THE FOLLOWING OPENING SIZES:
 

OPENING	LINTEL	No. Req'd
400 to 800	2-L90x75x6 LLV	45
800 to 1200	'L1'	4
1200 to 1800	'L2'	2

 REFER TO TYPICAL DETAIL 5.01 FOR ALL NOTES AND DETAILS FOR LINTEL PLACEMENT.
- ALL NEW BEAMS PLACED TIGHT TO u/s OF THE EXISTING ROOF DECK TO HAVE THE TOP FLANGE SCREWED INTO THE LOW FLUTES @ 400 o/c EACH SIDE, TYPICAL. PROVIDE "BP1" BEARING PLATES ON EXISTING BLOCK WALLS AT ALL NEW BEAM BEARING LOCATIONS. GROUT TOP 3 BLOCK COURSES SOLID BELOW ALL NEW BEARING PLATES.

**NOTES**



**LEGEND**

Date	Description	No.
JAN 17, 2020	ISSUED FOR 90% REVIEW	1
FEB 10, 2020	ISSUED FOR PERMIT AND TENDER	2

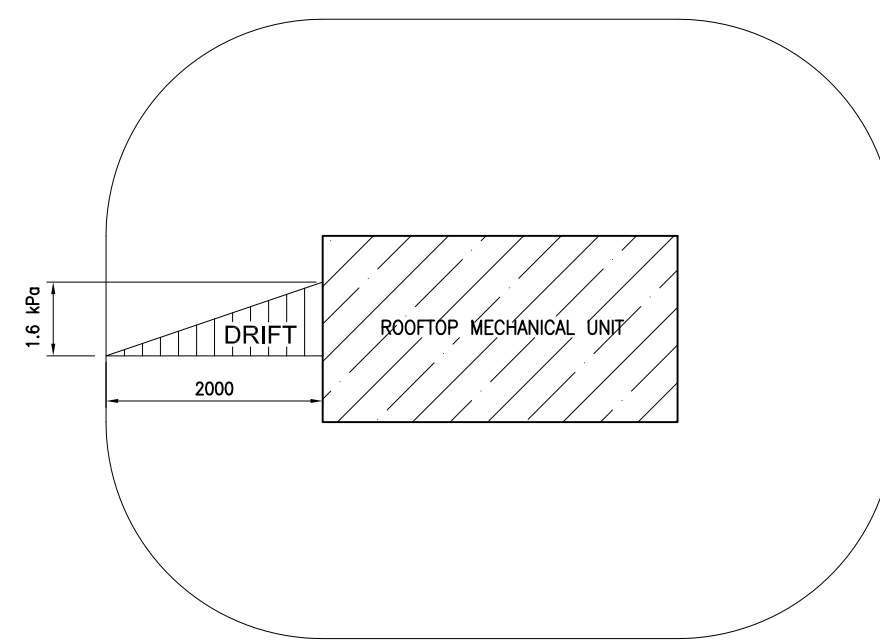
PROJECT TITLE  
**OUR LADY OF FATIMA PHASE 4 RENEWAL**

DRAWING TITLE  
**ROOF FRAMING PLAN**

DATE	DRAWN BY	DRAWING No.
11/27/2019	BCS	S101
As Indicated	GVB	
PROJECT No. 19232		



DESIGN LOAD DATA				
FLOOR/ROOF LOCATION	TYPE OF LOAD			
	DEAD		LIVE	
	CONSTRUCTION	VALUE (kPa)	TYPE	VALUE (kPa)
GENERAL ROOF	FELT AND GRAVEL INSULATION GYPSUM BOARD 40 STEEL DECK/76 STEEL DECK STRUCTURAL STEEL M&E CEILING ALLOWANCE ROOFTOP MECH UNITS PAVER	0.35 0.10 0.15 0.10/0.15 0.25 0.25 0.25 1.45/1.50 + UNITS SEE MECH. DWG. 1.0 kPa	SNOW & RAIN	1.38 (SNOW) + DRIFT
MECHANICAL FLOOR AREA	FLOOR FINISH 200 PRECAST PLANKS STRUCTURAL STEEL M&E CEILING MECHANICAL UNITS ON 100mm DEEP HOUSEKEEPING SLABS. (SEE TYPICAL DETAIL 3.33) COORDINATE WITH MECH.	1.20 3.05 0.25 0.50 5.00 + UNITS SEE MECH. DWG.	OCCUPANCY	3.60
CANOPY ROOF	FELT AND GRAVEL INSULATION GYPSUM BOARD 76 STEEL DECK STRUCTURAL STEEL M&E CEILING ALLOWANCE	0.35 0.10 0.15 0.15 0.25 0.25 0.25 1.50	SNOW & RAIN	1.38 (SNOW) + DRIFT
OTHER ENVIRONMENTAL LOADS	WIND PRESSURE q <sub>so</sub> 0.43 kPa I <sub>w</sub> 1.15 SEISMIC DATA S <sub>a</sub> (0.2) 0.160 S <sub>a</sub> (0.5) 0.092 S <sub>a</sub> (1.0) 0.050 S <sub>a</sub> (2.0) 0.015 PGA 0.088 I <sub>e</sub> 1.3	SNOW/ RAIN LOAD: S <sub>s</sub> 1.0 S <sub>r</sub> 0.4 I <sub>s</sub> 1.15 LATERAL EARTH PRESSURE K 0.40 SOIL CLASSIFICATION CLASS E: SOFT SOIL SEISMIC HAZARD INDEX: I <sub>e</sub> F <sub>a</sub> S <sub>a</sub> (0.2) = 0.44		
NOTES: 1. ALL LOADS SHOWN ABOVE APPLY TO THE AREAS OF THE BUILDING AS INDICATED (REFERENCE TO ARCHITECTURAL PLANS IS NECESSARY TO PROPERLY READ THIS TABLE), AND ARE BASED ON AND INTERPRETED FROM THE LATEST VERSION OF THE ONTARIO BUILDING CODE. USE THESE LOADS IN DESIGN OF BUILDING COMPONENTS AS REQUIRED. 2. ADDITIONAL SNOW PILE UP IS INCLUDED AS A "DRIFT" DIAGRAM ON ROOF FRAMING PLAN. SNOW DRIFT LOADS ARE IN ADDITION TO THE BASIC SNOW LOADS INDICATED. OVERLAPPING SNOW DRIFT LOADS ARE CUMULATIVE. 3. DEAD LOAD SHOWN IN TABLE IS EXCLUSIVE OF M+E EQUIPMENT. MECHANICAL EQUIPMENT PLAN SIZES AND LOADS ARE SHOWN ON STRUCTURAL PLAN BASED ON THE LATEST INFORMATION AVAILABLE TO THE CONSULTANTS. REPORT ANY DISCREPANCIES BETWEEN CONTRACT DOCUMENTS TO THE CONSULTANTS FOR REVIEW. 4. SEE MECHANICAL DRAWINGS AND ARCHITECTURAL DRAWINGS FOR CONDENSER LOCATIONS AND LOADS. 5. PAVER LOAD: 1.15kPa (24psf), SEE ARCHITECTURAL FOR PAVER LOCATIONS				



### TYPICAL DRIFT AROUND ROOFTOP MECHANICAL UNITS

- DRIFT LOAD SHOWN TO BE APPLIED AROUND ALL ROOFTOP MECHANICAL UNITS. NOTE THAT DRIFT LOADS ARE CUMULATIVE.
- SEE ROOF FRAMING PLANS FOR LOCATION OF ROOFTOP MECHANICAL UNITS. REFER ALSO TO NOTE #10 ON ROOF FRAMING PLAN NOTES.

GRADE BEAM SCHEDULE				
BEAM MARK	GRADE BEAM DIMENSIONS	GRADE BEAM REINFORCING	BEAM STIRRUPS	COMMENTS
GB1	310x910 dp	T1=3-25M B1=3-25M 3-15M EACH FACE	10M @ 300 o/c	-
NOTES: 1. CONCRETE CONTRACTOR TO HAVE ALL REINFORCING REVIEWED BY STRUCTURAL CONSULTANT REPRESENTATIVE AND APPROVED PRIOR TO PLACING CONCRETE. 2. SUPPLY 30 MPa CONCRETE WITH 3" SLUMP ± 1", AIR ENTRAINED 6% ± 1%. REINFORCING STEEL YIELD TO BE 400 MPa 3. PROVIDE 35M SPACER BARS BETWEEN BAR LAYERS AT 1200 o/c AT BEAMS WHERE THERE IS MORE THAN ONE LAYER OF TOP OR BOTTOM STEEL. 4. LAP TOP BARS AT MID SPAN OF BEAMS WITH A CLASS 'B' LAP 5. LAP BOTTOM BARS AT SUPPORTS WITH A CLASS 'B' LAP 6. REFER TO TYPICAL DETAIL 3.19 FOR CONTINUOUS BEAM REINFORCING DETAIL. 7. HOOK ALL TOP BARS AT ENDS OF ALL BEAM LINES 8. PLACE 2-10M BARS EACH SIDE OF CAISSON, TYPICAL				
				T1 = TOP UPPER LAYER B1 = BOTTOM LOWER LAYER T2 = TOP LOWER LAYER B2 = BOTTOM UPPER LAYER

FOUNDATION WALL AND STRIP FOOTING SCHEDULE					
WALL MARK	WALL WIDTH AND TYPE	WALL REINFORCING	CONTINUOUS STRIP FOOTING SIZE	STRIP FOOTING REINFORCING	COMMENTS
FW1	385 CONC. WALL	2-20M T&B CONT	900x300 DEEP	SEE NOTE#1	
NOTES: 1. UNLESS NOTED OTHERWISE IN SECTIONS AND DETAILS, PROVIDE 15x450mm LONG DOWELS STAGGERED FROM CONTINUOUS STRIP FOOTING TO CONCRETE FOUNDATION WALL. 2. UNLESS NOTED OTHERWISE IN SECTIONS AND DETAILS, PROVIDE DOWELS FROM CONCRETE FOUNDATION WALL TO MASONRY WALL TO MATCH VERTICAL WALL REINFORCING (SEE LOAD BEARING MASONRY WALL SCHEDULE ON DRAWING S1.3). 3. EXTEND CONTINUOUS CONCRETE STRIP FOOTING A MINIMUM OF 300mm PAST THE END OF THE FOUNDATION WALL. 4. POUR TOP OF CONTINUOUS STRIP FOOTING FLUSH WITH TOP OF ADJACENT PAD FOOTING (SEE TYPICAL DETAILS).					

COLUMN AND FOOTING SCHEDULE								
COLUMN MARK	SC1	SC2	SC3	SC4	SC5	SC6	SC7	
TOP OF STEEL - EX. GYM ROOF ELEVATION 6120mm								
TOP OF STEEL - NEW ATRIUM ROOF ELEVATION 5685mm								
TOP OF STEEL - EX. MAIN ROOF ELEVATION 3643mm								
FINISHED FLOOR - GROUND LEVEL ELEVATION 0mm	HSS 152x152x4.8	HSS 152x152x4.8	HSS 203x203x4.8	HSS 152x152x4.8	HSS 152x152x4.8	HSS 152x152x4.8	HSS 203x203x13	
DISTANCE FROM FINISHED FLOOR TO U/S OF BASEPLATE	200	200	200	200	200	200	200	
STEEL BASE PLATE (SQUARE U.N.O.)	300x16x300	300x16x300	450x19x450	300x16x300	300x16x300	300x16x300	450x19x450	
ANCHOR BOLTS	SIZE	4-19mm#	4-19mm#	4-19mm#	4-19mm#	4-19mm#	4-19mm#	4-19mm#
	EMBEDMENT (mm)	450	450	450	450	450	450	450
	HOOK (mm)	50	50	50	50	50	50	50
SERVICE LOAD (kN)	DL=130 LL=90	DL=215 LL=175	DL=130 LL=150	DL=50 LL=45	DL=50 LL=75	DL=85 LL=150	DL=165 LL=200	
HELICAL PILE CAP (SIZE SQUARE U.N.O.)	HELICAL FABRICATOR	HELICAL FABRICATOR	HELICAL FABRICATOR	HELICAL FABRICATOR	HELICAL FABRICATOR	HELICAL FABRICATOR	HELICAL FABRICATOR	
	REINFORCING	HELICAL FABRICATOR	HELICAL FABRICATOR	HELICAL FABRICATOR	HELICAL FABRICATOR	HELICAL FABRICATOR	HELICAL FABRICATOR	
HELICAL PILES	HELICAL FABRICATOR	HELICAL FABRICATOR	HELICAL FABRICATOR	HELICAL FABRICATOR	HELICAL FABRICATOR	HELICAL FABRICATOR	HELICAL FABRICATOR	
NOTES	BRACE TOP OF COLUMN AT u/s ROOF DECK. SEE PLAN	BRACE TOP OF COLUMN AT u/s ROOF DECK. SEE PLAN						
COLUMN DATA	SC1	SC2	SC3	SC4	SC5	SC6	SC7	

LOAD BEARING MASONRY WALL SCHEDULE				
WALL MARK	WALL TYPE	VERTICAL REINFORCING	HORIZONTAL REINFORCING	COMMENTS
MW190A	190 CONC BLOCK (f <sub>m</sub> '=15MPa)	1-20M @ 800 VERT. (EVERY 4TH CORE)	- 9ga. LADDER @ 400 (EVERY 2ND COURSE) - 2-15M CONT. BOND BEAMS @ TOP AND MIDDLE OF WALL. SEE SECTIONS	-HORIZ. BARS PLACED IN CONTINUOUS LINTEL COURSE -SEE SECTIONS FOR ADDITIONAL REBAR
LOAD BEARING MASONRY WALL SCHEDULE NOTES: 1. ALL MASONRY WALLS SHOWN ON PLAN AS THUS  ARE LOAD BEARING (GRAVITY AND/OR LATERAL). 2. PROVIDE 2-15M VERTICAL IN CORE ADJACENT TO EACH SIDE OF ROUGH OPENINGS OR IN CORE ADJACENT TO BEARING PLATE OF STEEL LINTEL. VERTICAL REINFORCING IS TO BE INSTALLED CONTINUOUS FROM FOUNDATION WALL TO UNDERSIDE OF BEAM/STEEL DECK. 3. FULLY GROUT ALL REINFORCED CORES. (SEE NOTE #8) 4. FILL ALL CORES IN PIERS LESS THAN 600mm IN WIDTH SOLID WITH GROUT IN ADDITION TO THAT REQUIRED BY NOTE #2. 5. GROUT SOLID ALL CORES BELOW THE BEARING POINT OF ALL BEAMS, JOISTS OR LINTELS CONTINUOUS TO THE FOUNDATION. 6. SEE SECTIONS FOR ANY ADDITIONAL WALL REINFORCING STEEL. 7. PROVIDE MECHANICAL CONNECTION BETWEEN LOWER AND UPPER LIFTS OF VERTICAL REINFORCING. 8. ALL GROUT TO BE 15MPa WITH 10mm MAX. AGGREGATE SIZE AND 225mm±25mm SLUMP. ALL GROUTING TO CONFORM TO CSA/CAN3 A371-M84. PLACE GROUT IN "LOW LIFTS" (NOT MORE THAN 1500mm VERTICAL).				

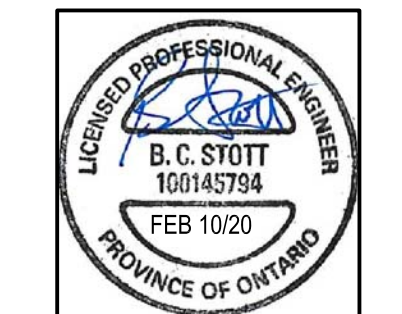
STEEL BEARING PLATE SCHEDULE				
BASEPLATE MARK	PLATE SIZE	ANCHOR BOLTS	ANCHOR SPACING	COMMENTS
BP1	170Wx12x200L	2-13mm# x 300 LONG + 50 HOOK BOLTS		
STEEL BEARING PLATE SCHEDULE NOTES: 1. STEEL BEARING PLATES TO BE FABRICATED BY STRUCTURAL STEEL CONTRACTOR AND PLACED BY CONCRETE FORMING CONTRACTOR (CONCRETE WALL, BEAM OR COLUMN) OR THE MASONRY CONTRACTOR (CONCRETE BLOCK WALL). 2. LOCATION AND ELEVATION OF BEARING PLATES TO BE COORDINATED WITH STRUCTURAL STEEL SHOP DRAWINGS. BEAM OR JOIST TO BE SUPPORTED ON THE PLATE TO BE CENTRED ALONG THE LENGTH OF THE PLATE U.N.O. 3. DIMENSION OF PLATE NOTED IN PLATE SIZE COLUMN AS 'L' TO BE PLACED ALONG THE LENGTH OF THE WALL AND/OR ORIENTED ALONG THE LENGTH OF THE BEAM/JOIST - UNLESS NOTED OTHERWISE ON PLANS AND DETAILS. 4. BEAM FLANGE OR JOIST SHOE TO BE FIELD WELDED DOWN TO TOP OF BEARING PLATE USING A MINIMUM 6mm FILLET WELD EACH SIDE OF BEAM/JOIST SHOE FOR THE ENTIRE LENGTH OF BEARING. 5. FOR BEARING PLATES PLACED ON CONCRETE BLOCK WALLS - GROUT SOLID THE CORES OF THE BLOCKS CONTAINING THE ANCHOR BOLTS OF THE PLATES CONTINUOUS TO THE TOP OF THE FOUNDATION WALL. GROUT SOLID THE BEAM/JOIST POCKETS AFTER FIELD WELDING 6. ANCHOR BOLTS SHOWN TO BE WELDED TO THE UNDERSIDE OF THE BEARING PLATE FOR TENSILE CAPACITY OF THE BOLT				

LOAD BEARING MASONRY LINTEL SCHEDULE			
MARK	SIZE	BEARING PLATE OR MINIMUM BEARING LENGTH	COMMENTS
L1	W200x31 + 10mm THICK CONT. PL	200	10mm THICK CONTINUOUS PLATE TO BE PLACED ON BOTTOM FLANGE OF BEAM TO SUPPORT BLOCK ABOVE. WIDTH OF PLATE TO MATCH BLOCK THICKNESS SUPPORTED ABOVE
L2	W410x46 + 10mm THICK CONT. PL (SEE SECTIONS AND COMMENTS)	200	10mm THICK CONTINUOUS PLATE FOR BLOCK SUPPORT.
LOAD BEARING LINTEL SCHEDULE NOTES: 1. ALL OPENINGS IN CONCRETE BLOCK WALLS LARGER THAN 400mm IN WIDTH AND ALL OPENINGS IN BRICK VENEER REQUIRE A LINTEL OVER THE OPENING. IF NOT SPECIFICALLY INDICATED ON PLAN, SEE DRAWING S4.1 FOR REQUIRED LINTEL SIZE CORRESPONDING TO THE WALL WIDTH AND OPENING SIZE. 2. GROUT BLOCK SOLID BELOW BEARING POINT OF ALL LINTELS. 3. PROVIDE ONE 12mm# A325 ANCHOR BOLT x 400mm LONG w/ 50mm-90° HOOK FULLY WELDED TO THE UNDERSIDE OF STEEL LINTELS OR STEEL LINTEL BEARING PLATES BEARING ON MASONRY. 4. WELD ALL BACK TO BACK ANGLES AT 400mm o/c. 5. FILL ALL MASONRY AROUND LINTELS SOLID WITH MORTAR. 6. PROVIDE 15M WELDABLE REBAR DOWELS @ 400 o/c TO THE TOP FLANGE OF ALL LINTELS THAT ARE SUPPORTING MASONRY WALLS ABOVE, TYPICAL. GROUT ALL REINFORCED CORES ABOVE, TYPICAL			

### COLUMN AND PAD FOOTING SCHEDULE NOTES

- FOR COLUMN OFFSETS FROM GRIDLINES - REFER TO ARCHITECTURAL DRAWINGS
- FOR PLACEMENT OF CONCRETE HELICAL PILE CAPS AND ASSOCIATED HELICAL PILES - SEE HELICAL PILE CONTRACTOR DESIGN
- FOR TIES IN ALL CONCRETE COLUMNS AND PIERS - SEE TYPICAL DETAIL 3.06
- FOR ALL COLUMNS PLACED IN NEW OR EXISTING MASONRY BLOCK PROVIDE BLOCK TIES AS PER TYPICAL DETAIL 4.05.
- FOR STRUCTURAL STEEL BASE PLATES - FIRST PLAN DIMENSION IS TO BE ORIENTED IN THE E-W DIRECTION U.N.O.
- ALL COLUMN SPLICES ARE TO BE BELOW THE FLOOR LEVEL.

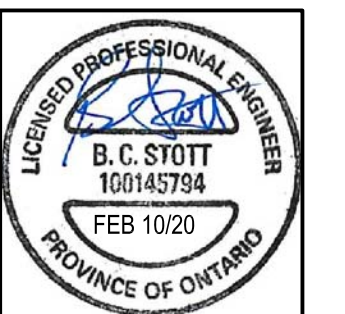
### NOTES



### LEGEND

Date	Description	No.
JAN 17, 2020	ISSUED FOR 90% REVIEW	1
FEB 10, 2020	ISSUED FOR PERMIT AND TENDER	2

NOTES



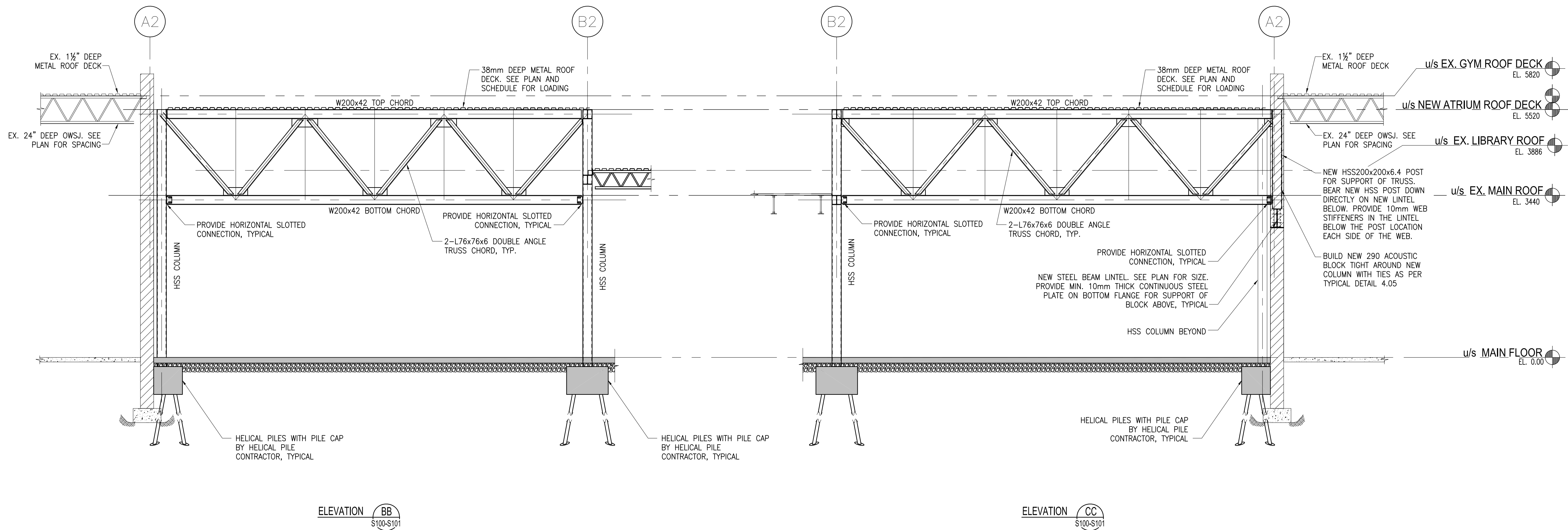
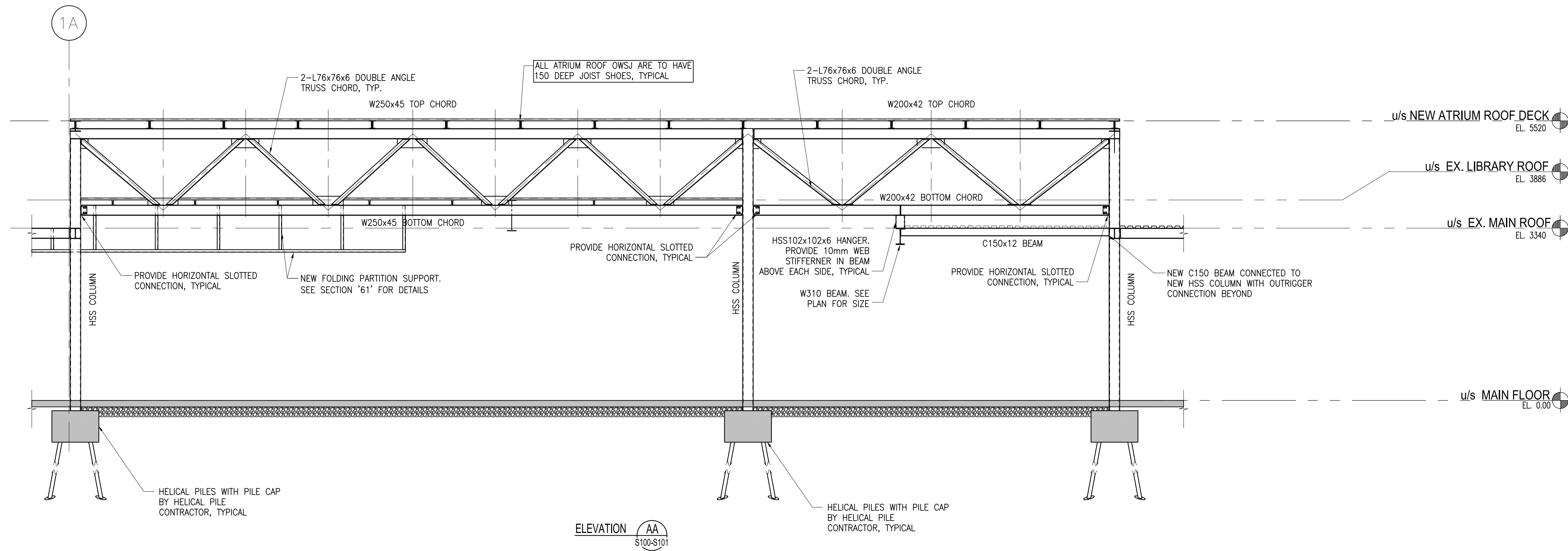
LEGEND

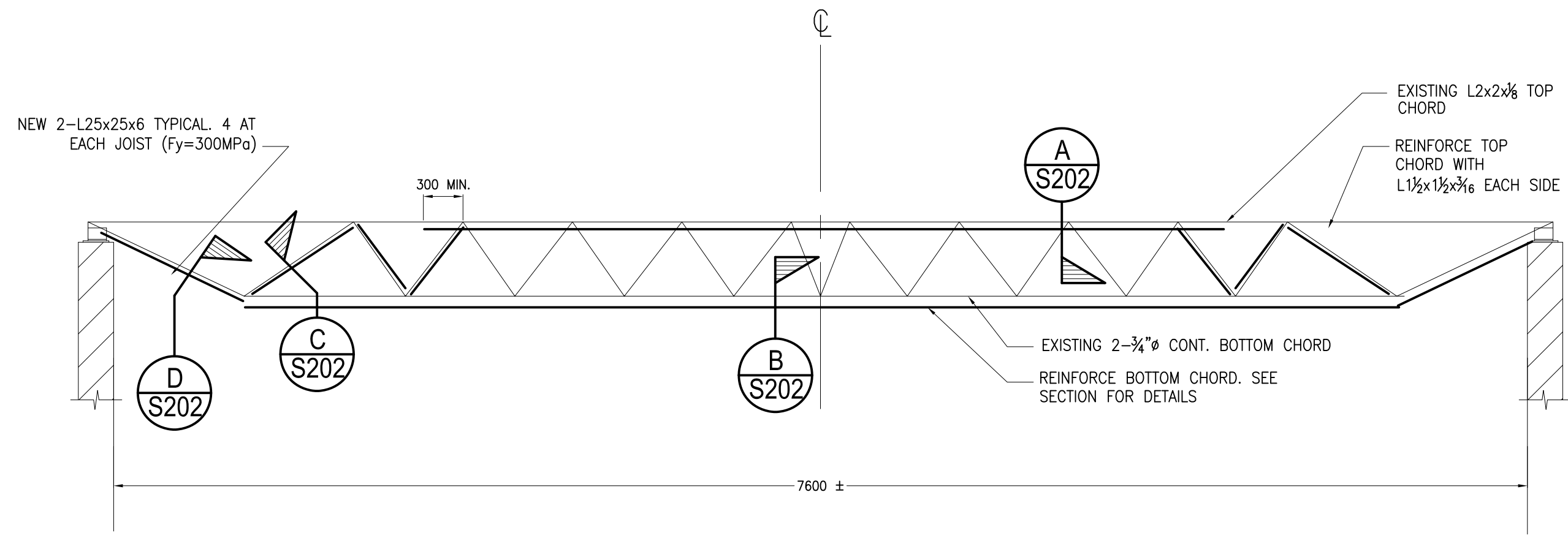
Date	Description	No.
JAN 17, 2020	ISSUED FOR 90% REVIEW	1
FEB 10, 2020	ISSUED FOR PERMIT AND TENDER	2

PROJECT TITLE  
**OUR LADY OF FATIMA PHASE 4 RENEWAL**

DRAWING TITLE  
**ELEVATIONS**

DATE	DRAWN BY	DRAWING NO.
11/27/2019	BCS	
SCALE	CHECKED BY	<b>S201</b>
As Indicated	GVB	
PROJECT NO.	19232	





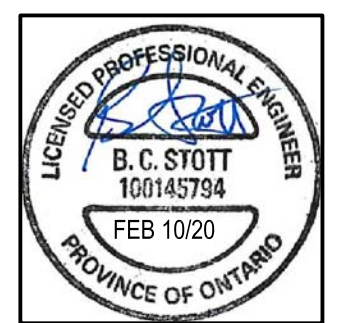
**JOIST 'A' ELEVATION**  
 SCALE: 1:25

VB&S IS TO BE CONTACTED BY THE CONTRACTOR ONCE CONSTRUCTION HAS STARTED TO RENEW ALL JOISTS TO BE REINFORCED. ALL JOISTS ARE TO BE MEASURED AND RECORDED ON SITE BY VB&S PRIOR TO ANY REINFORCING BEING ORDERED AND PLACED ON SITE.

**JOIST REINFORCING NOTES:**

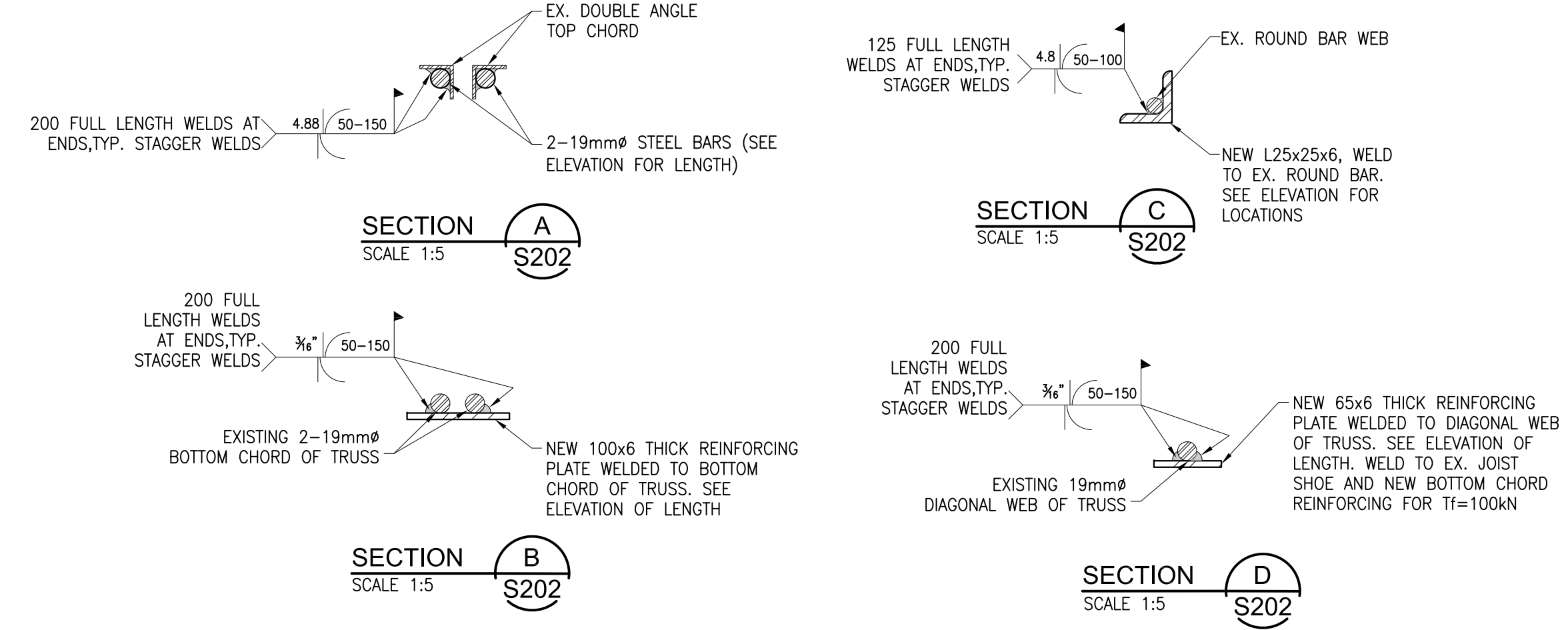
1. ALL JOIST MEMBERS SHOWN IN ELEVATION MARKED WITH A LINE SHOWN THUS REQUIRE REINFORCING. SEE SECTIONS FOR TYPE OF REINFORCING.
2. REFER TO JOIST ELEVATIONS AND SECTIONS FOR REINFORCING INFORMATION.
3. WELDER TO TAKE CARE IN WELDING REINFORCING TO THE EXISTING CHORD MEMBERS TO AVOID BURNING THROUGH THE MATERIAL. IF A MEMBER IS DAMAGED DURING THE WELDING PROCESS, THE CONTRACTOR SHALL CONTACT VANBOXMEER & STRANGES IMMEDIATELY.
4. TOUCH UP ALL WELDS WITH 2 COATS OF ZINC RICH PAINT.
5. ALL NEW STRUCTURAL STEEL INCLUDING PLATES, BARS AND ANGLES TO BE G40.21 - GRADE 300W.
6. ALL WELDING TO CONFORM TO:
  - i) CSA STANDARD W59-03 "WELDED STEEL CONSTRUCTION" (METAL ARC WELDING).
  - ii) CSA STANDARD W55.3-1965(R2008) "RESISTANCE WELDING QUALIFICATION CODE".
  - iii) CSA STANDARD W47.1-03 "CERTIFICATION OF COMPANIES FOR FUSION WELDING OF STEEL"
7. AS PER CSA W47.1-03, THE STRUCTURAL STEEL FABRICATOR TO BE CERTIFIED BY THE CANADIAN WELDING BUREAU - DIVISION 2.1. ALL STRUCTURAL FIELD WELDING TO BE REFORMED BY A CANADIAN WELDING BUREAU CERTIFIED WELDER.

**NOTES**



**VB&S VanBoxmeer & Stranges Ltd.**  
 STRUCTURAL ENGINEERS  
 458 Queens Ave., London, ON, Canada N6B 1X9  
 tel. (519) 433-4661  
 E-mail vbands@vbands.com

**LEGEND**

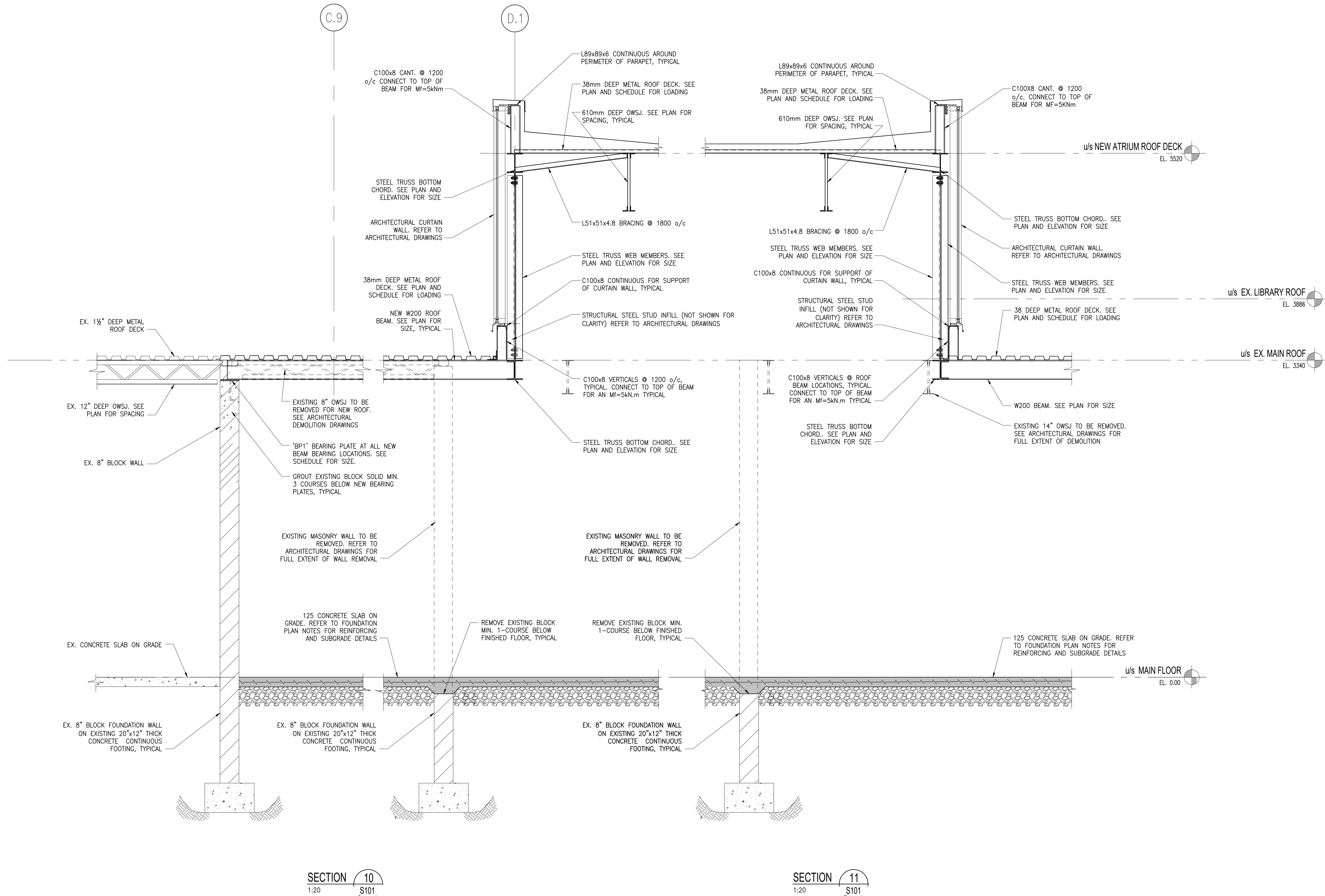


Date	Description	No.
JAN 17, 2020	ISSUED FOR 90% REVIEW	1
FEB 10, 2020	ISSUED FOR PERMIT AND TENDER	2

PROJECT TITLE  
**OUR LADY OF FATIMA PHASE 4 RENEWAL**

DRAWING TITLE  
**JOIST REINFORCING**

DATE 11/27/2019	DRAWN BY BCS	DRAWING NO. <b>S202</b>
SCALE As Indicated	CHECKED BY GVB	
PROJECT NO. 19232		



SECTION 10  
 1:20  
 S101

SECTION 11  
 1:20  
 S101

NOTES



**VB&S VanBoxmeer & Stranges Ltd.**  
 STRUCTURAL ENGINEERS  
 458 Queens Ave. London, ON, Canada N6B 1X9  
 Tel. (519) 433-4661  
 E-mail vbands@vbands.com

LEGEND

Date	Description	No.
JAN 17, 2020	ISSUED FOR 90% REVIEW	1
FEB 13, 2020	ISSUED FOR PERMIT AND TENDER	2

PROJECT TITLE  
**OUR LADY OF FATIMA PHASE 4 RENEWAL**

DRAWING TITLE  
**SECTIONS**

DATE 11/27/2019	DRAWN BY BCS	DRAWING No.
SCALE As indicated	CHECKED BY GVB	<b>S301</b>
PROJECT No. 19232		

**NOTES**



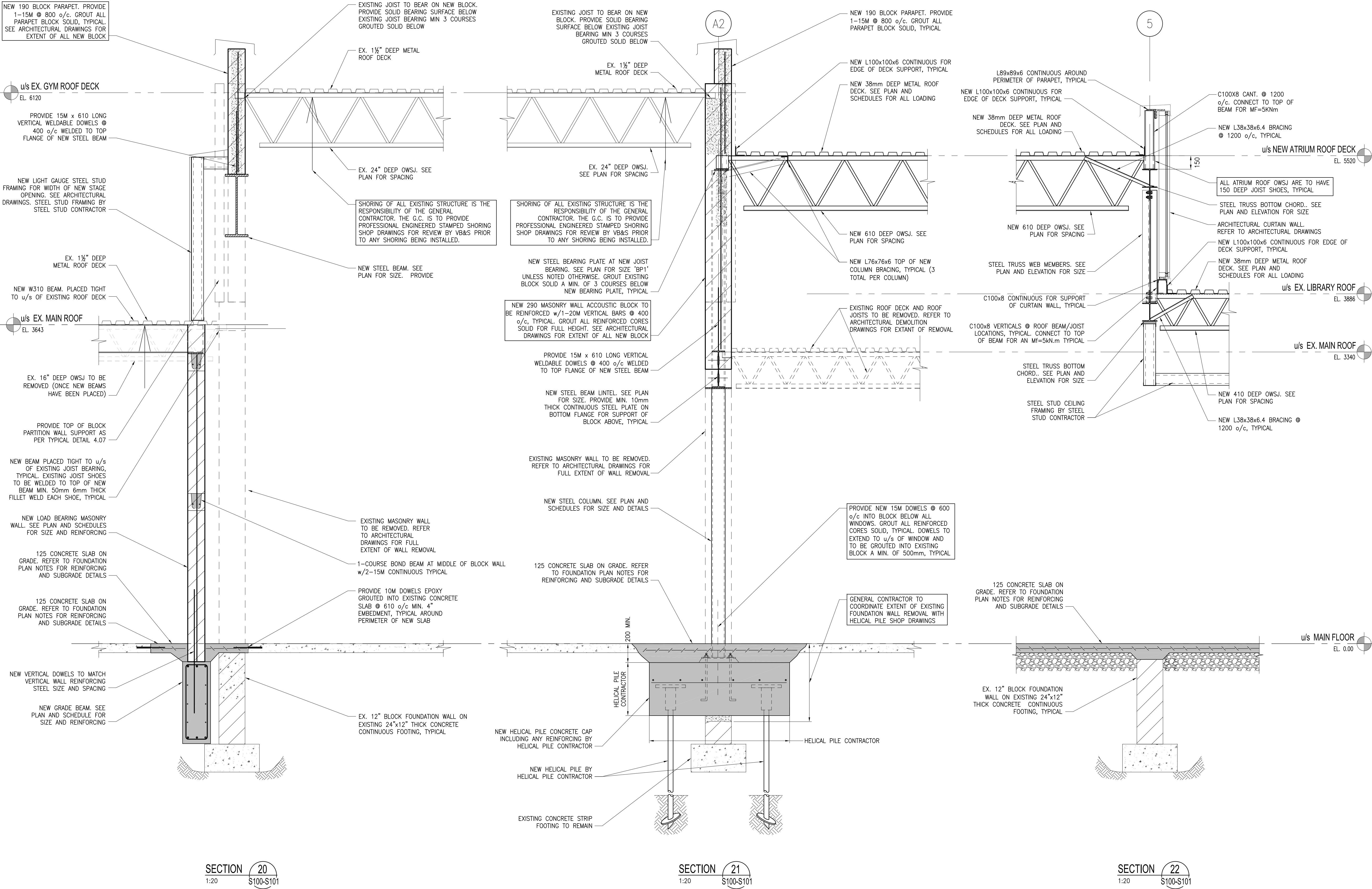
**LEGEND**

Date	Description	No.
JAN 17, 2020	ISSUED FOR 90% REVIEW	1
FEB 10, 2020	ISSUED FOR PERMIT AND TENDER	2

PROJECT TITLE  
**OUR LADY OF FATIMA PHASE 4 RENEWAL**

DRAWING TITLE  
**SECTIONS**

DATE 11/27/2019	DRAWN BY BCS	DRAWING NO.
SCALE As Indicated	CHECKED BY GVB	<b>S302</b>
PROJECT NO. 19232		



**NOTES**



**VB&S VanBoxmeer & Stranges Ltd.**  
**STRUCTURAL ENGINEERS**  
 458 Queens Ave, London, ON, Canada N6B 1X9  
 Tel. (519) 433-4661  
 E-mail vbands@vbands.com

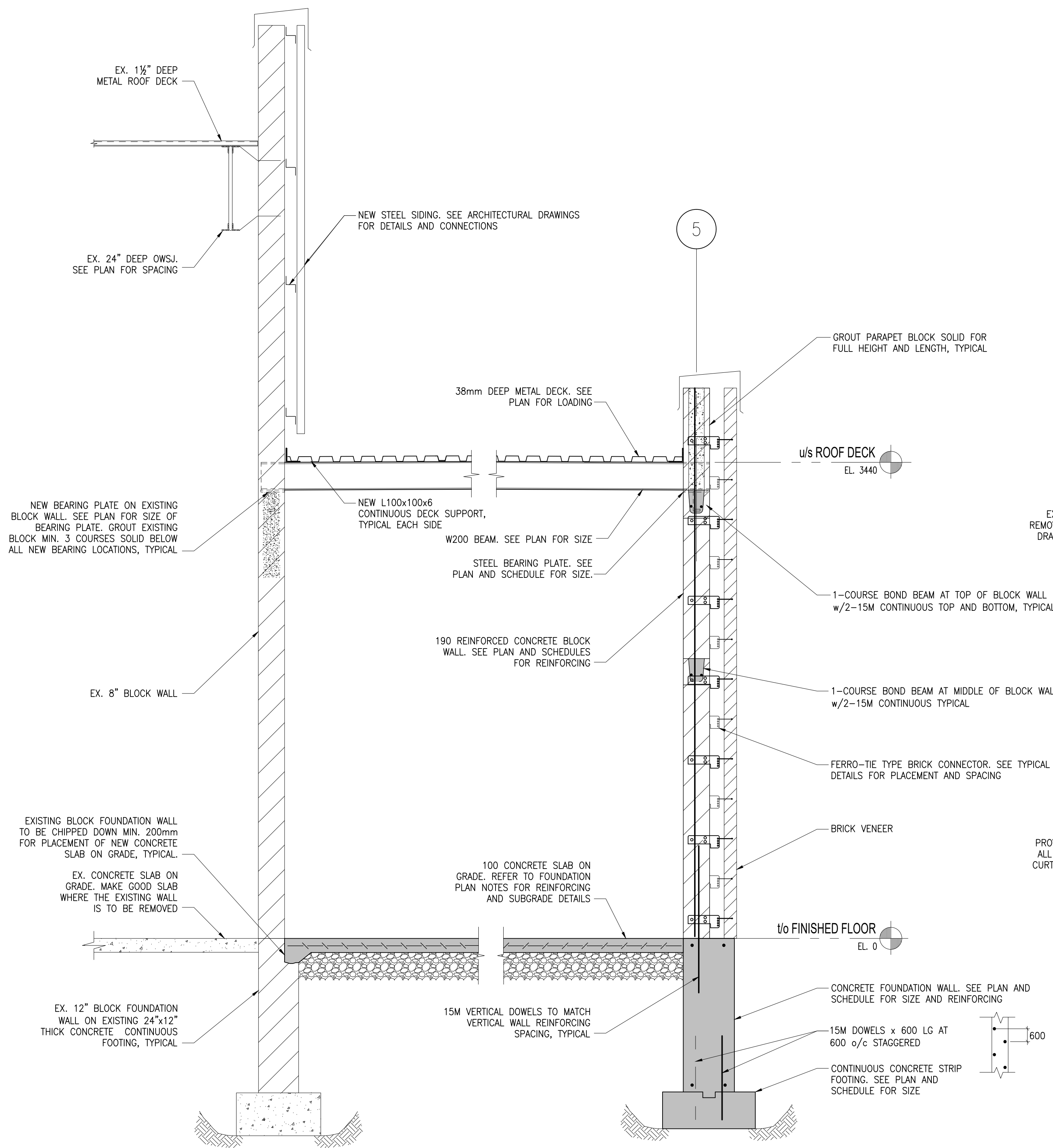
**LEGEND**

Date	Description	No.
JAN 17, 2020	ISSUED FOR 90% REVIEW	1
FEB 13, 2020	ISSUED FOR PERMIT AND TENDER	2

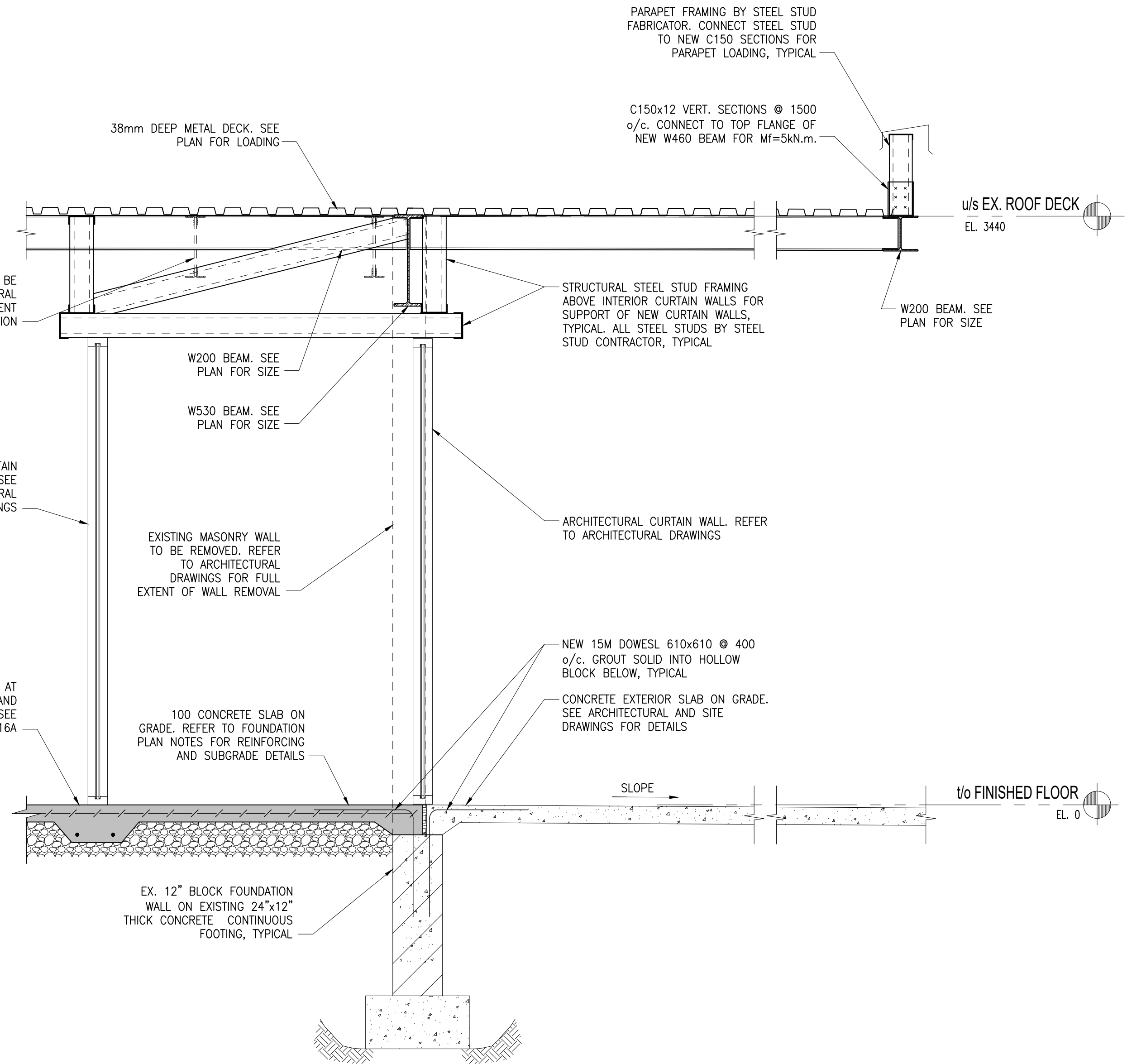
PROJECT TITLE  
**OUR LADY OF FATIMA PHASE 4 RENEWAL**

DRAWING TITLE  
**SECTIONS**

DATE 11/27/2019	DRAWN BY BCS	DRAWING No. <b>S303</b>
SCALE As indicated	CHECKED BY GVB	
PROJECT No. 19232		

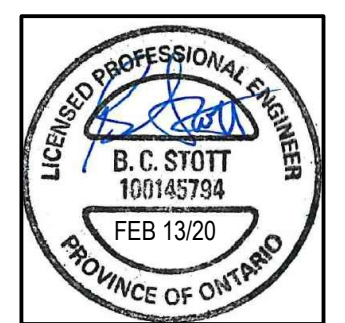


**SECTION 30**  
 1:20 S100-S101



**SECTION 31**  
 1:20 S100-S101

NOTES



**VanBoxmeer & Stranges Ltd.**  
**STRUCTURAL ENGINEERS**  
458 Queens Ave. London, ON, Canada N6B 1X9  
tel. (519) 433-4661  
E-mail vbands@vbands.com

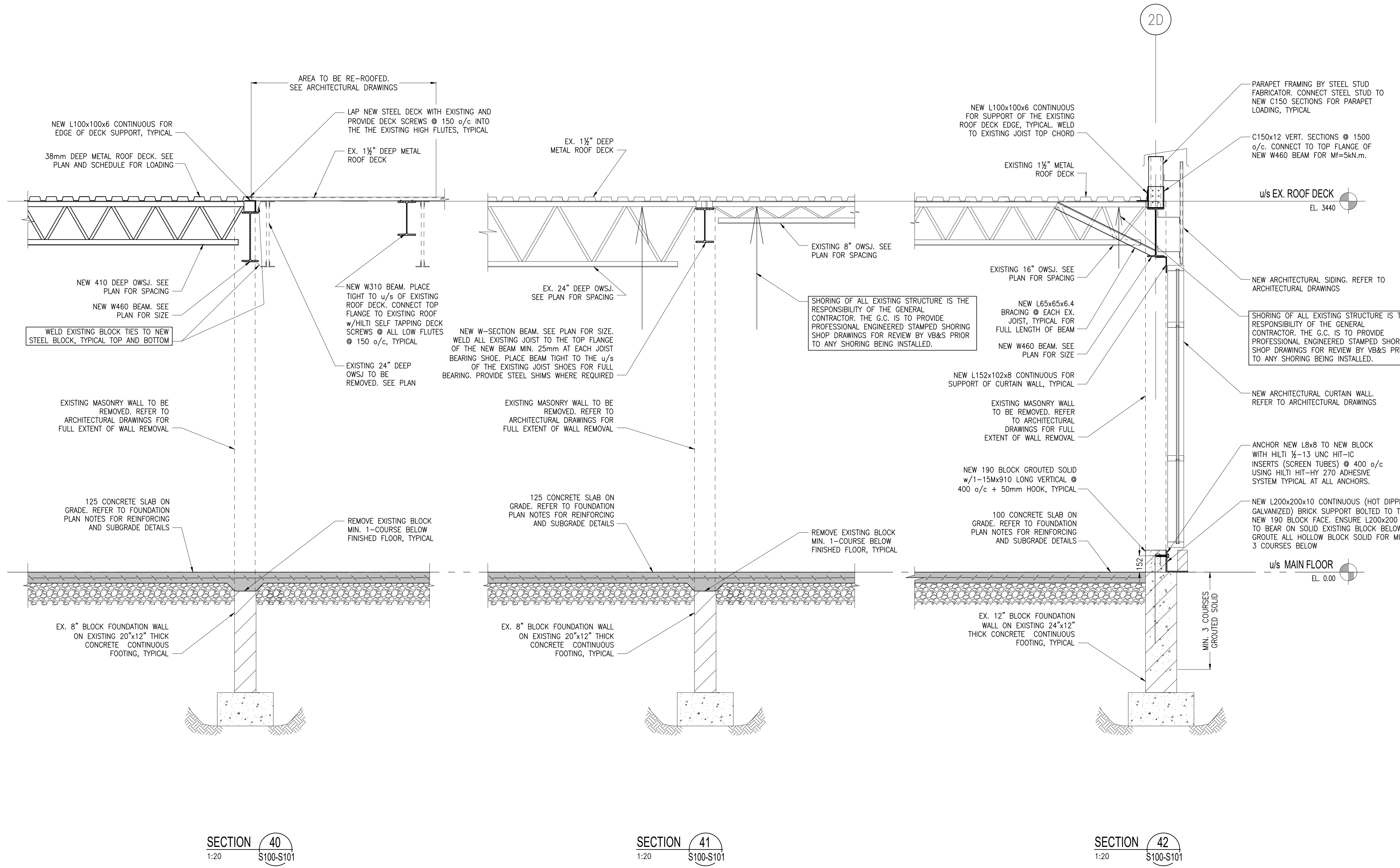
LEGEND

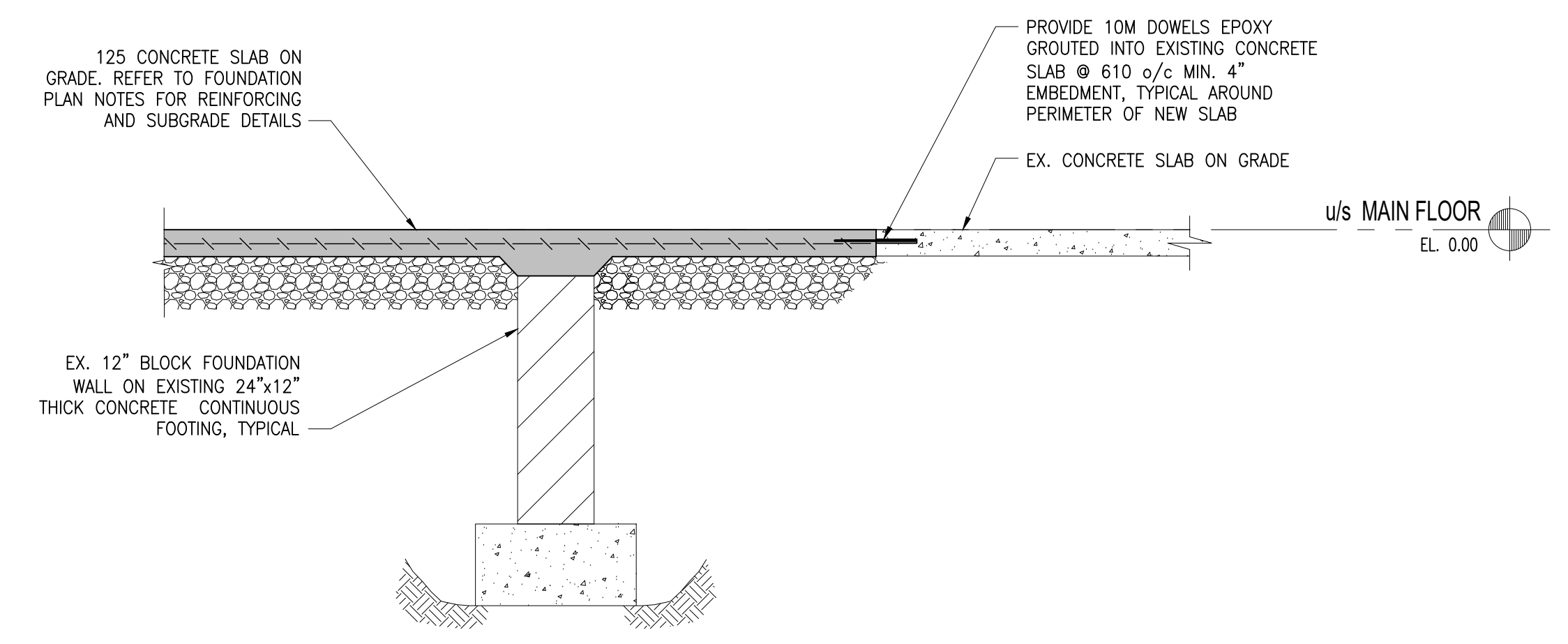
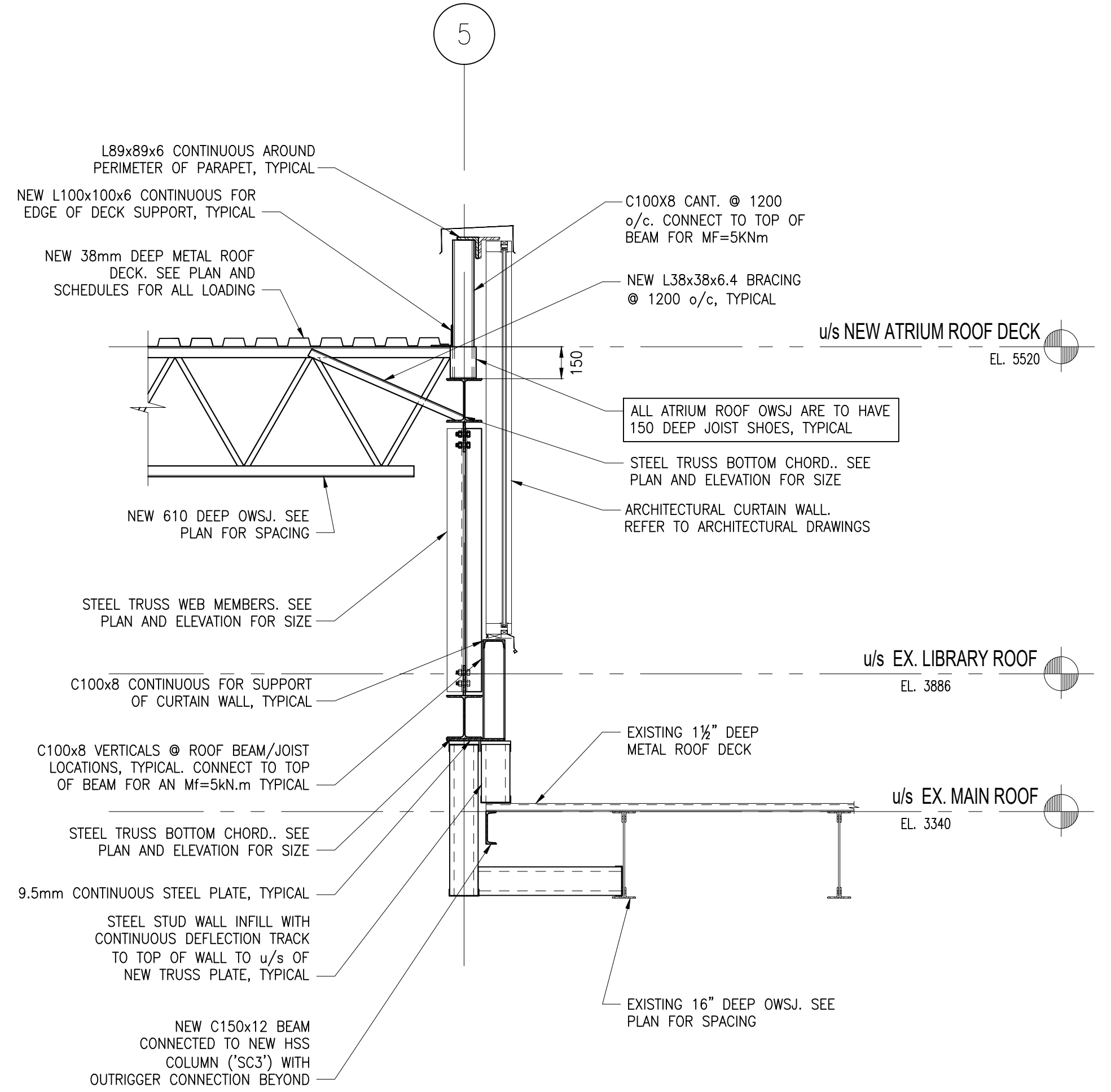
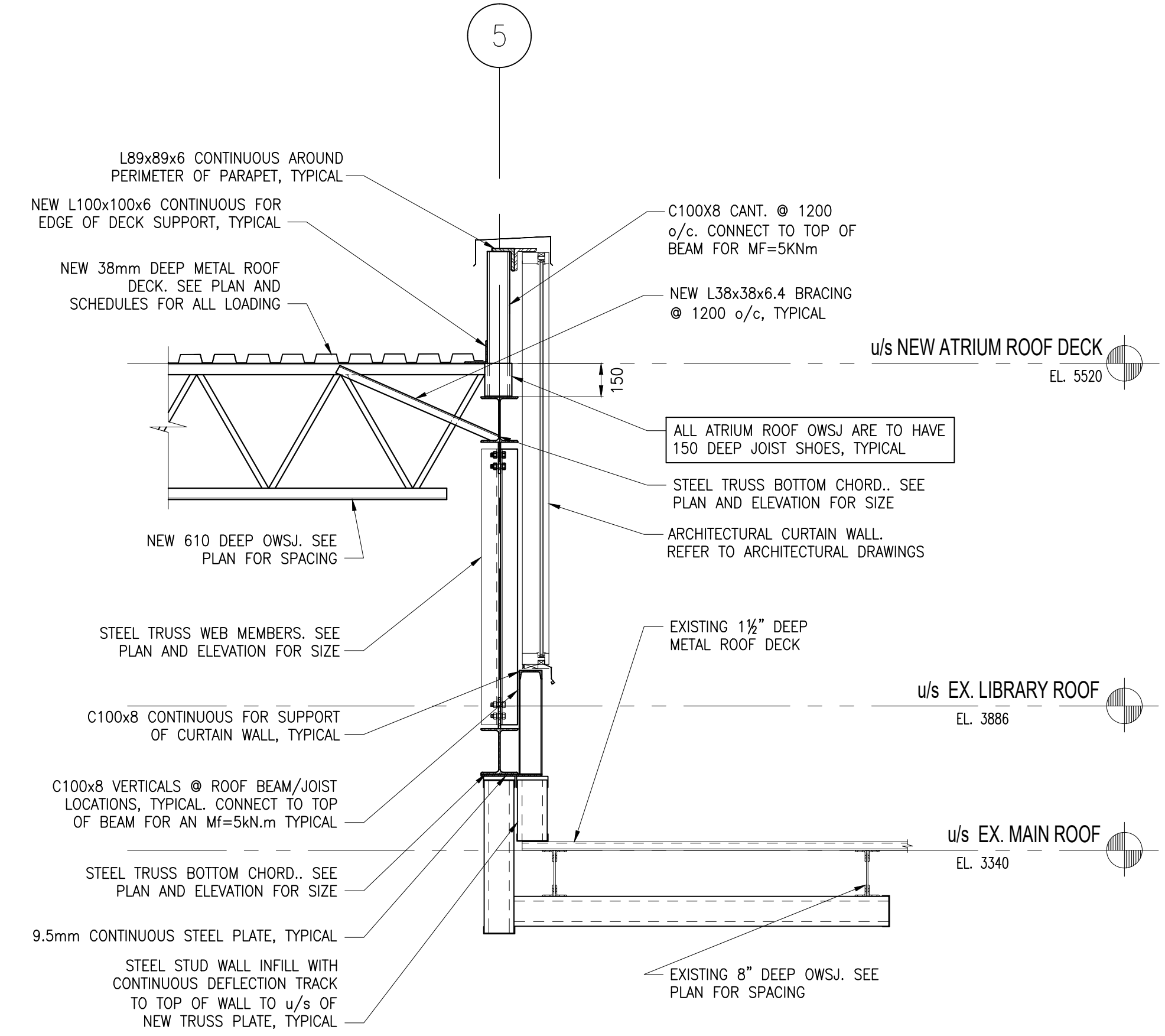
Date	Description	No.
JAN 17, 2020	ISSUED FOR 90% REVIEW	1
FEB 13, 2020	ISSUED FOR PERMIT AND TENDER	2

PROJECT TITLE  
**OUR LADY OF FATIMA PHASE 4 RENEWAL**

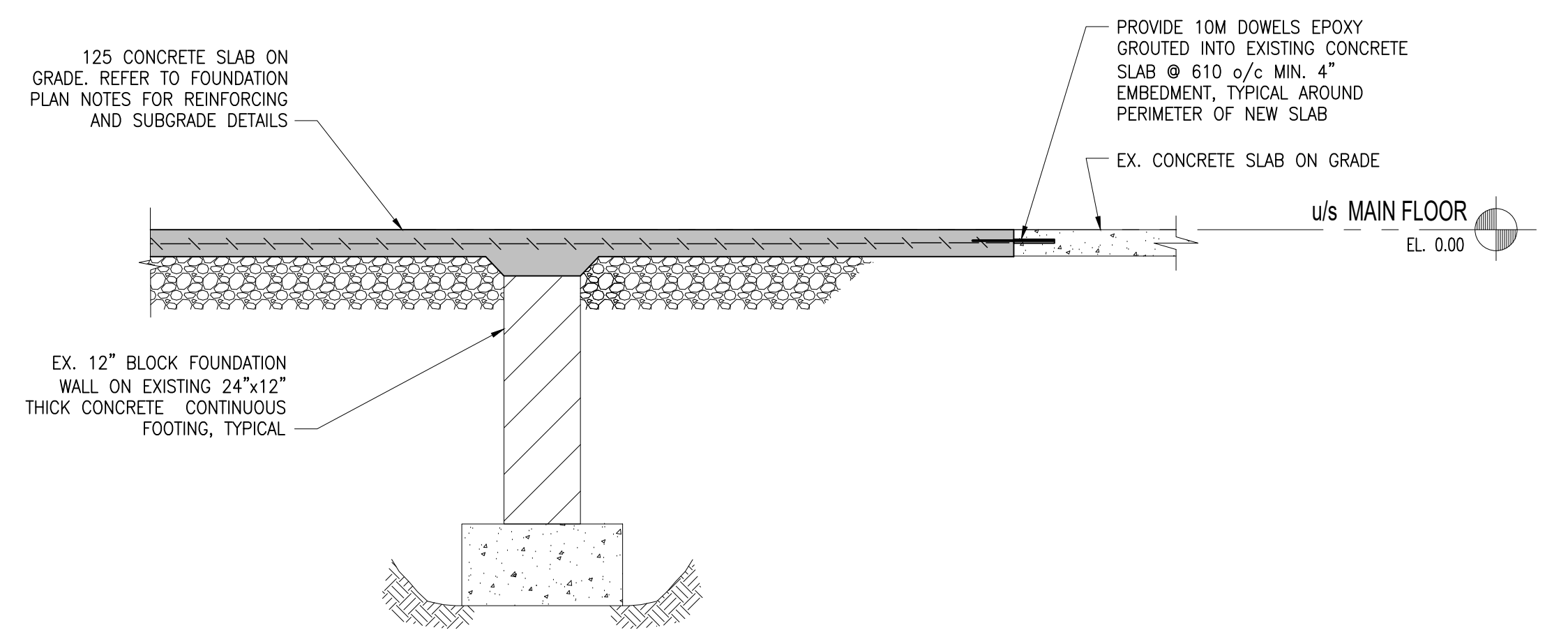
DRAWING TITLE  
**SECTIONS**

DATE 11/27/2019	DRAWN BY BCS	DRAWING NO.
SCALE As indicated	CHECKED BY GVB	<b>S304</b>
PROJECT No. 19232		





SECTION 50  
1:20 S100-S101



SECTION 51  
1:20 S100-S101

NOTES




**VanBoxmeer & Stranges Ltd.**  
STRUCTURAL ENGINEERS  
458 Queens Ave, London, ON, Canada N6B 1X9  
tel. (519) 433-4661  
E-mail vbands@vbands.com

LEGEND

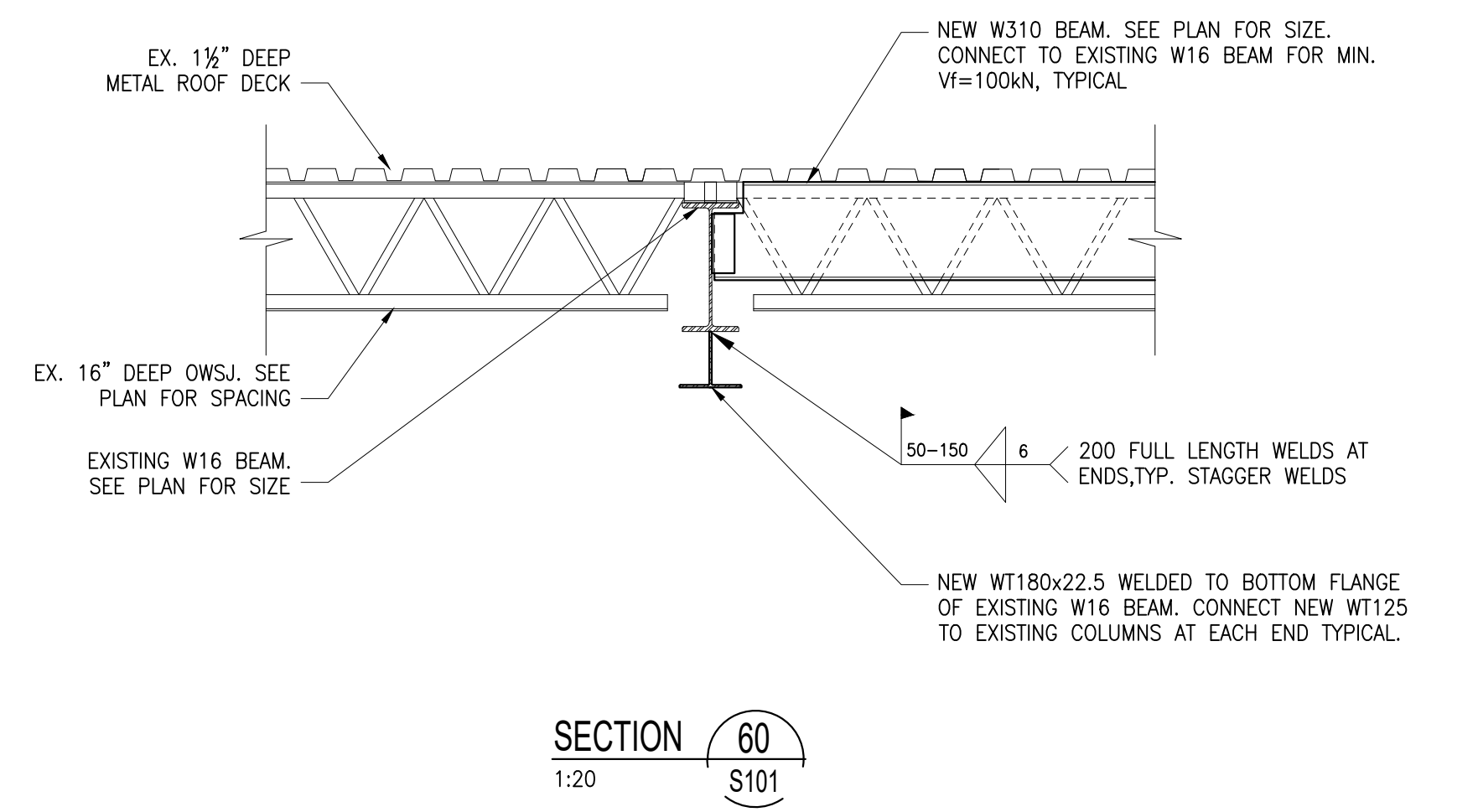
Date	Description	No.
JAN 17, 2020	ISSUED FOR 90% REVIEW	1
FEB 13, 2020	ISSUED FOR PERMIT AND TENDER	2

PROJECT TITLE  
**OUR LADY OF FATIMA PHASE 4 RENEWAL**

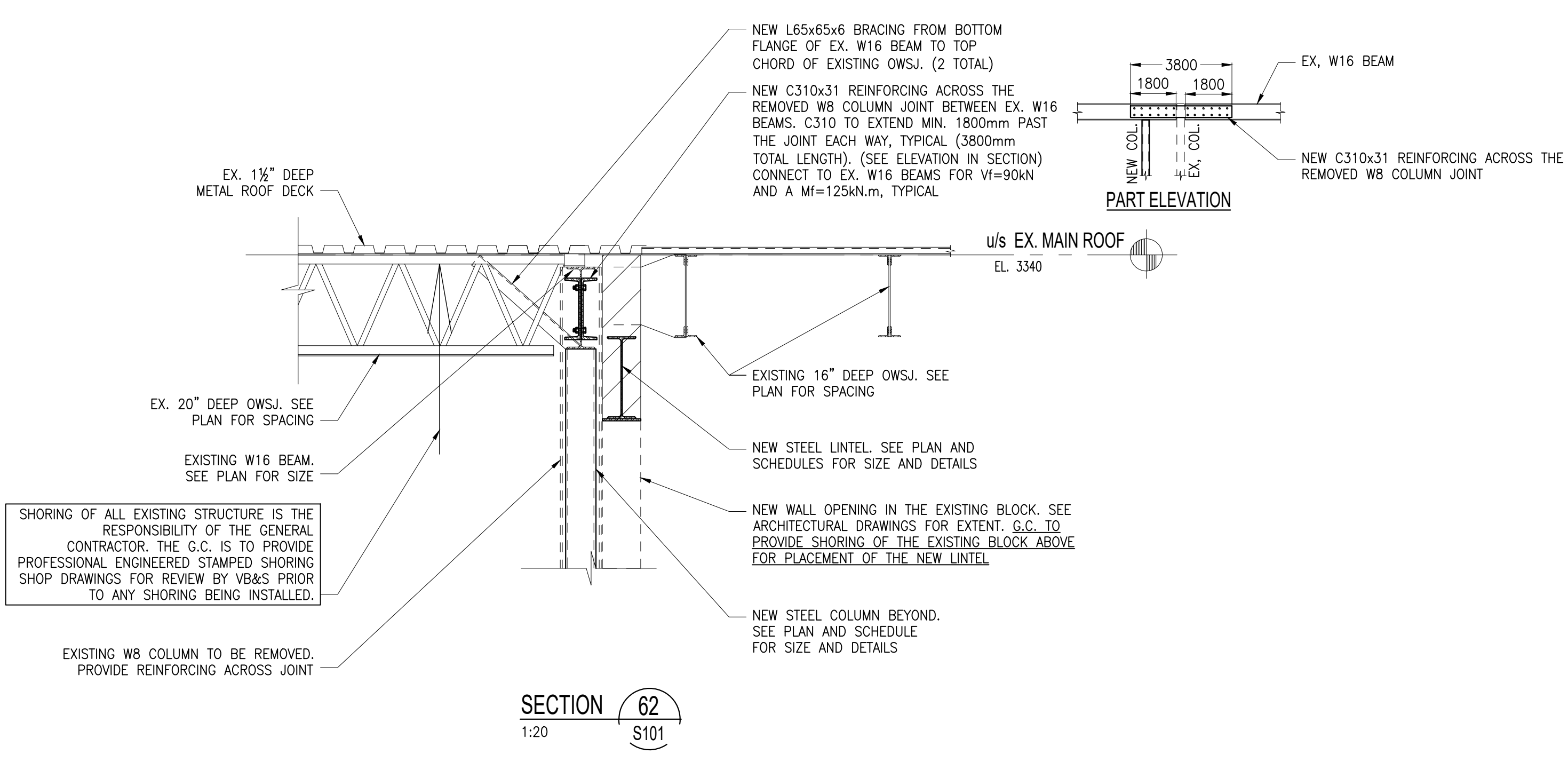
DRAWING TITLE  
**SECTIONS**

DATE 11/27/2019	DRAWN BY BCS	DRAWING No.
SCALE As indicated	CHECKED BY GVB	<b>S305</b>
PROJECT No. 19232		

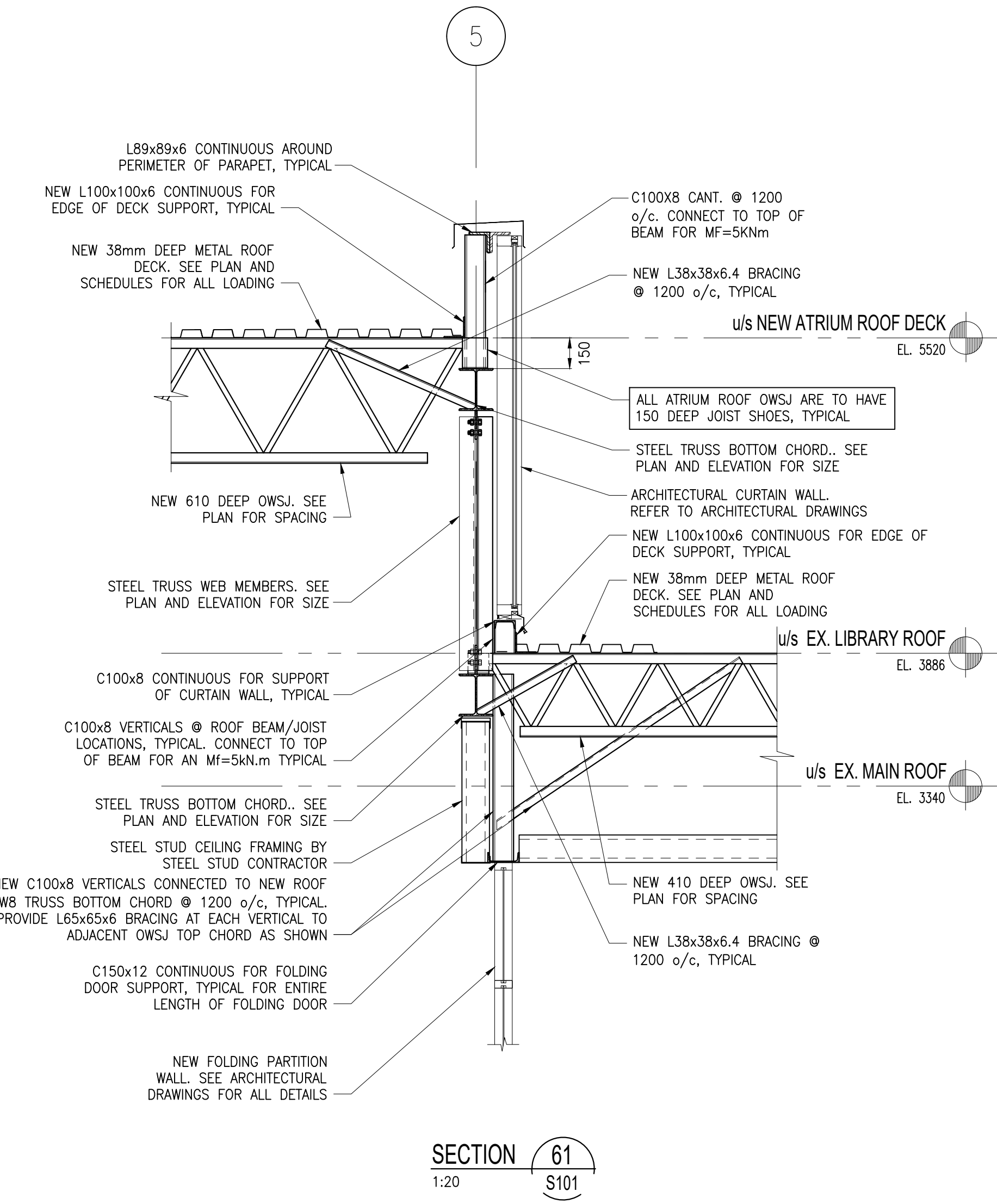




SECTION **60**  
 1:20 S101



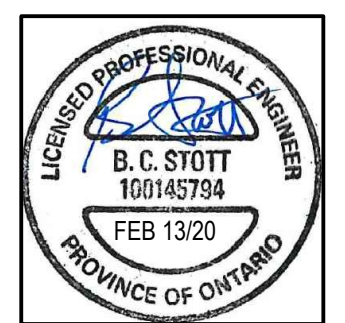
SECTION **62**  
 1:20 S101



SECTION **61**  
 1:20 S101

SHORING OF ALL EXISTING STRUCTURE IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THE G.C. IS TO PROVIDE PROFESSIONAL ENGINEER STAMPED SHORING SHOP DRAWINGS FOR REVIEW BY VB&S PRIOR TO ANY SHORING BEING INSTALLED.

NOTES



**VB&S VanBoxmeer & Stranges Ltd.**  
**STRUCTURAL ENGINEERS**  
 458 Queens Ave, London, ON, Canada N6B 1X9  
 Tel. (519) 433-4661  
 E-mail vbands@vbands.com

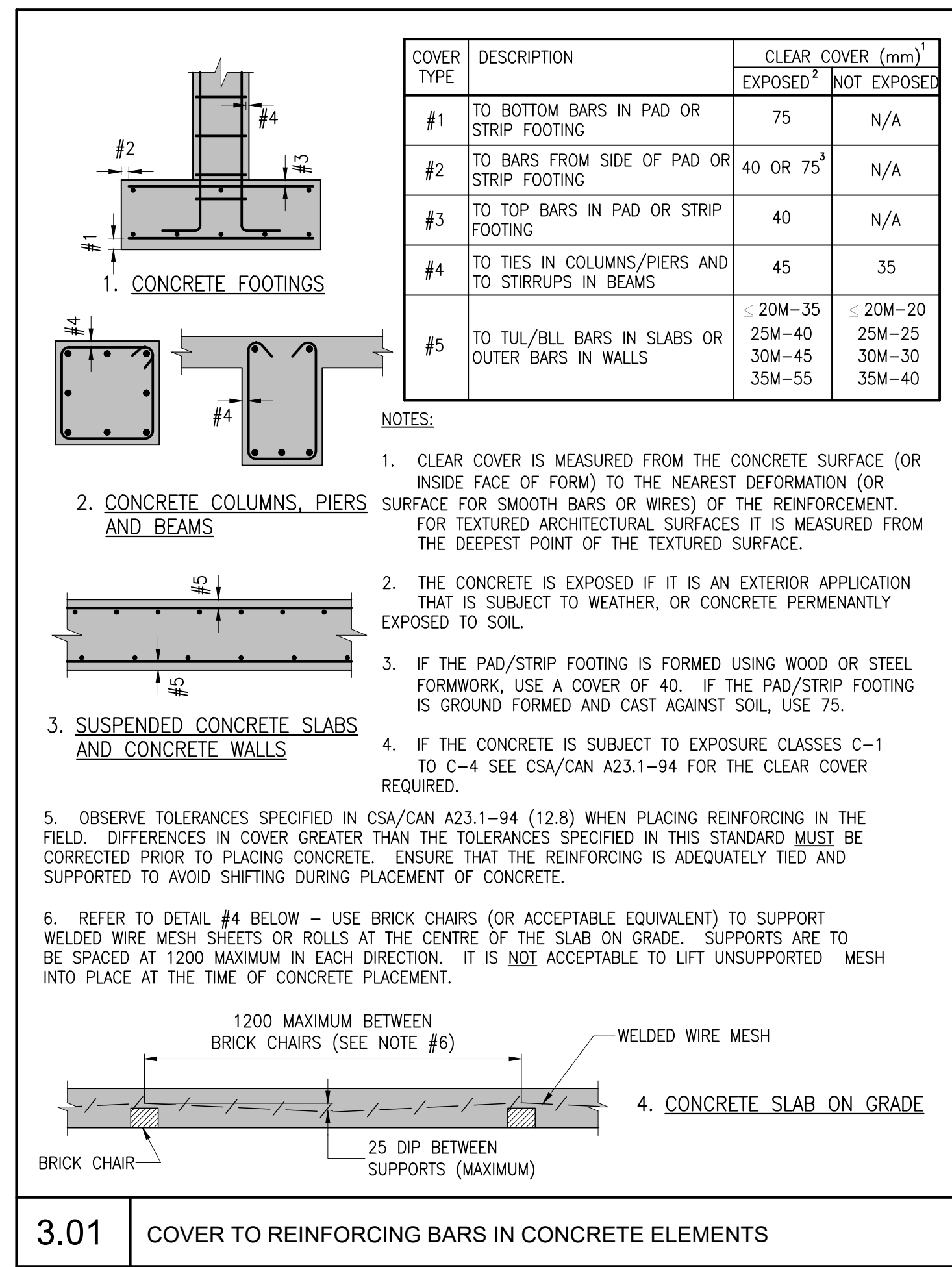
LEGEND

Date	Description	No.
JAN 17, 2020	ISSUED FOR 90% REVIEW	1
FEB 13, 2020	ISSUED FOR PERMIT AND TENDER	2

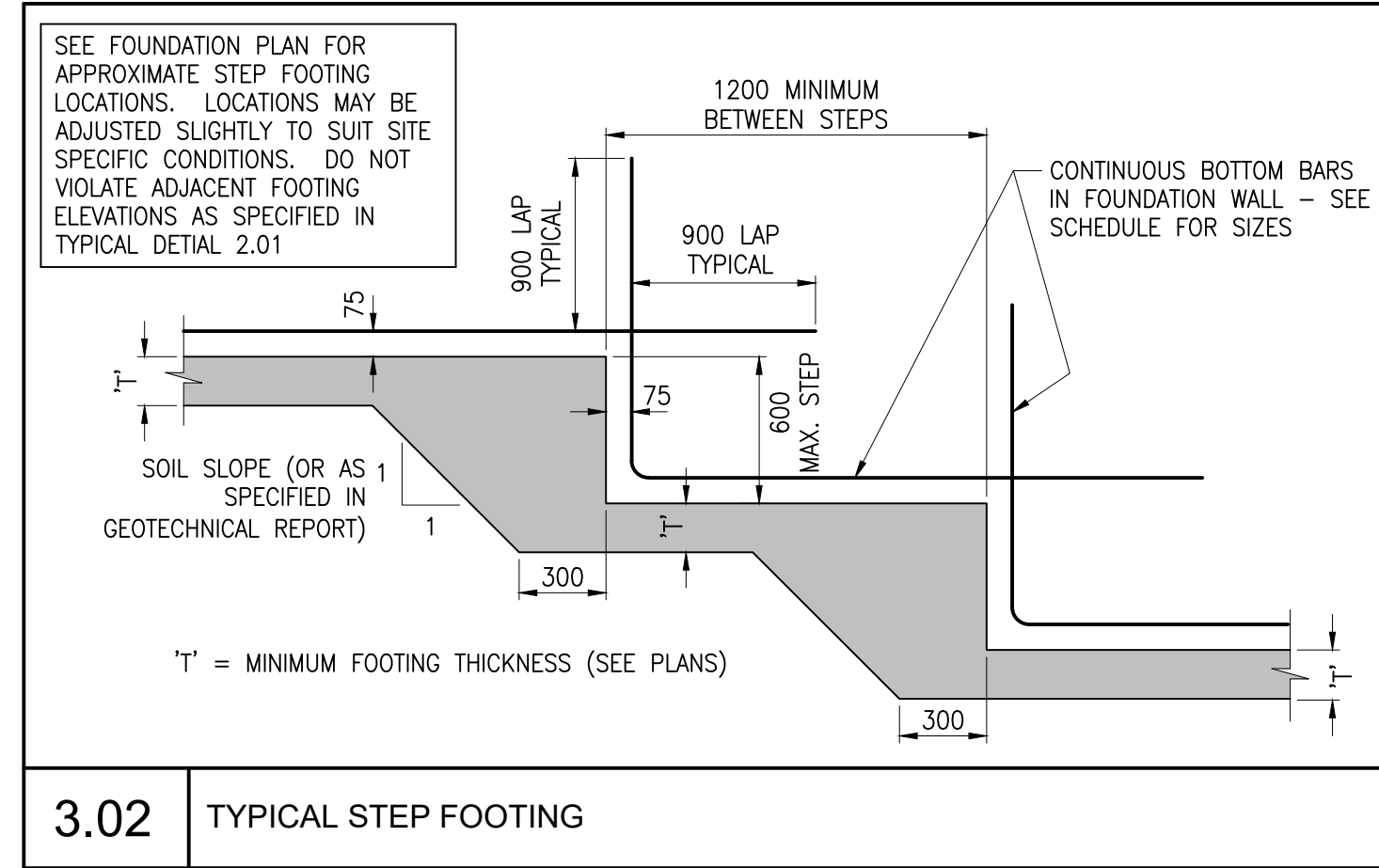
PROJECT TITLE  
**OUR LADY OF FATIMA PHASE 4 RENEWAL**

DRAWING TITLE  
**SECTIONS**

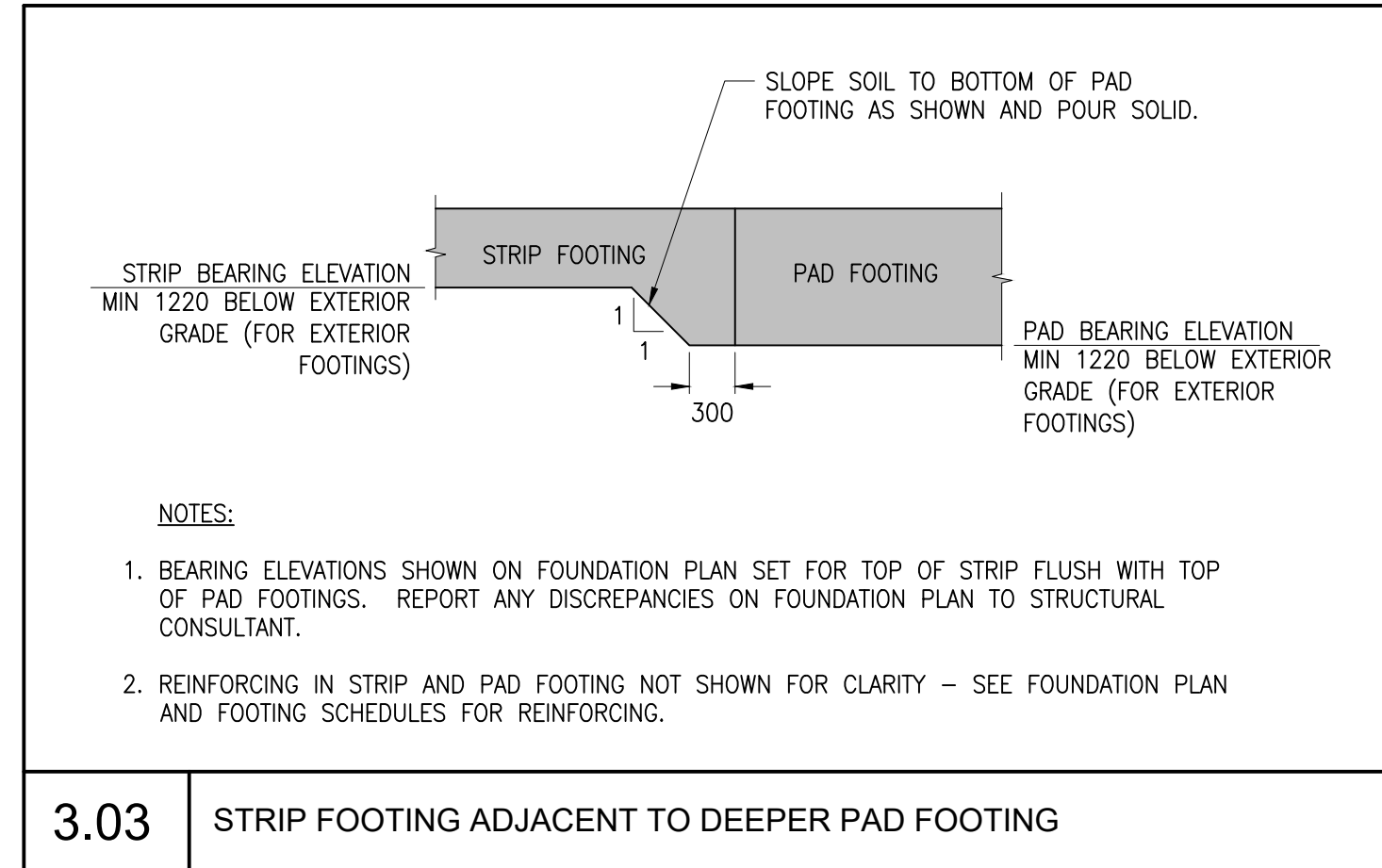
DATE 11/27/2019	DRAWN BY BCS	DRAWING No.
SCALE As indicated	CHECKED BY GVB	<b>S306</b>
PROJECT No. 19232		



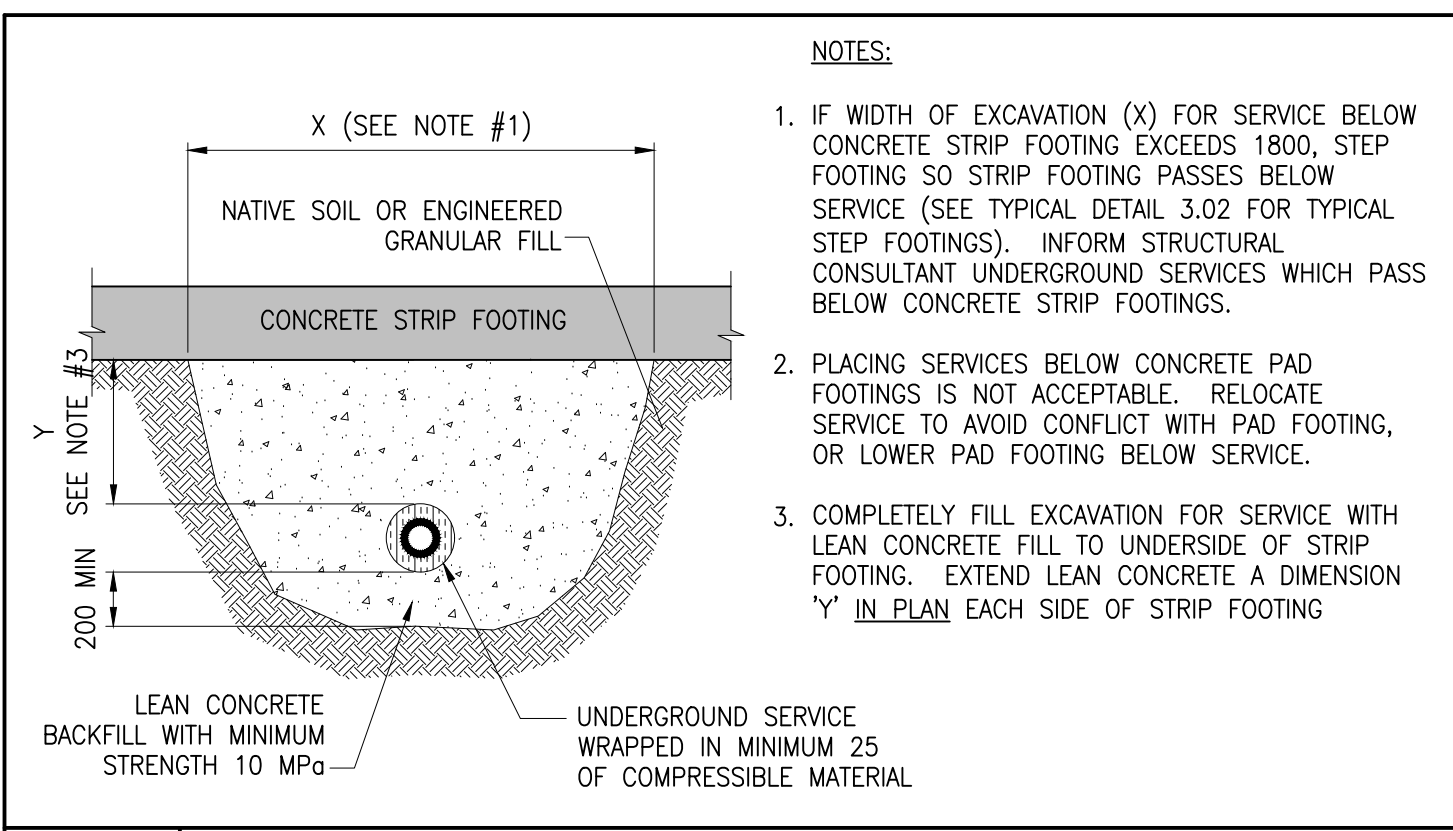
3.01 COVER TO REINFORCING BARS IN CONCRETE ELEMENTS



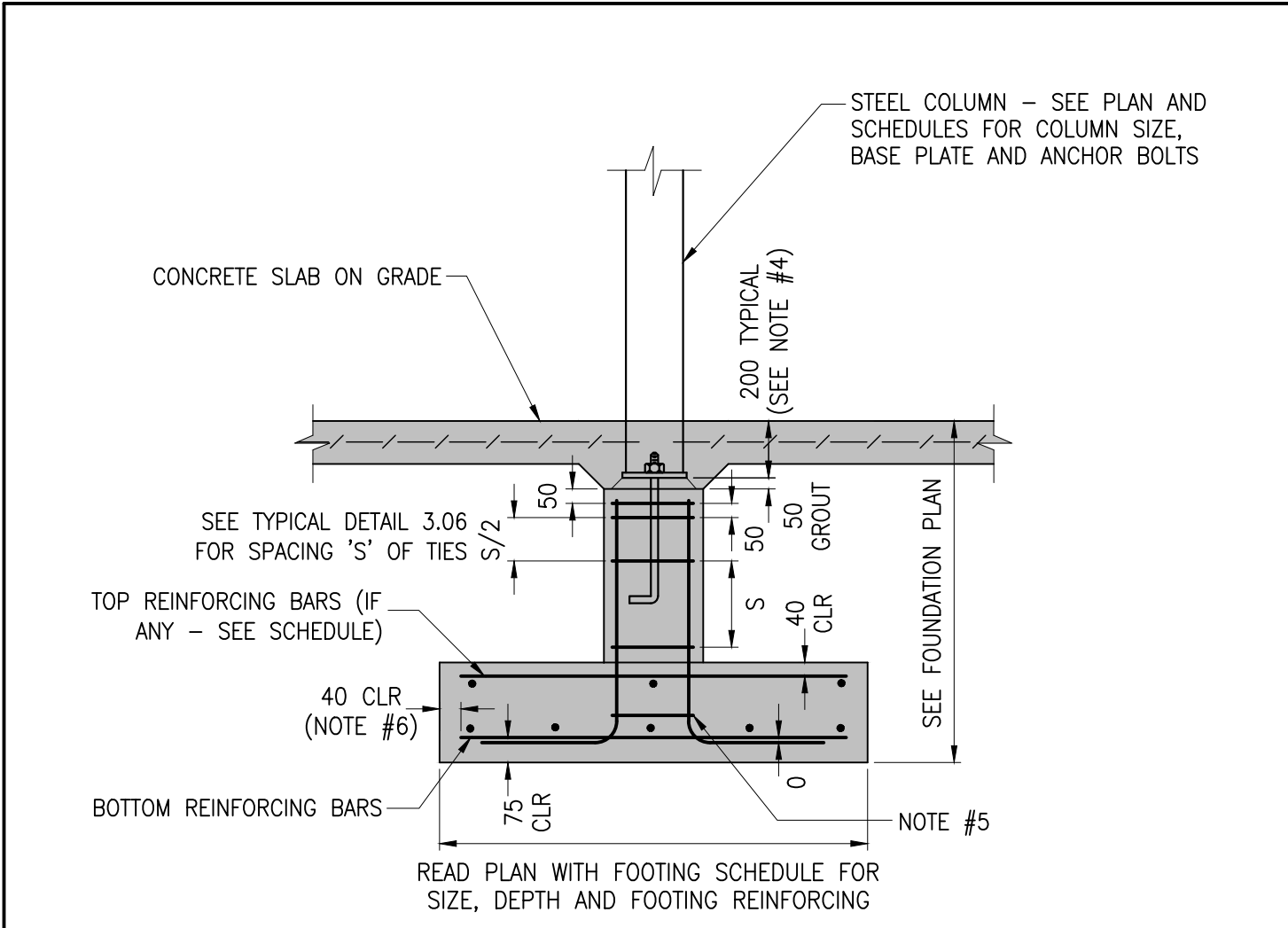
3.02 TYPICAL STEP FOOTING



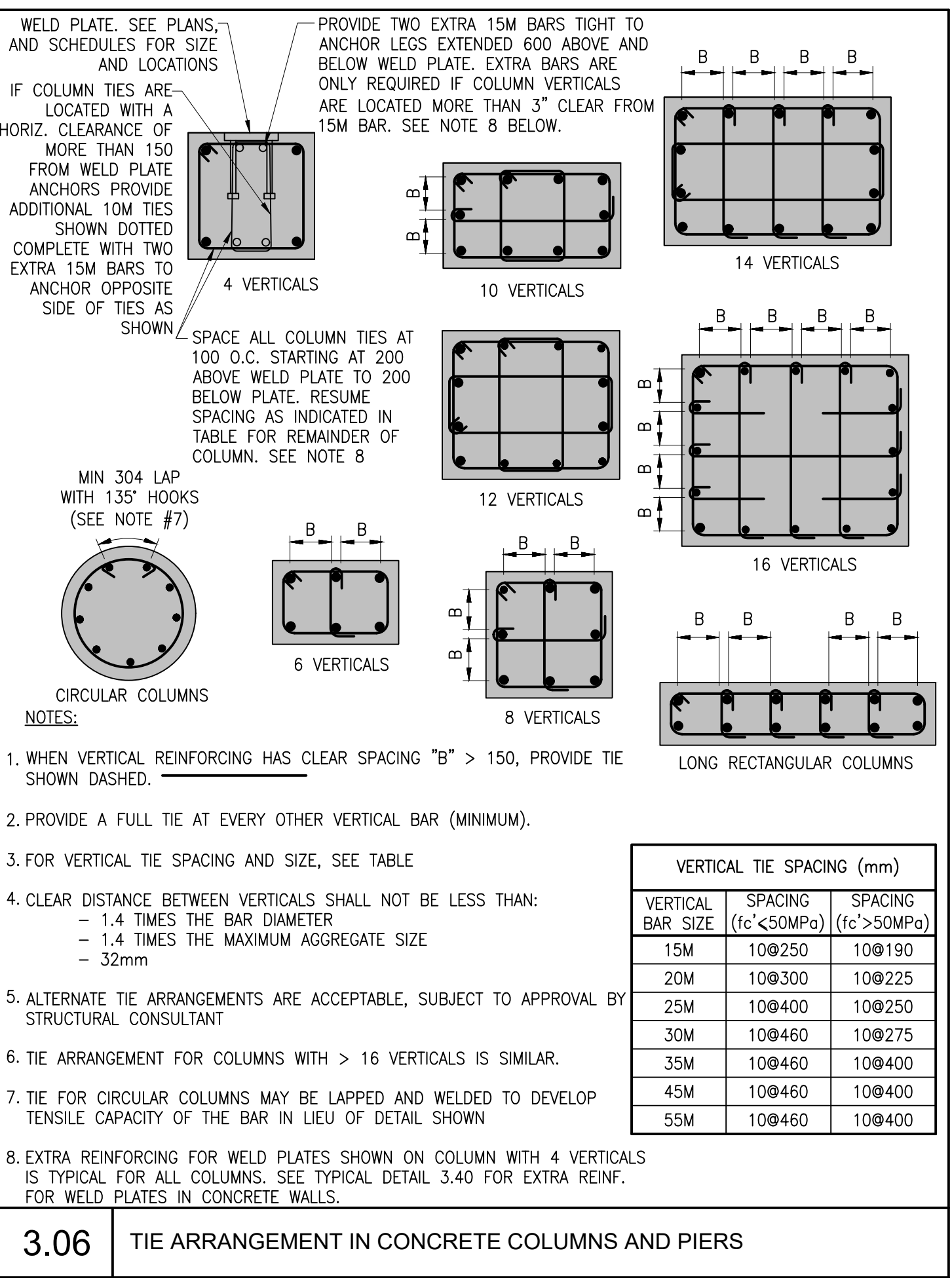
3.03 STRIP FOOTING ADJACENT TO DEEPER PAD FOOTING



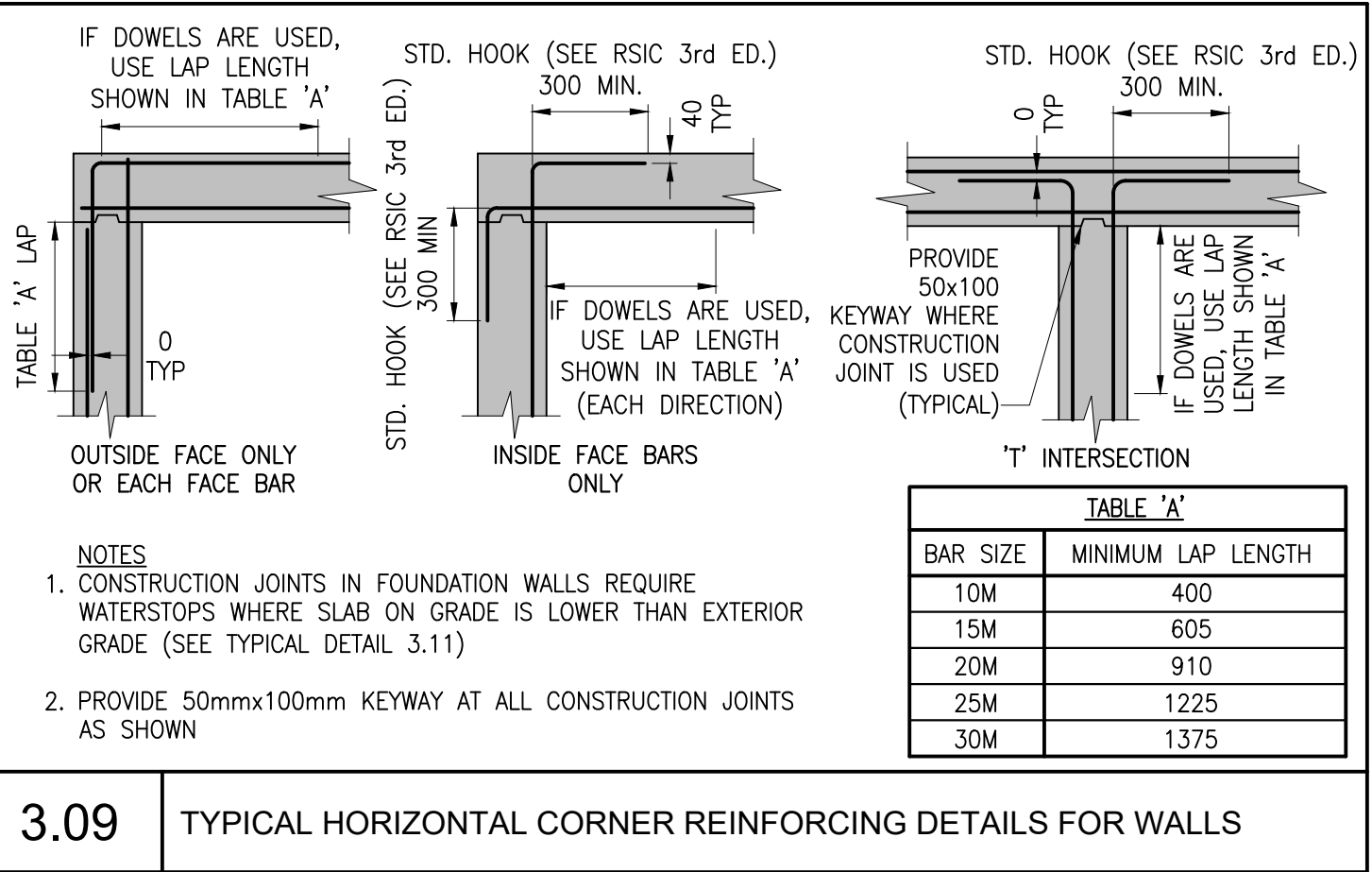
3.04 UNDERGROUND SERVICE BELOW CONTINUOUS CONCRETE STRIP FOOTINGS



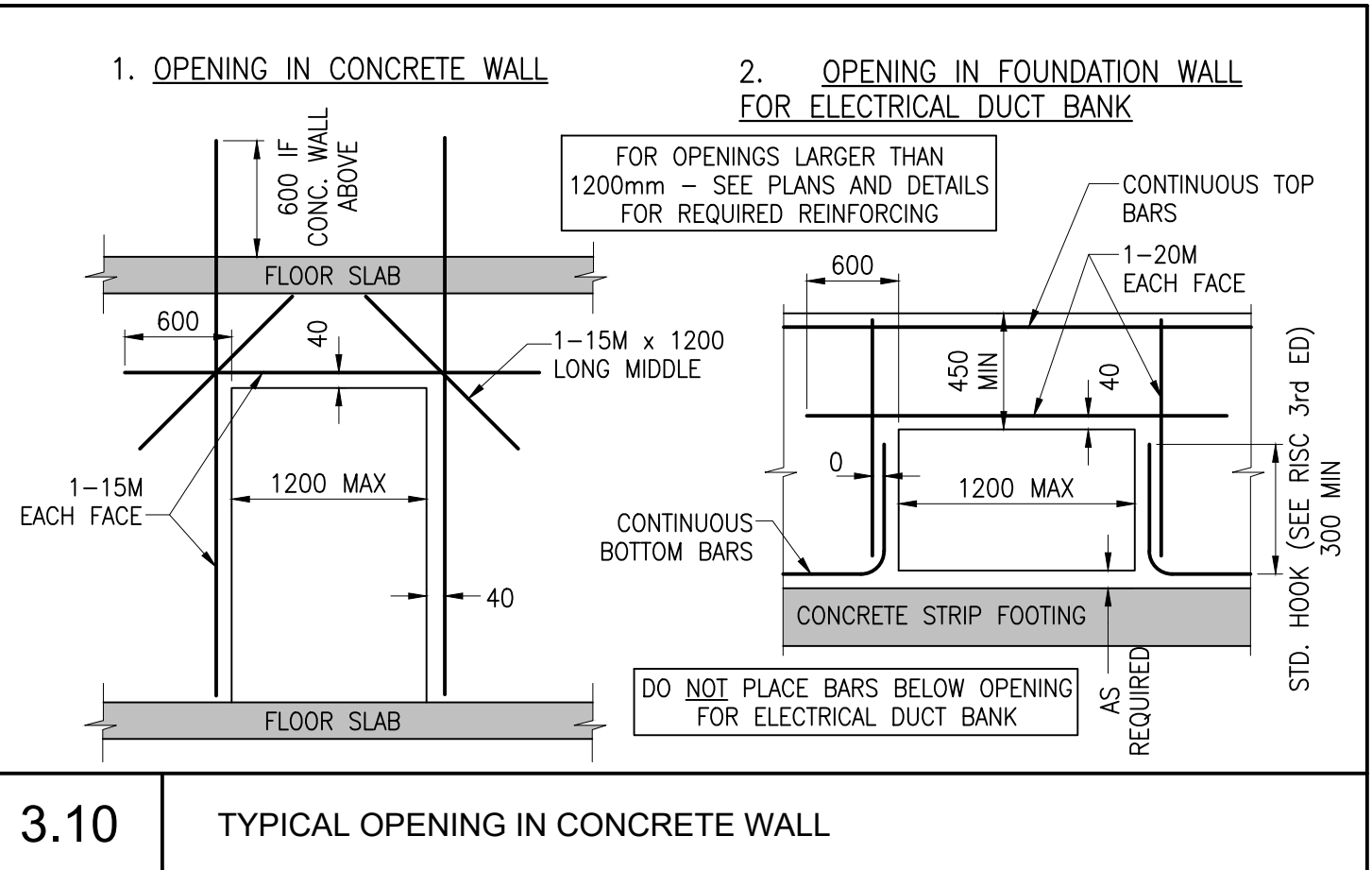
3.05 TYPICAL CONCRETE PAD FOOTING



3.06 TIE ARRANGEMENT IN CONCRETE COLUMNS AND PIERS

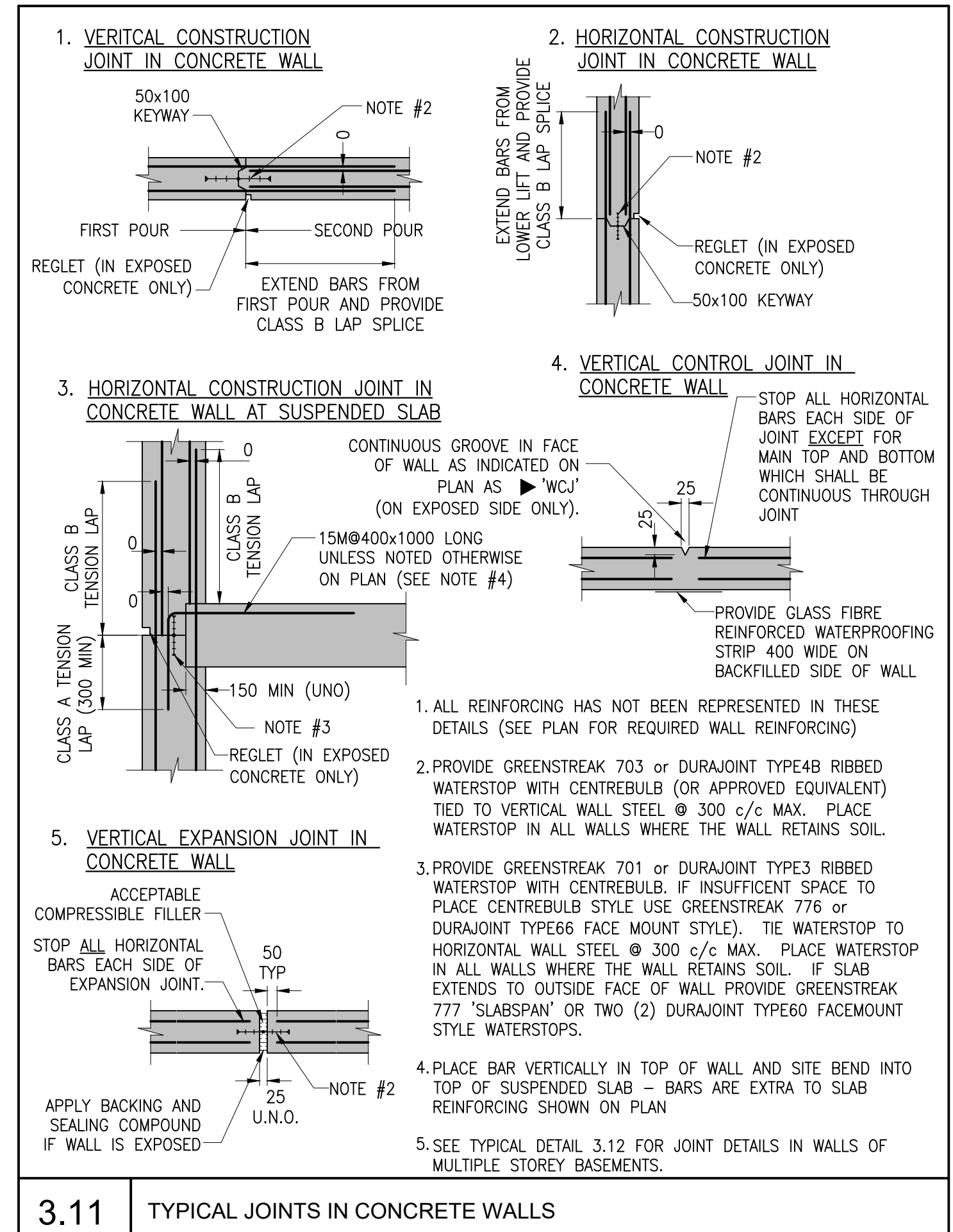


3.09 TYPICAL HORIZONTAL CORNER REINFORCING DETAILS FOR WALLS

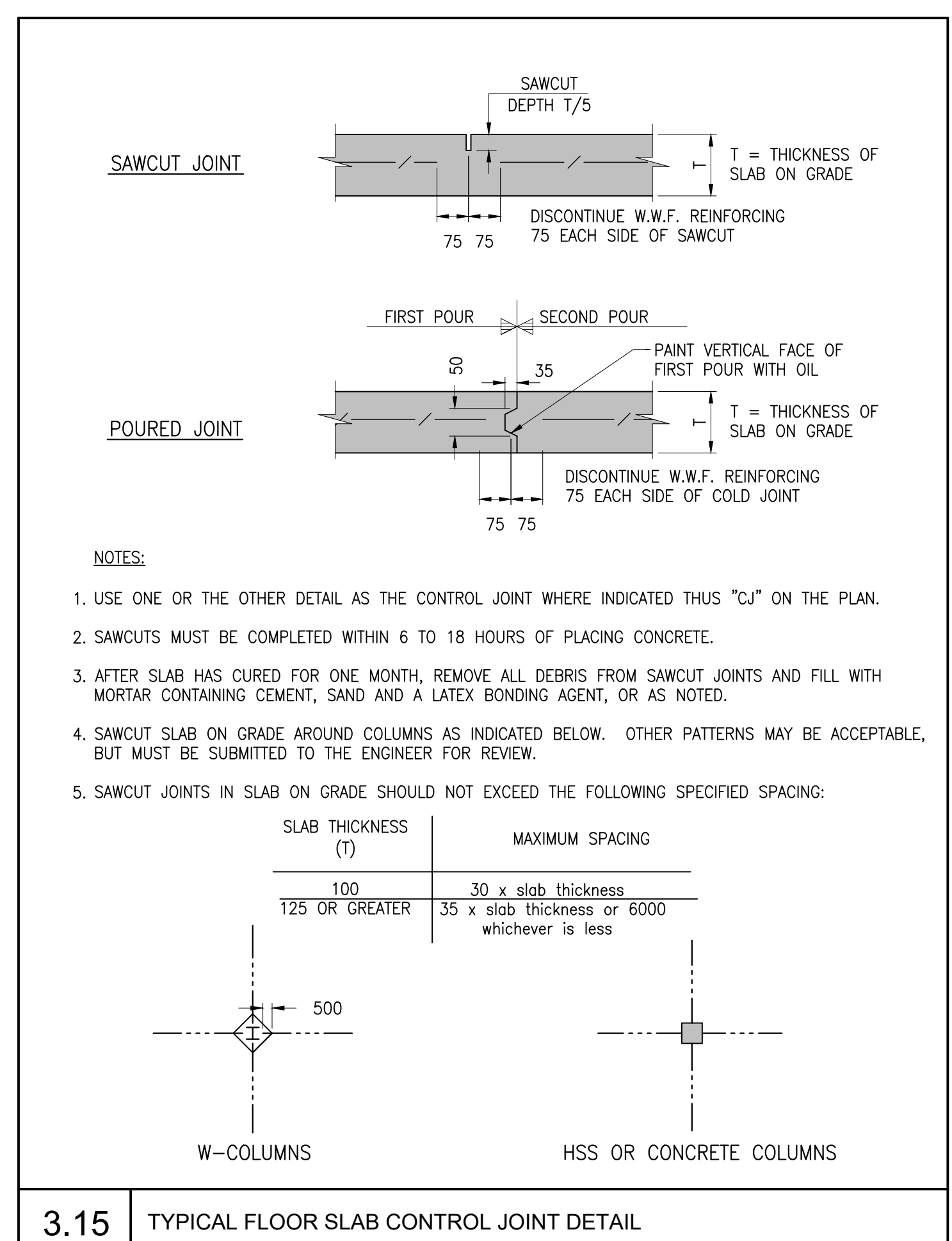


3.10 TYPICAL OPENING IN CONCRETE WALL

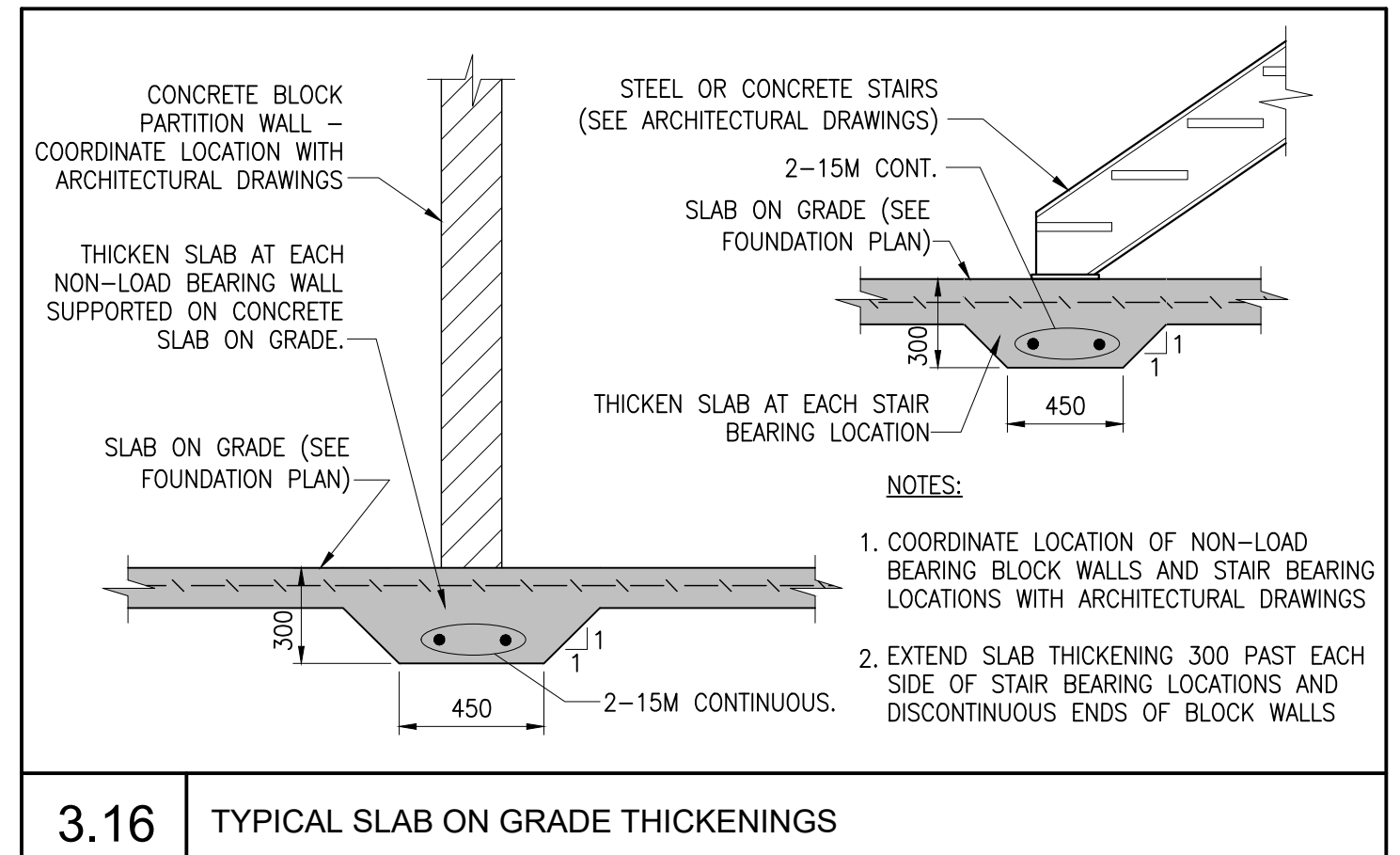
Date	Description	No.
JAN 17, 2020	ISSUED FOR 90% REVIEW	1
FEB 13, 2020	ISSUED FOR PERMIT AND TENDER	2



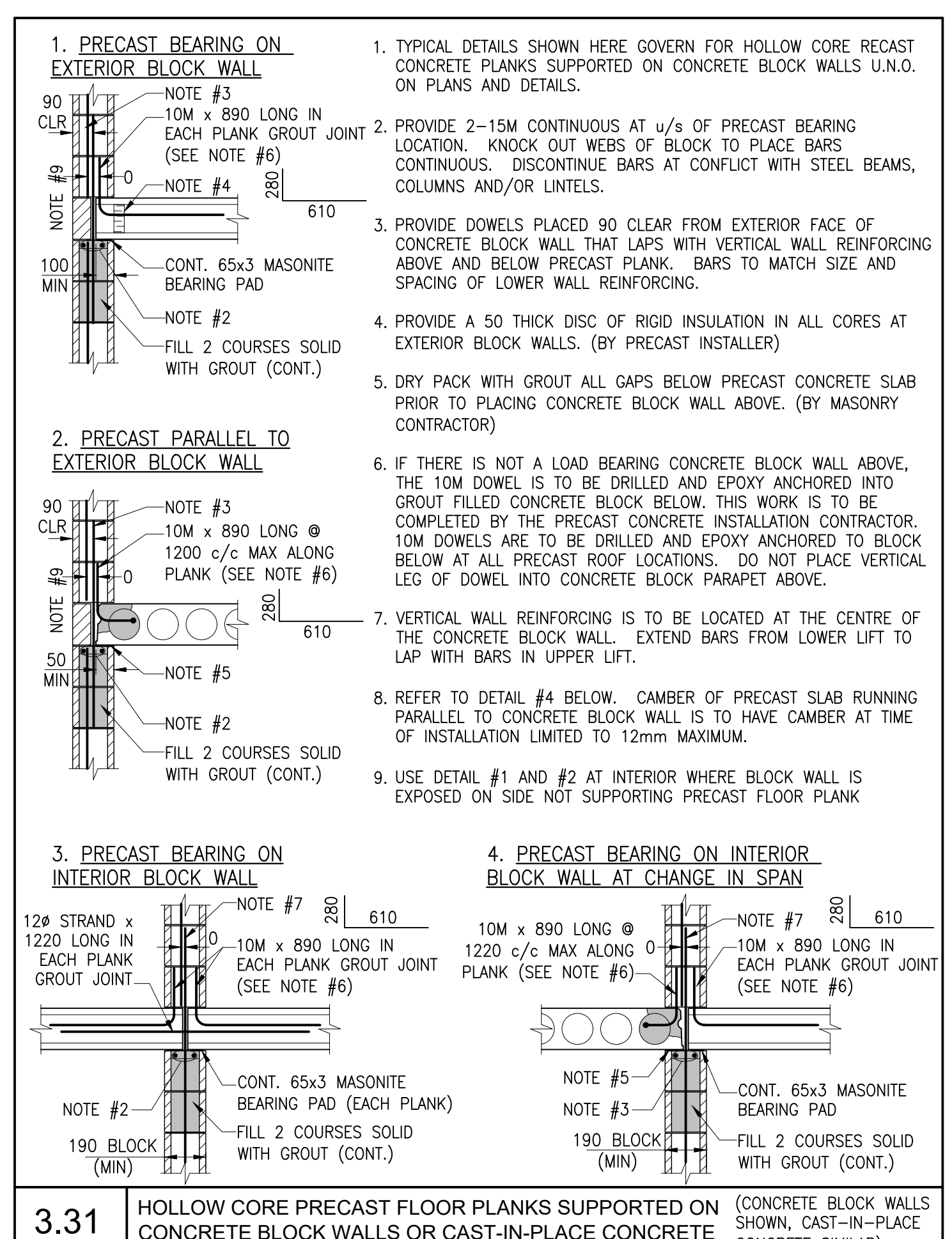
3.11 TYPICAL JOINTS IN CONCRETE WALLS



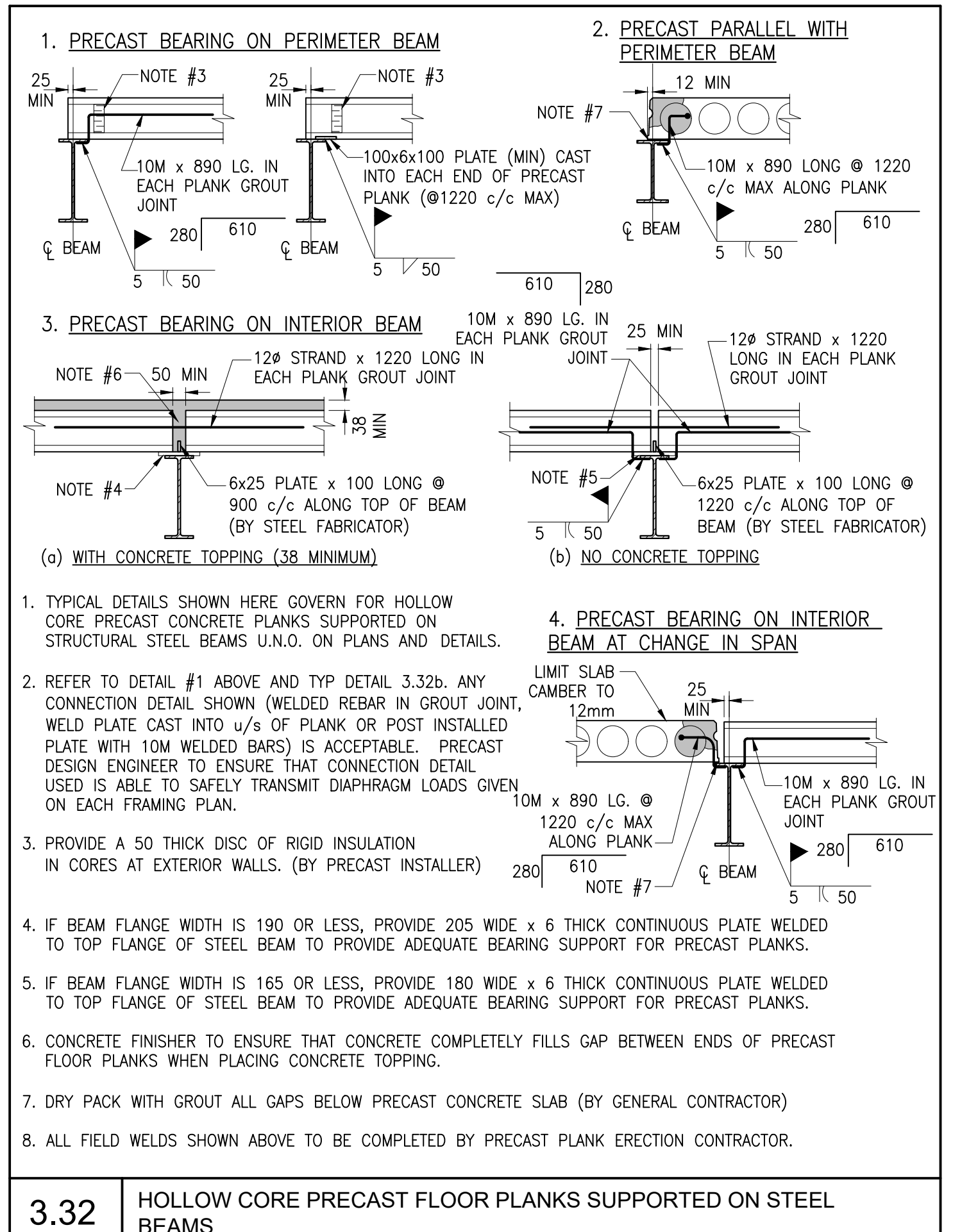
3.15 TYPICAL FLOOR SLAB CONTROL JOINT DETAIL



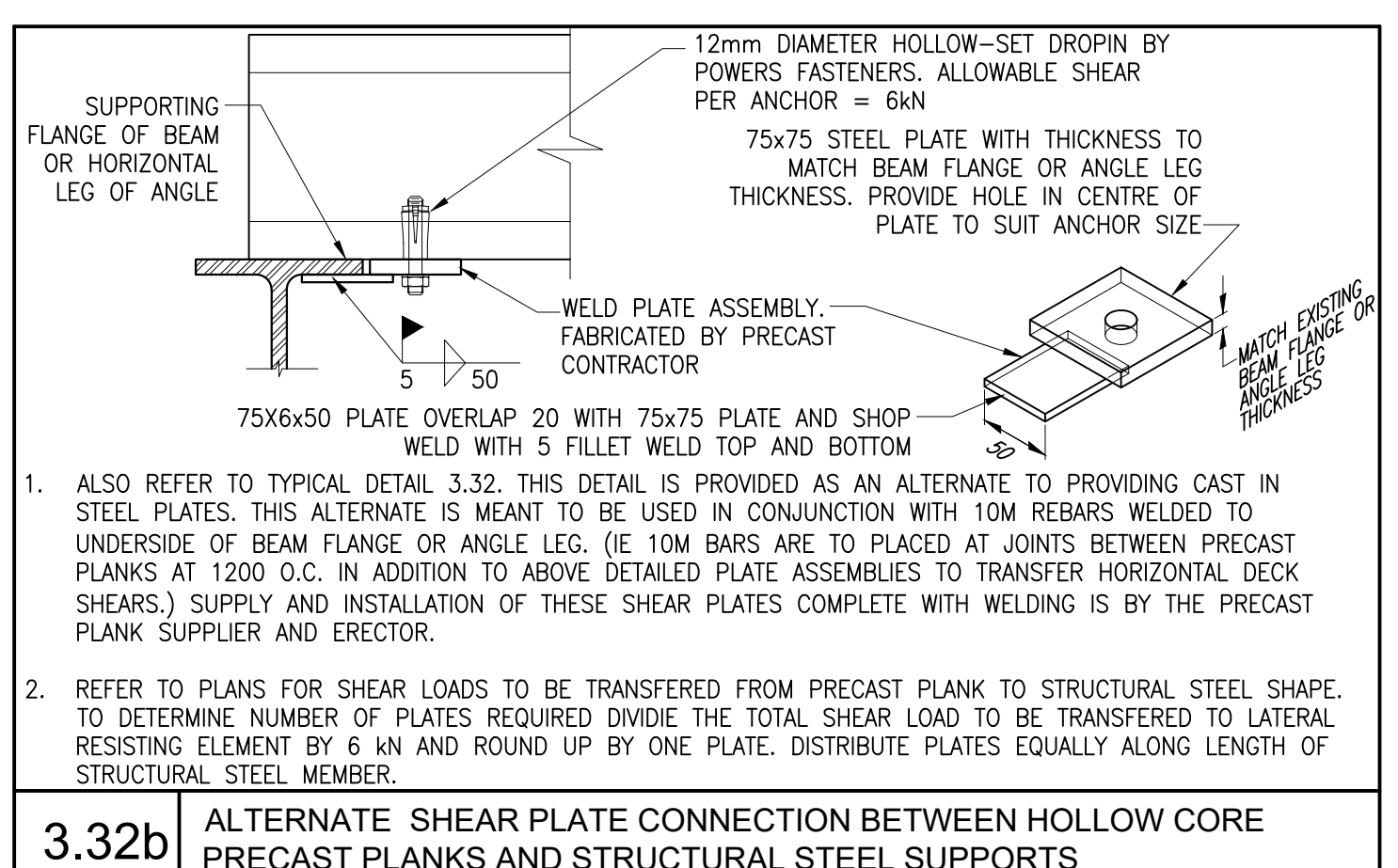
3.16 TYPICAL SLAB ON GRADE THICKENINGS



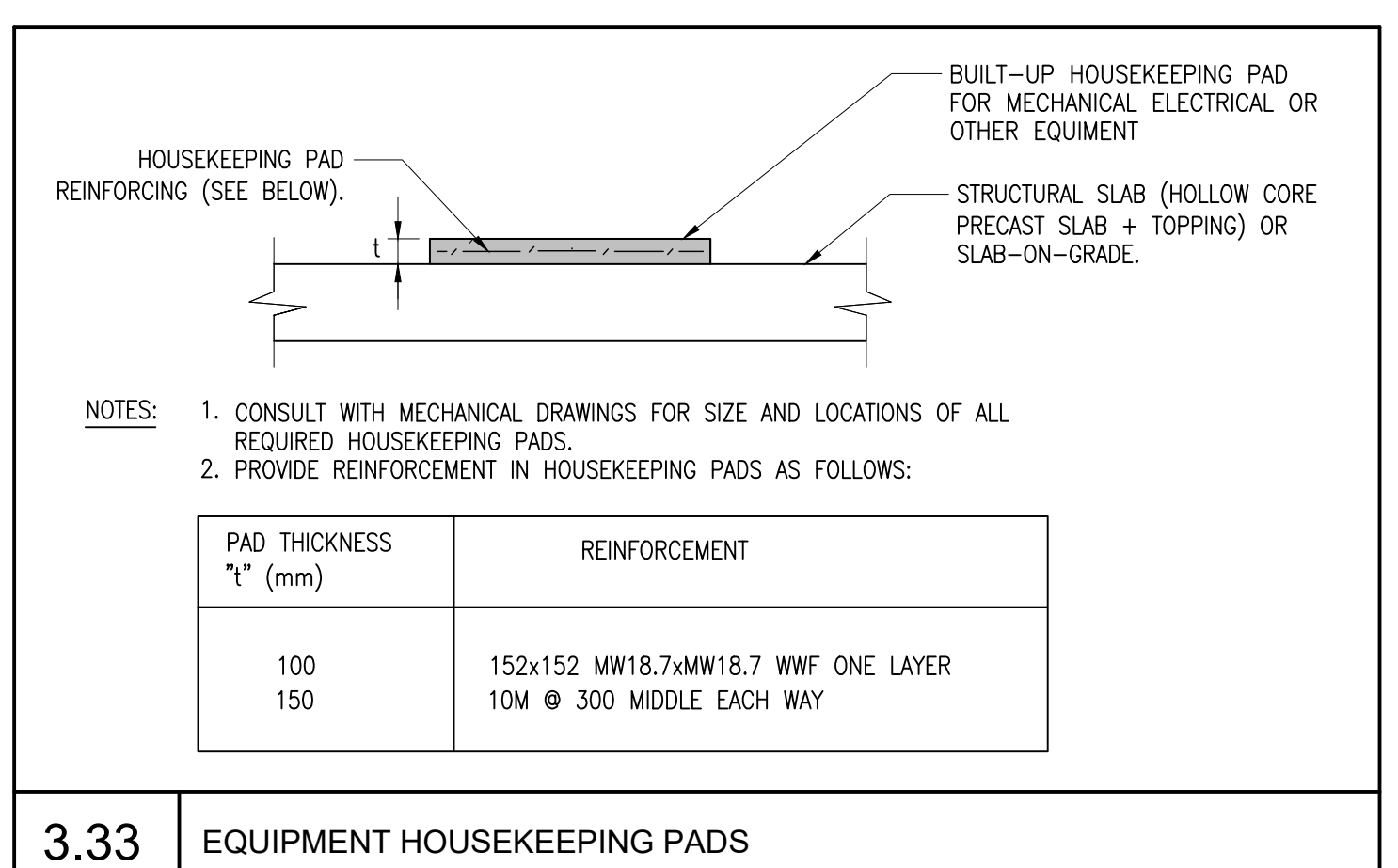
3.31 HOLLOW CORE PRECAST FLOOR PLANKS SUPPORTED ON CONCRETE BLOCK WALLS OR CAST-IN-PLACE CONCRETE (CONCRETE BLOCK WALLS SHOWN, CAST-IN-PLACE CONCRETE SIMILAR)



3.32 HOLLOW CORE PRECAST FLOOR PLANKS SUPPORTED ON STEEL BEAMS



3.32b ALTERNATE SHEAR PLATE CONNECTION BETWEEN HOLLOW CORE PRECAST PLANKS AND STRUCTURAL STEEL SUPPORTS



3.33 EQUIPMENT HOUSEKEEPING PADS

LEGEND

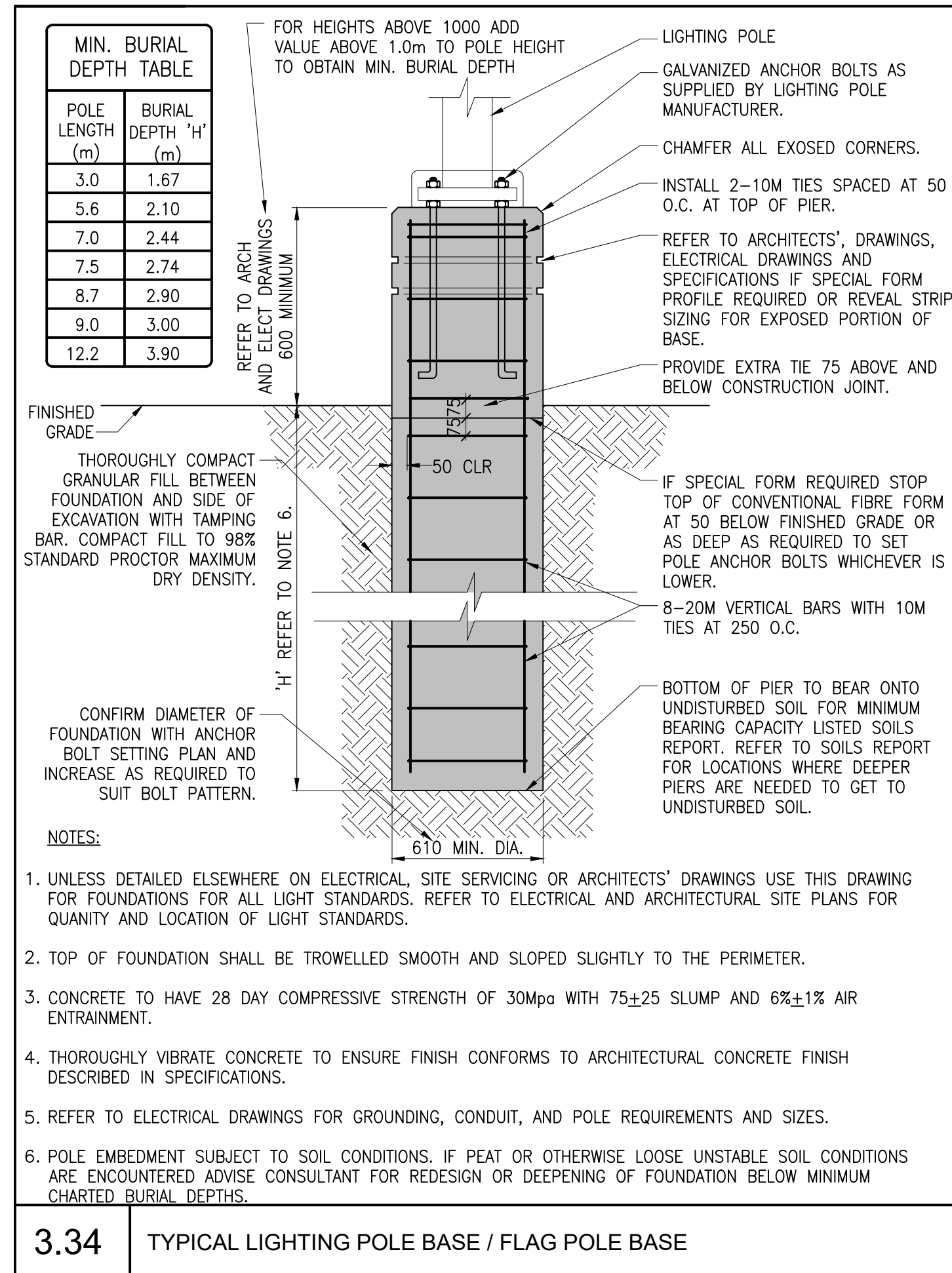
Date	Description	No.
JAN 17, 2020	ISSUED FOR 90% REVIEW	1
FEB 13, 2020	ISSUED FOR PERMIT AND TENDER	2

PROJECT TITLE

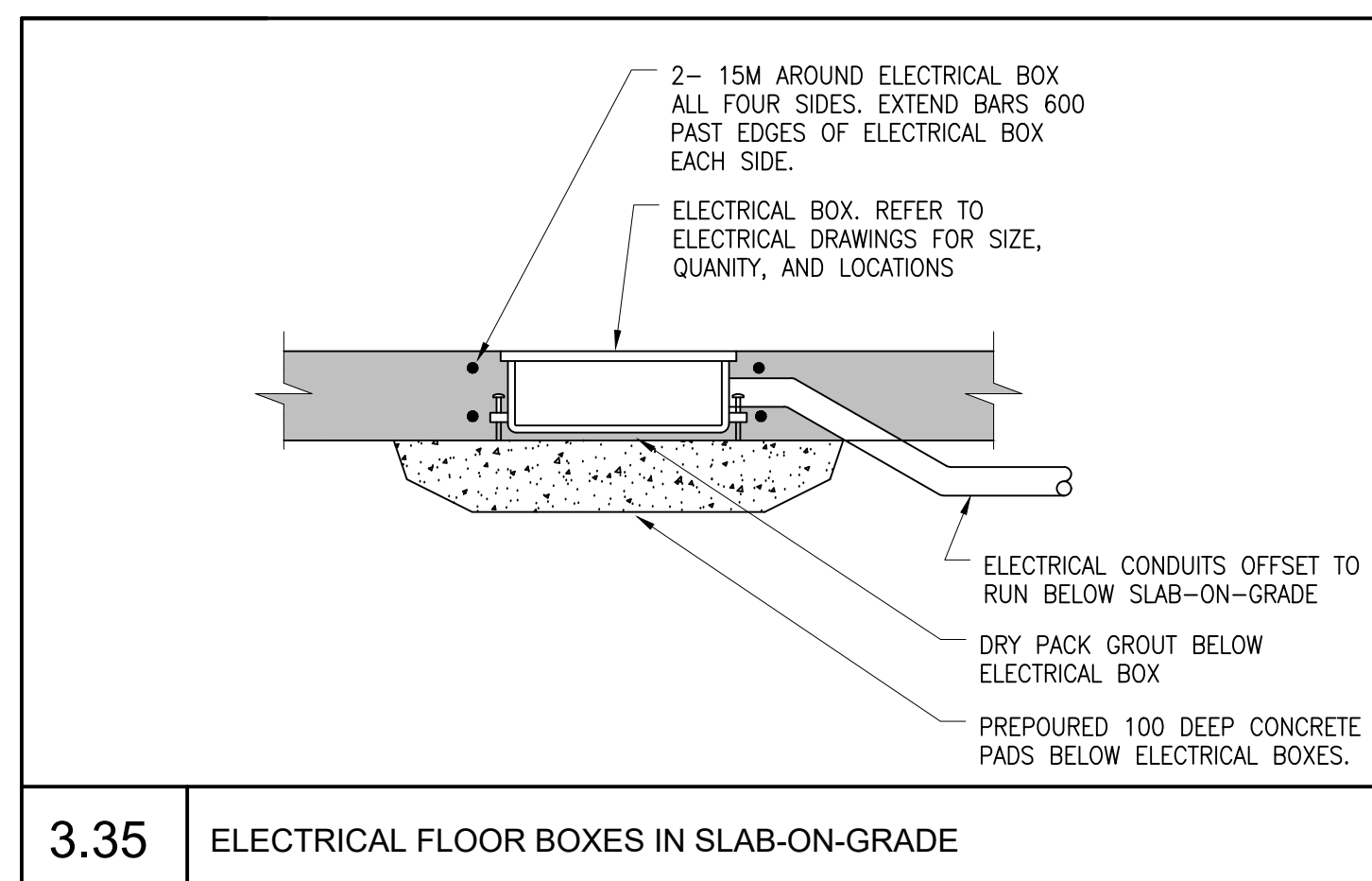
OUR LADY OF FATIMA PHASE 4 RENEWAL

DRAWING TITLE

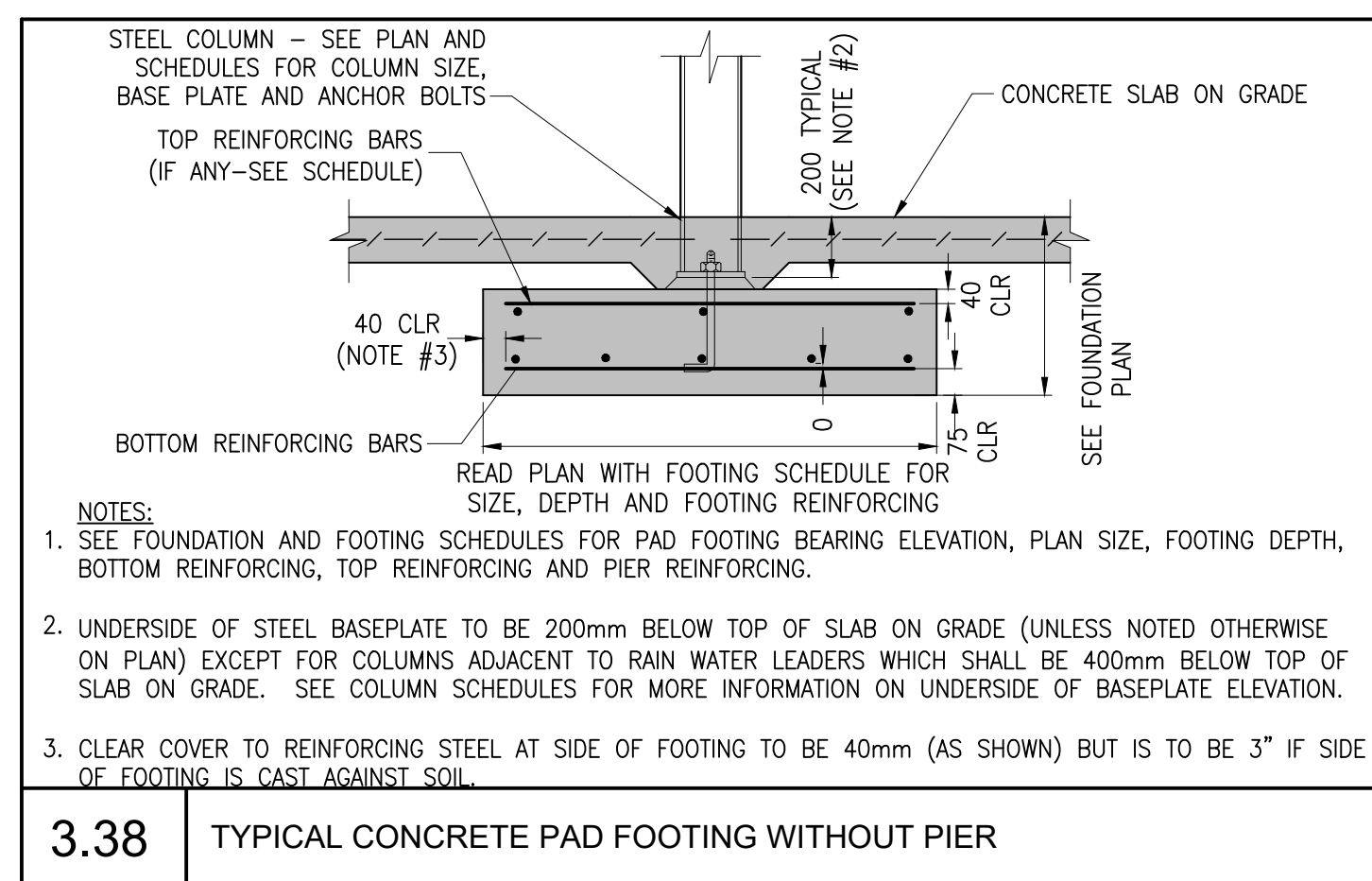
TYPICAL DETAILS



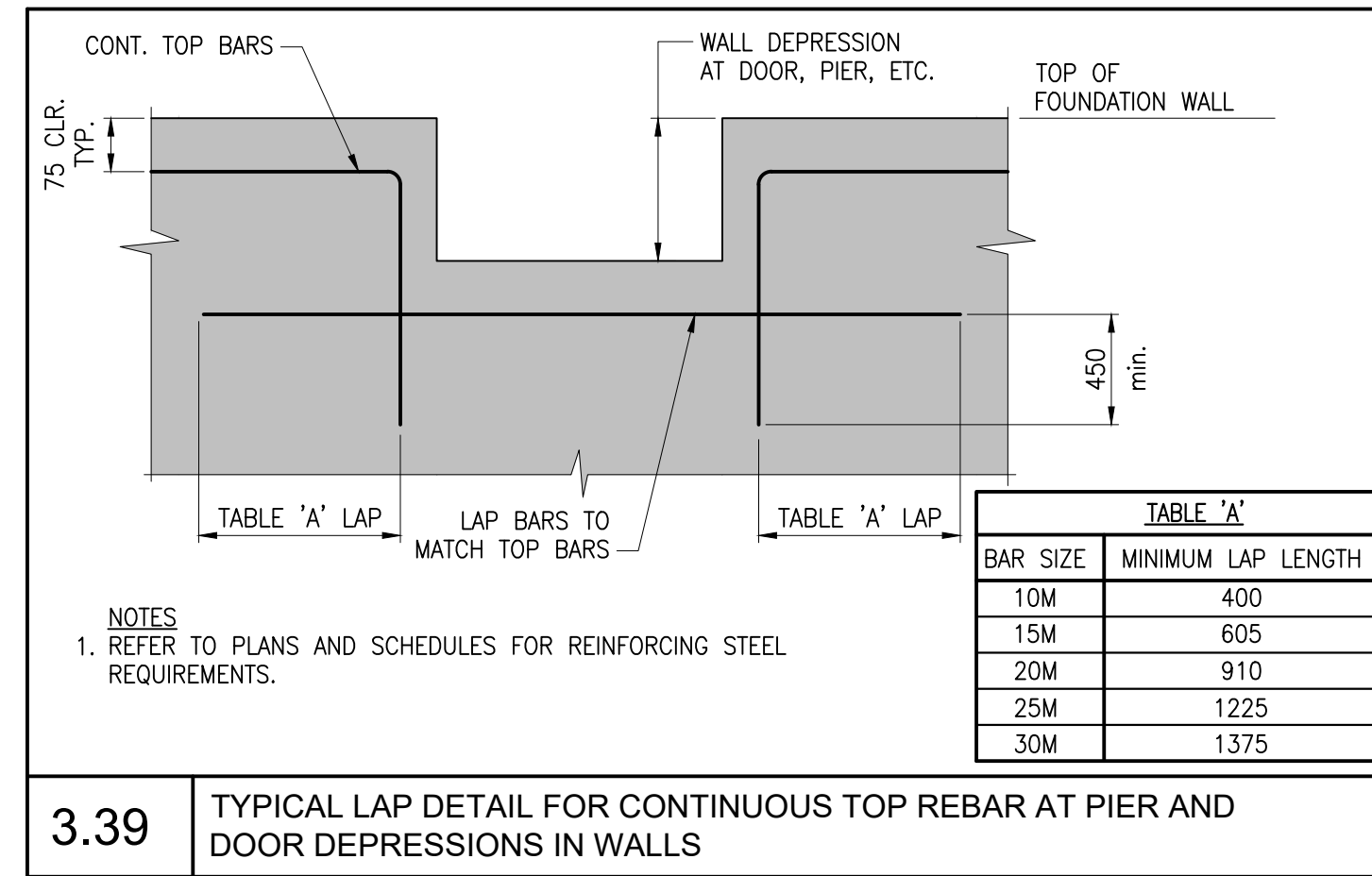
3.34 TYPICAL LIGHTING POLE BASE / FLAG POLE BASE



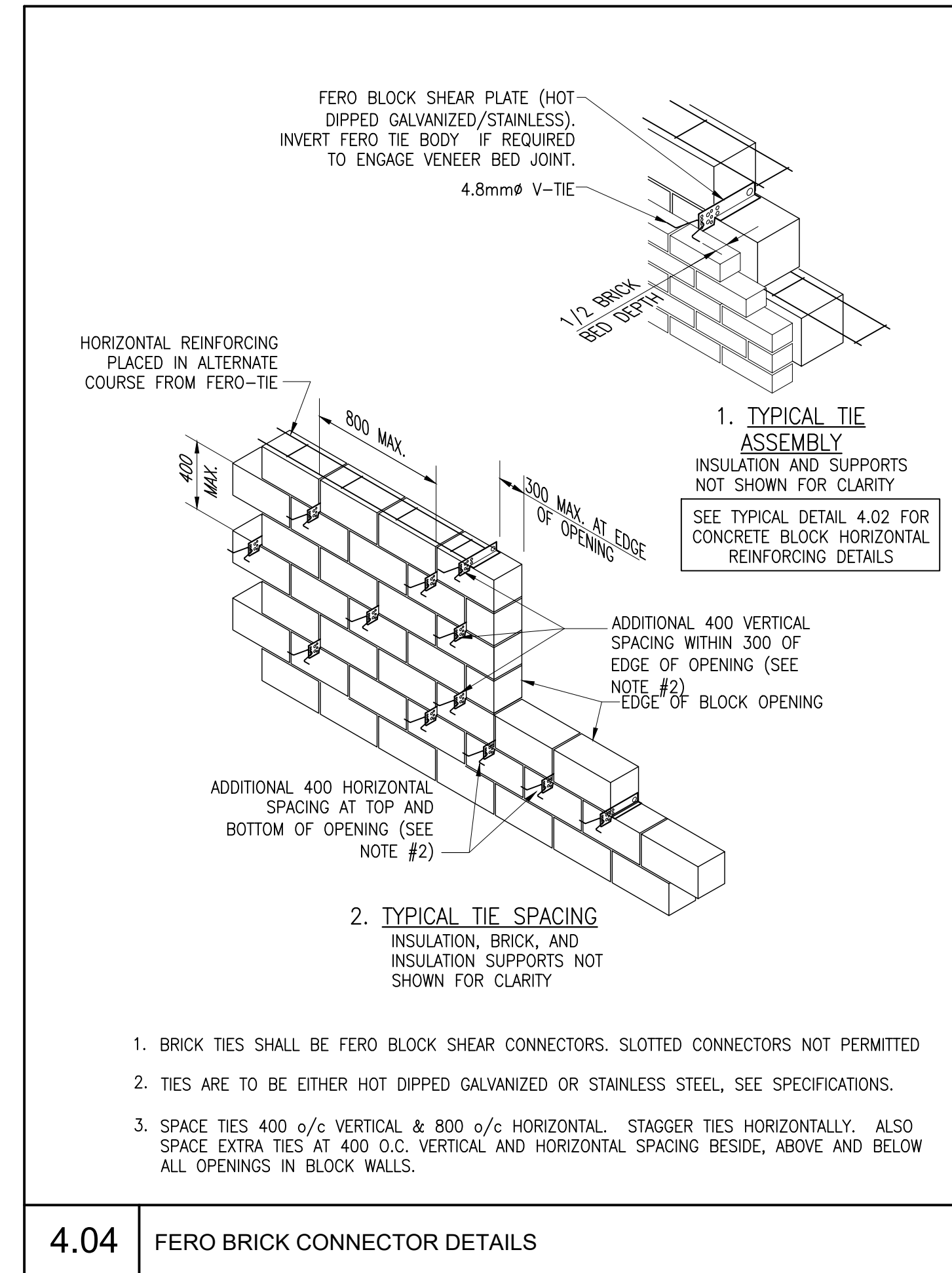
3.35 ELECTRICAL FLOOR BOXES IN SLAB-ON-GRADE



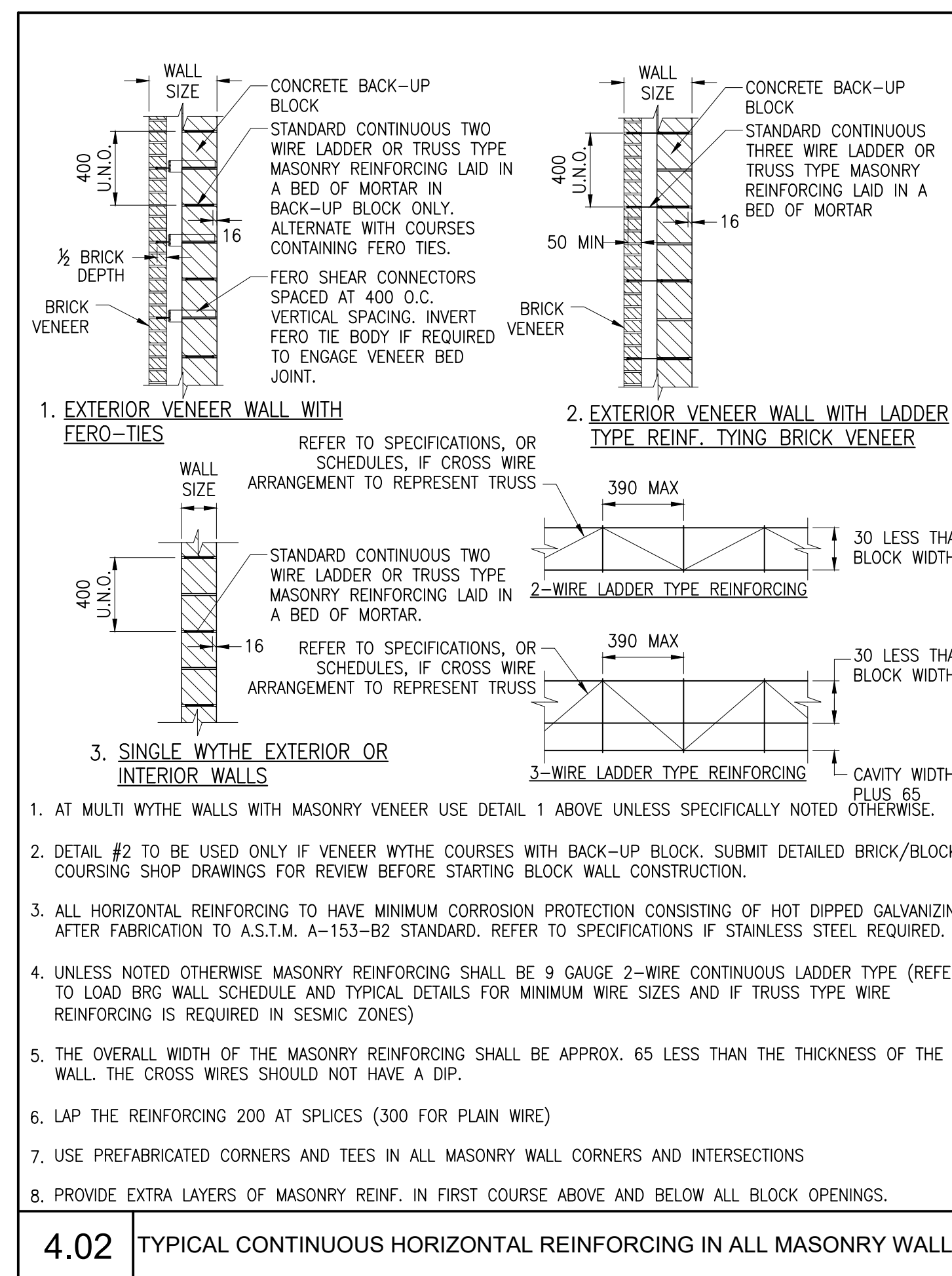
3.38 TYPICAL CONCRETE PAD FOOTING WITHOUT PIER



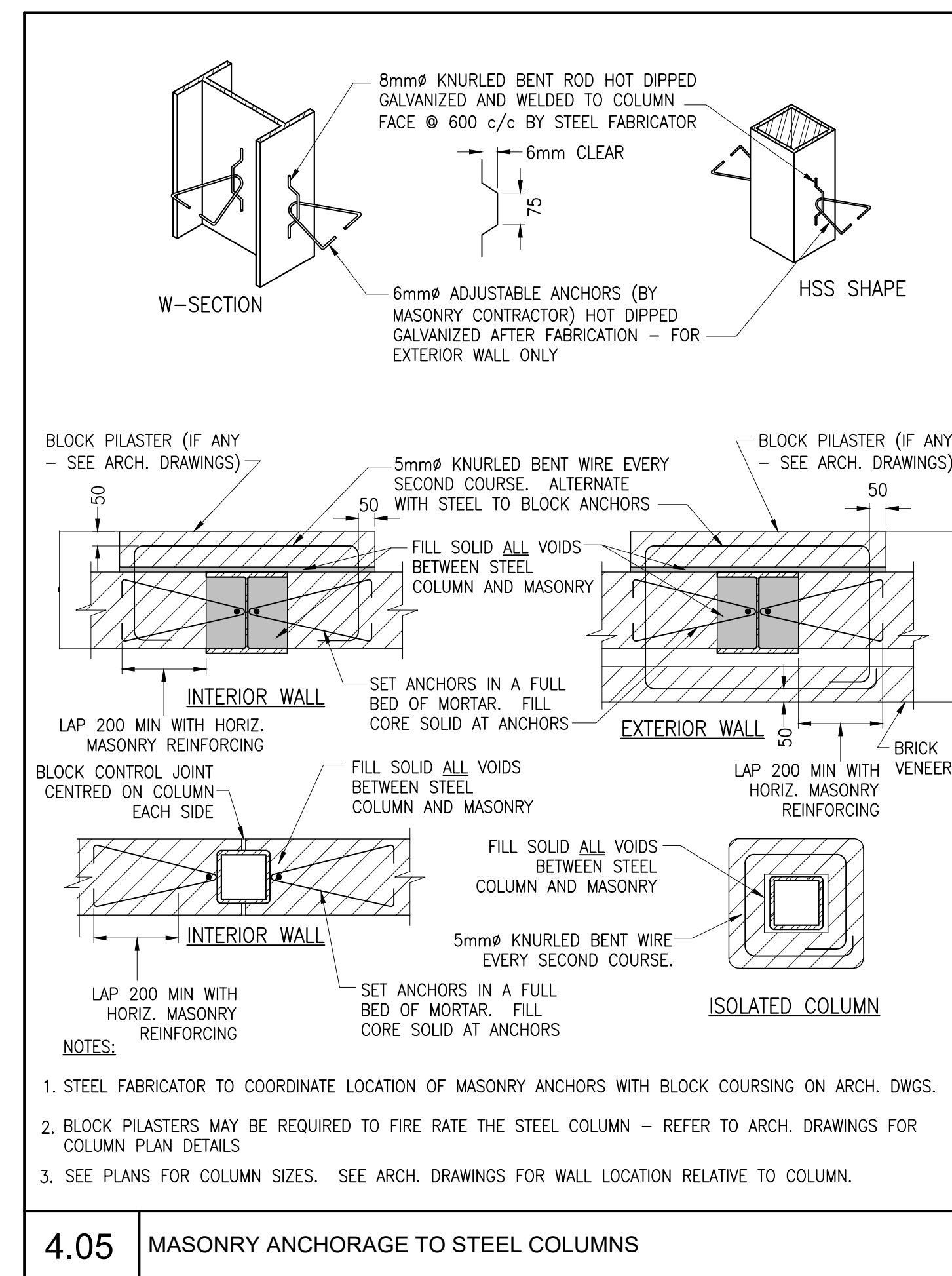
3.39 TYPICAL LAP DETAIL FOR CONTINUOUS TOP REBAR AT PIER AND DOOR DEPRESSIONS IN WALLS



4.04 FERRO BRICK CONNECTOR DETAILS

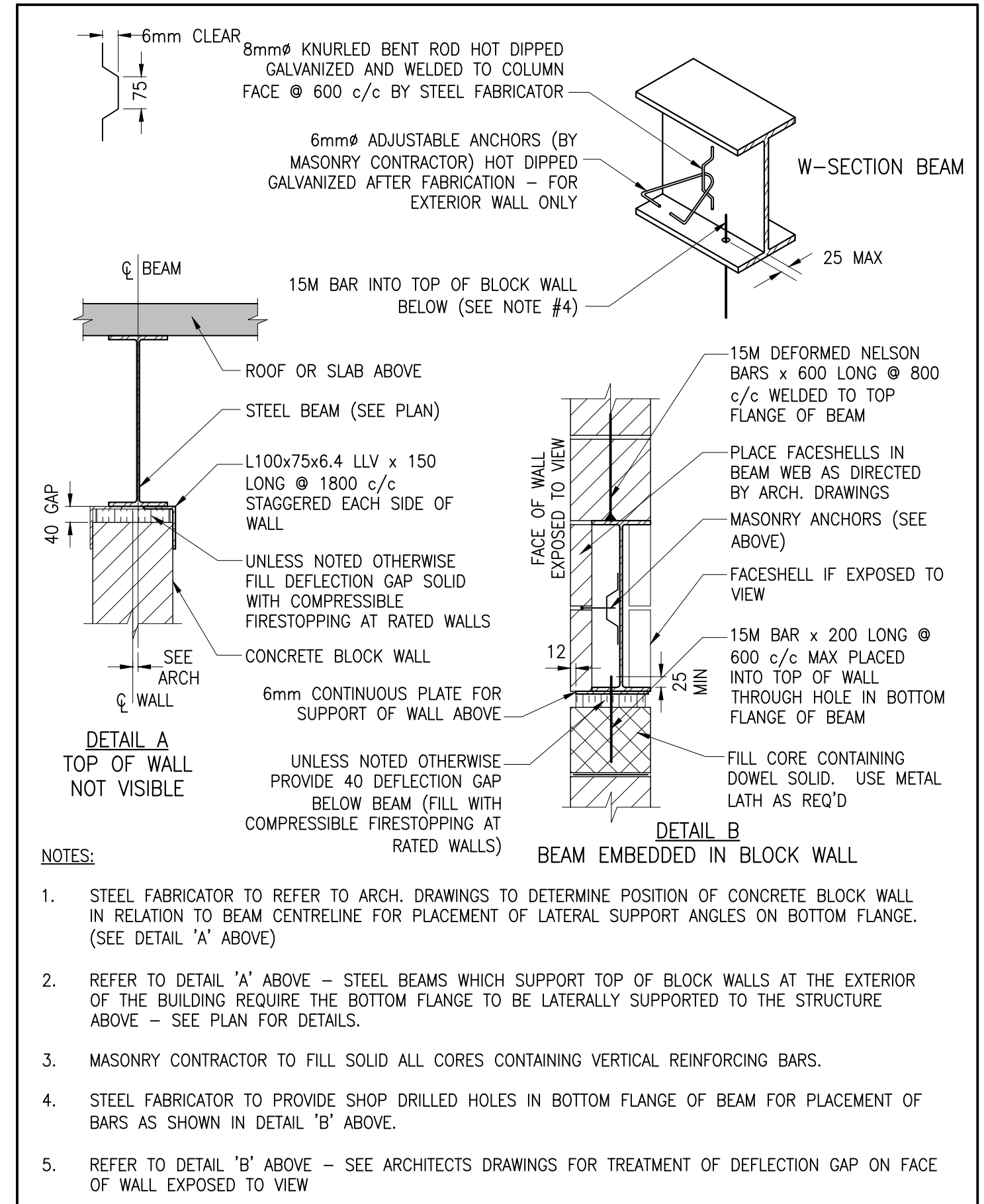


4.02 TYPICAL CONTINUOUS HORIZONTAL REINFORCING IN ALL MASONRY WALLS

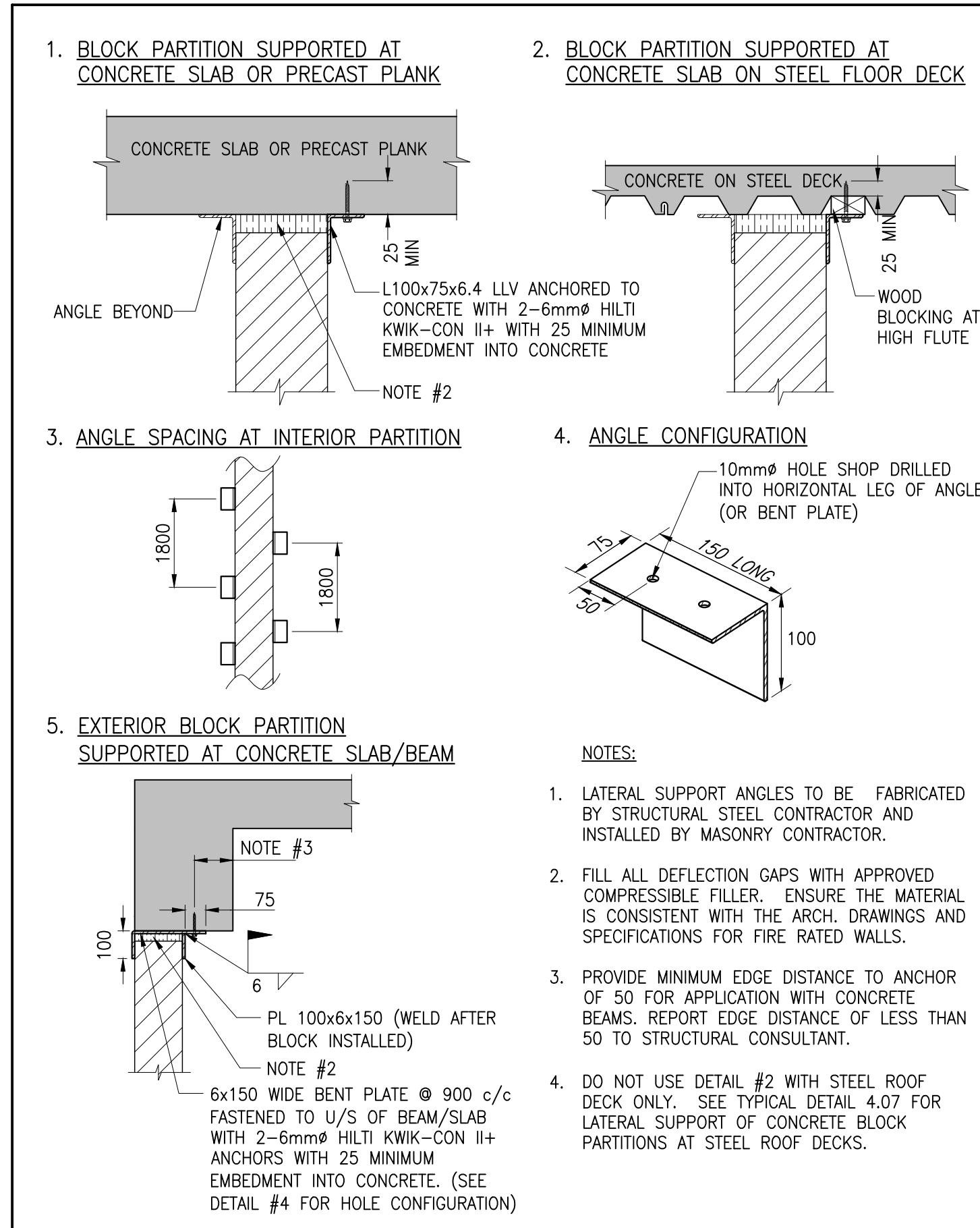


4.05 MASONRY ANCHORAGE TO STEEL COLUMNS

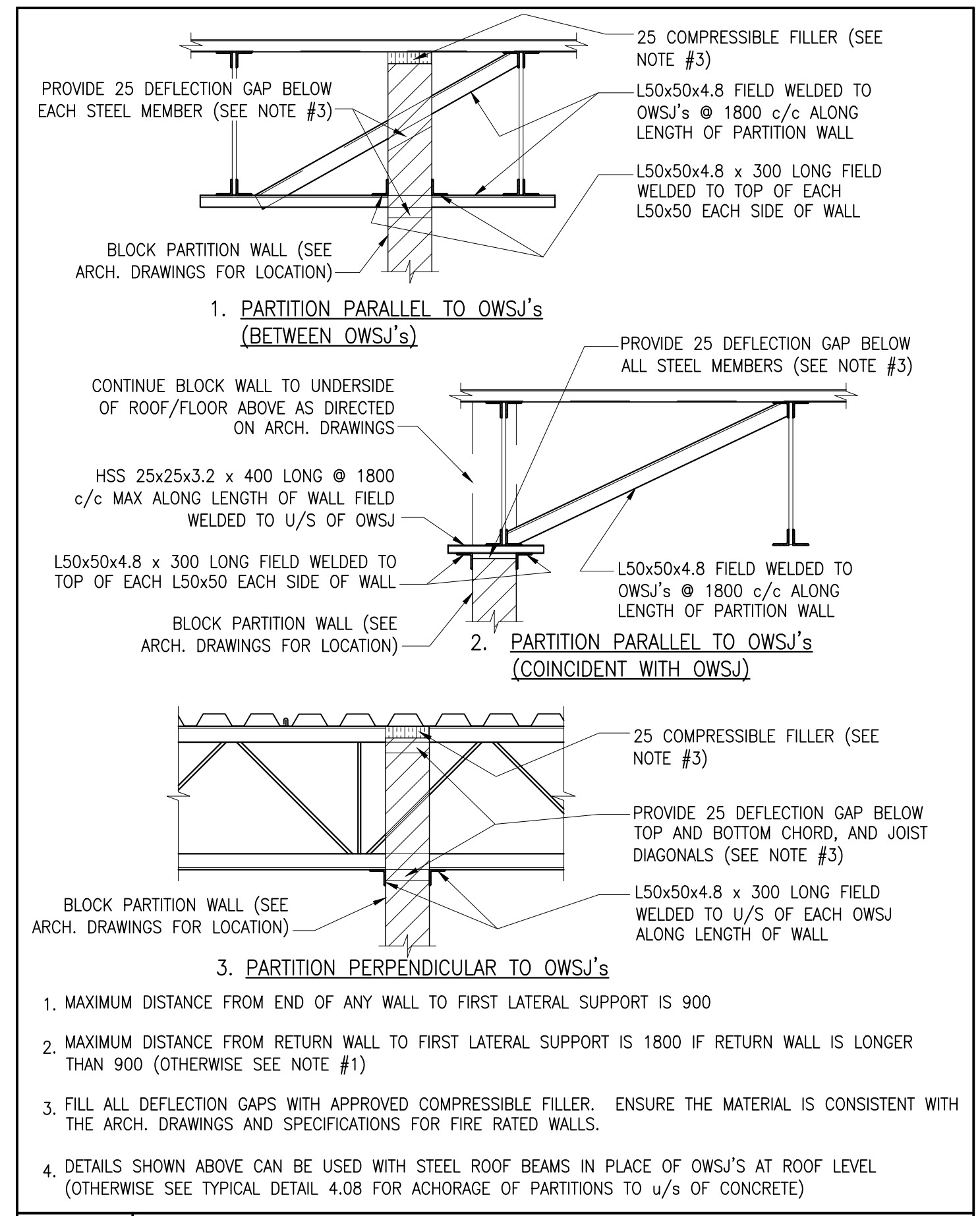
Date	Description	No.
JAN 17, 2020	ISSUED FOR 90% REVIEW	1
FEB 13, 2020	ISSUED FOR PERMIT AND TENDER	2



4.06 MASONRY ANCHORAGE TO STEEL BEAMS



4.08 LATERAL SUPPORT OF CONCRETE BLOCK PARTITION AT CONCRETE SLAB/DECK

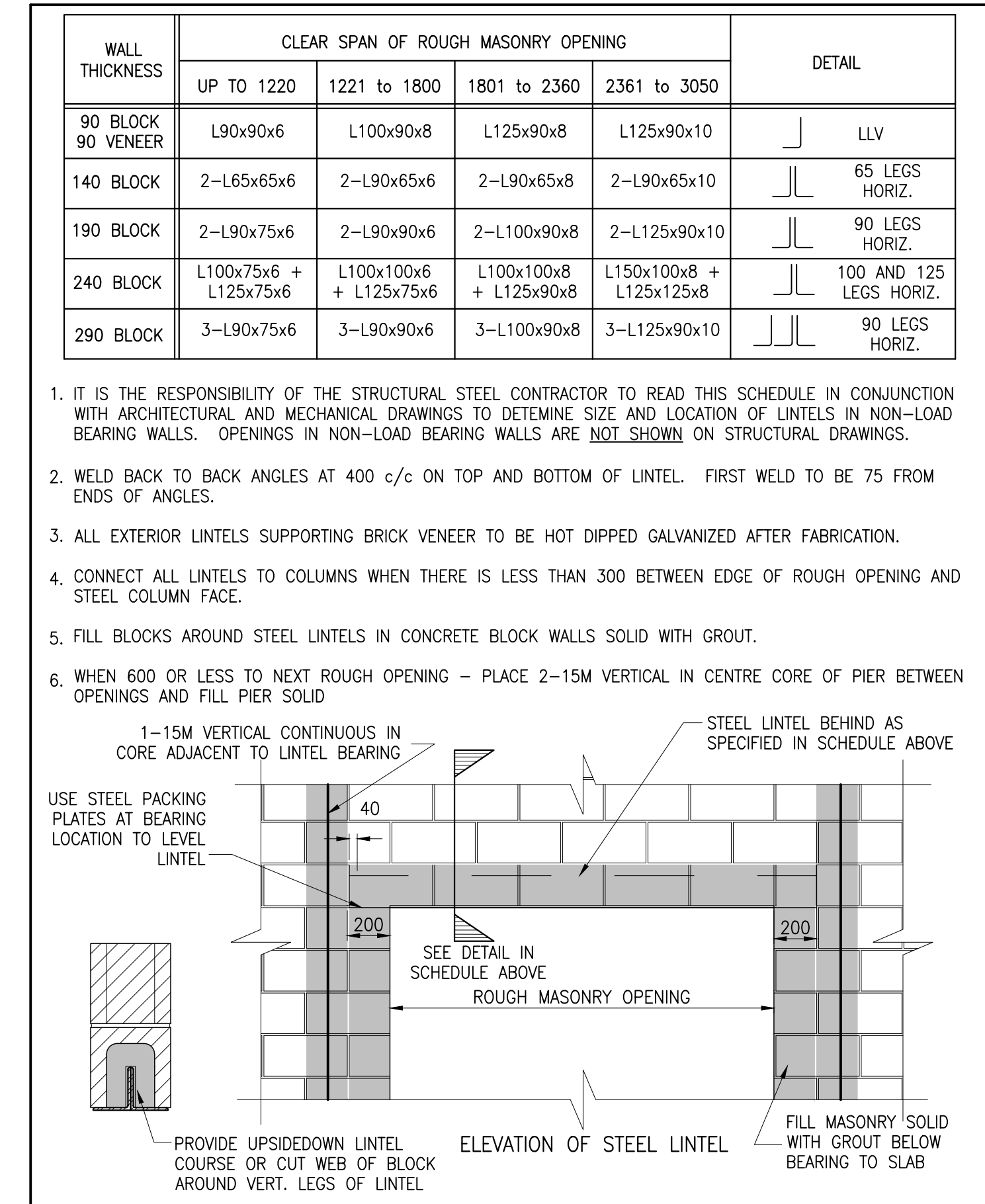


4.07 MASONRY PARTITION SUPPORT AT OWSJ

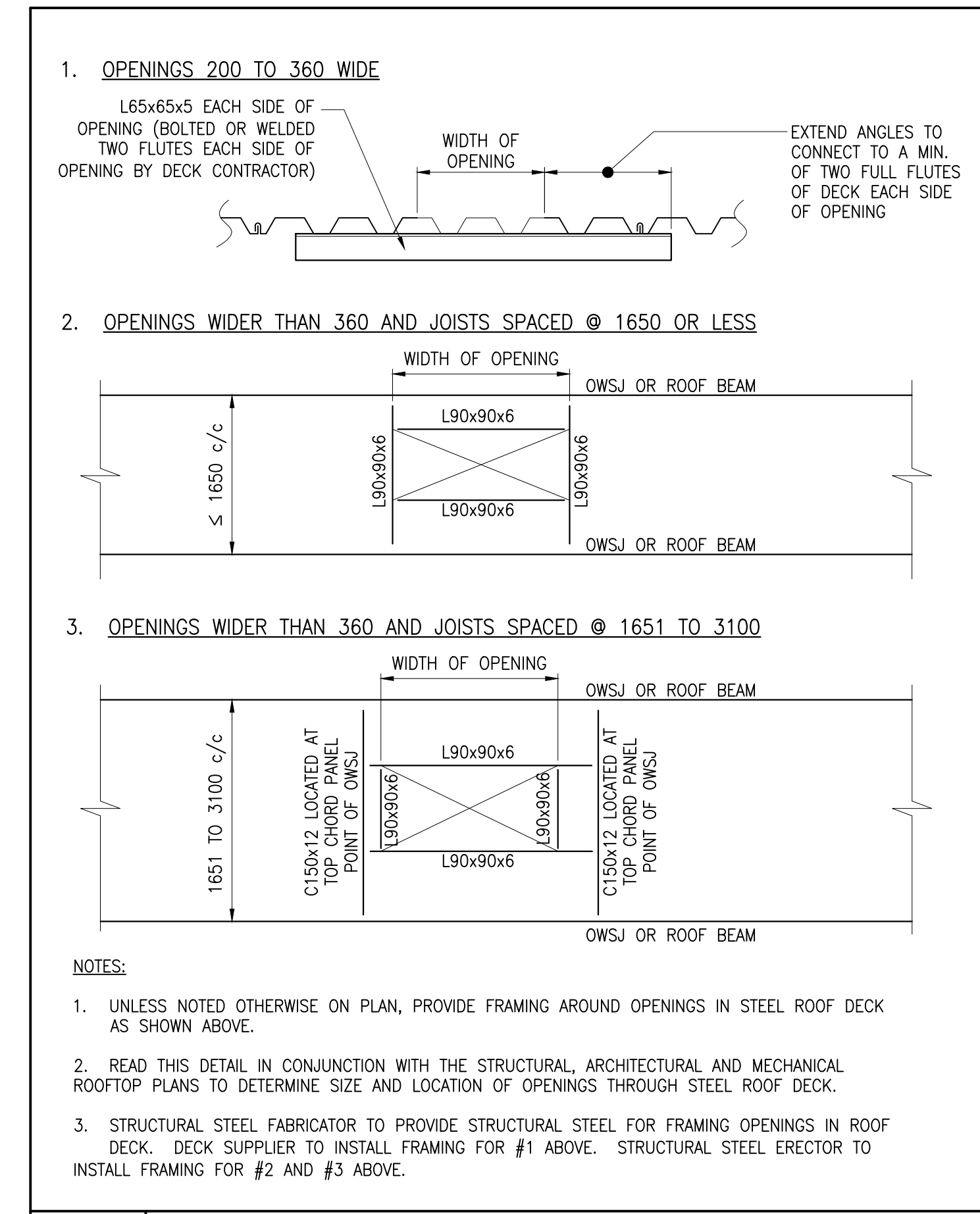
WALL THICKNESS	VERTICAL REINFORCING	HORIZONTAL REINFORCING
90 BLOCK	NIL	STANDARD LADDER STYLE WIRE REINFORCING WITH 3.66mm LONGITUDINAL WIRES AND 3.66mm CROSS WIRES SPACED AT 400 O.C. VERTICAL (EVERY OTHER COURSE)
140 BLOCK	10M @ 800 c/c HORIZ (EVERY 4th CORE)	STANDARD LADDER STYLE WIRE REINFORCING WITH 3.66mm LONGITUDINAL WIRES AND 3.66mm CROSS WIRES SPACED AT 400 O.C. VERTICAL (EVERY OTHER COURSE)
190 BLOCK	10M @ 1200 c/c HORIZ (EVERY 6th CORE)	STANDARD LADDER STYLE WIRE REINFORCING WITH 3.66mm LONGITUDINAL WIRES AND 3.66mm CROSS WIRES SPACED AT 400 O.C. VERTICAL (EVERY OTHER COURSE)
240 BLOCK	15M @ 1200 c/c HORIZ (EVERY 6th CORE)	STANDARD LADDER STYLE WIRE REINFORCING WITH 3.66mm LONGITUDINAL WIRES AND 3.66mm CROSS WIRES SPACED AT 400 O.C. VERTICAL (EVERY OTHER COURSE)
290 BLOCK	15M @ 1200 c/c HORIZ (EVERY 6th CORE)	STANDARD LADDER STYLE WIRE REINFORCING WITH 3.66mm LONGITUDINAL WIRES AND 3.66mm CROSS WIRES SPACED AT 400 O.C. VERTICAL (EVERY OTHER COURSE)

1. SEISMIC HAZARD INDEX = I<sub>s</sub>(F<sub>a</sub>)(S<sub>a</sub>) REFER TO SEISMIC DATA LISTED ON PLANS OR SCHEDULE DWGS FOR VALUES  
 2. NON-LOAD BEARING MASONRY WALLS THAT ARE SHOWN ON THE ARCHITECTURAL PLANS BUT ARE NOT SHOWN ON THE STRUCTURAL FRAMING PLANS. REINFORCE THESE WALLS ACCORDING TO THE SCHEDULE ABOVE. FOR MASONRY WALLS SHOWN ON THE STRUCTURAL DRAWINGS, READ THE FRAMING PLANS IN CONJUNCTION WITH THE LOAD BEARING MASONRY WALL SCHEDULE TO DETERMINE REINFORCING FOR THESE WALLS.  
 3. FULLY GROUT ALL CORES CONTAINING VERTICAL REINFORCING.  
 4. SEE TYPICAL DETAIL 4.02 FOR GALVANIZING REQUIREMENTS AND DETAILS RELATING TO PLACEMENT OF HORIZONTAL WIRE JOINT REINFORCING.  
 5. FOR VERTICAL REINFORCING BARS, LAP BARS 600mm MINIMUM AT BAR SPLICES OR PROVIDE MECHANICAL SPLICE TO DEVELOP 125% OF THE BAR STRENGTH IN TENSION  
 6. PROVIDE 1-15M VERTICAL FULL HEIGHT IN THE CORE ADJACENT TO BEARING POINT OF LINTELS OVER ALL ROUGH OPENINGS IN NON-LOAD BEARING WALLS (SEE TYPICAL DETAIL 4.01 AND/OR 5.01). THESE BARS ARE PLACED IN ADDITION TO THE VERTICAL BARS INDICATED IN THE SCHEDULE ABOVE.

4.10 REINFORCING FOR NON-LOAD BEARING RUNNING BOND BLOCK WALLS WHERE SEISMIC HAZARD INDEX IS GREATER THAN 0.35 BUT LESS THAN 0.75

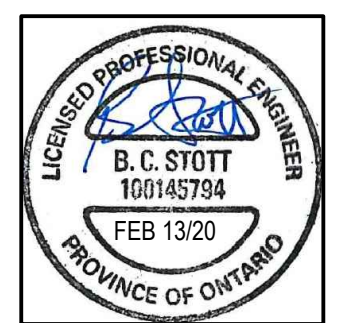


5.01 STRUCTURAL STEEL LINTELS FOR NON-LOAD BEARING CONCRETE BLOCK WALLS AND BRICK VENEER



5.02 OPENINGS IN STEEL ROOF DECK

NOTES



**VanBoxmeer & Stranges Ltd.**  
 STRUCTURAL ENGINEERS  
 458 Queens Ave, London, ON, Canada N6B 1X9  
 tel. (519) 433-4661  
 E-mail vbands@vbands.com

LEGEND

Date	Description	No.
JAN 17, 2020	ISSUED FOR 90% REVIEW	1
FEB 13, 2020	ISSUED FOR PERMIT AND TENDER	2

PROJECT TITLE	OUR LADY OF FATIMA PHASE 4 RENEWAL	
DRAWING TITLE	TYPICAL DETAILS	
DATE	DRAWN BY	DRAWING No.
11/27/2019	BCS	S403
SCALE	CHECKED BY	
As indicated	GVB	
PROJECT No.	19232	

**1. STEEL DECK ABUTTING CONCRETE BLOCK WALL**  
 10Mx600 LONG FULLY GROUTED INTO CONCRETE BLOCK WALL  
 FULLY GROUT REINFORCED CORE (USE METAL LATH BELOW AS REQUIRED)  
 150x9.5x150 ANCHOR PLATE @ 800 c/c ALONG WALL  
 10M WELDABLE BAR  
 1/2 WALL THICKNESS  
 FIELD WELD DECK TO CONTINUOUS ANGLE FOR DIAGRAM LOADS SHOWN ON ROOF PLAN  
 L65x65x6 CONTINUOUS SUPPORT ANGLE (CUT AT WALL CONTROL JOINTS)  
 MINIMUM 4 COURSES OF BLOCK ABOVE

**2. STEEL FLOOR DECK ON CONCRETE BLOCK WALL NOT SUBJECT TO UPLIFT LOADS**  
 CONCRETE BLOCK WALL (IF ANY) SEE PLAN. FILL LOW FLUTES OF STEEL DECK WITH GROUT BELOW WALL  
 NO UPLIFT  
 20 GROUT BED  
 OPTIONAL DETAIL TO WELD ANCHOR TO U/S OF PLATE ONLY WHEN BOLT DOES NOT INTERSECT LINTEL AND AS NOTED IN ITEM 6 BELOW.  
 WELD PLATE 75x6 CONT. c/w 20x125 LG STUDS @ 400 c/c.  
 CONTINUOUS LINTEL BLOCK FULLY FILLED WITH CONCRETE OR MORTAR.  
 PLATE 60x6x60 AND DOUBLE NUT OR 75 HOOK

**3. STEEL ROOF DECK ON CONCRETE BLOCK WALL WHERE UPLIFT LOADS ARE PRESENT**  
 BLOCK PARAPET (IF ANY) FILLED SOLID WITH GROUT. FILL LOW FLUTES OF STEEL DECK WITH GROUT BELOW PARAPET  
 UPLIFT  
 SLOT ROOF DECK AT EACH ANCHOR BOLT (TYPICAL)  
 WELD PLATE 75x6 CONT. CUT AT CONTROL JOINTS IN MASONRY.  
 12# A-BOLTS x 600 LONG @ 800 c/c. CUT A-BOLT AT INTERSECTION WITH STEEL LINTEL AND FULLY WELD TO LINTEL.  
 FULLY GROUT CORE WITH A BOLT. (USE METAL LATH BELOW AS REQUIRED)

**NOTES:**  
 1. USE DETAIL #2 FOR ALL DECK ON BLOCK WALL APPLICATIONS WHERE DECK IS NOT SUBJECTED TO UPLIFT UNLESS NOTED OTHERWISE ON PLAN. USE DETAIL #3 FOR ALL ROOF DECK ON BLOCK WALL APPLICATIONS. USE DETAIL #1 ONLY AS INDICATED ON PLANS AND DETAILS.  
 2. SEE PLAN FOR LOADS ON STEEL DECK. CONNECT DECK TO WELDPLATE (OR SUPPORT ANGLE) FOR DIAPHRAGM LOADS INDICATED ON PLAN  
 3. SEE ALSO TYPICAL DETAIL 5.04 FOR ANCHORAGE OF JOIST BRIDGING TO CONCRETE BLOCK WALLS.  
 4. DECK SUPPLIER/ERECTOR TO NOTCH DECK ON SITE AROUND TOP OF ANCHOR BOLTS AS SHOWN IN DETAIL #3.  
 5. MASONRY CONTRACTOR TO PROVIDE HOLE IN BOTTOM OF CONTINUOUS LINTEL BLOCK TO INSTALL CONTINUOUS VERTICAL WALL REINFORCING AS SPECIFIED ON PLAN FOR DETAIL #2.  
 6. DO NOT EXTEND PLATE MORE THAN 75 PAST ANCHOR POINT. IF BARS ARE PRE-WELDED TO U/S OF WELD PLATE FABRICATOR TO SUPPLY ADDITIONAL NUTTED ANCHORS TO ALLOW FIELD CUTTING OF PLATE TO LENGTH.

**5.03 STEEL DECK SUPPORTED AT LOAD BEARING CONCRETE BLOCK WALLS**

**1. FLOOR/ROOF JOIST BEARING ON STEEL BEAM**  
 PROVIDE L100x100x8 PERIMETER ANGLE WELDED TO EACH JOIST (UNLESS NOTED OTHERWISE ON PLAN)  
 STEEL BEAM (SEE PLAN)  
 EXTEND JOIST BOTTOM CHORD AND CONNECT TO BEAM (OR EXTENSION THEREOF) WHEN INDICATED AS 'TJ' ON PLAN

**2. JOIST PARALLEL TO BEAM**  
 SLOPE BRIDGING AS REQ'D  
 JOIST SPACING  
 TOP CHORD BRIDGING  
 PROVIDE CROSS BRIDGING THIS BAY IF SPECIFICALLY SHOWN ON STRUCTURAL DRAWINGS OR JOIST DRAWINGS

**3. DECK SPAN CHANGE AT BEAM SUPPORTING JOIST**  
 LIGHT GAUGE METAL CLOSURE CHANNEL (BY DECK SUPPLIER) CONTINUOUS AT DECK CHANGE.  
 PROVIDE HSS WITH DEPTH TO MATCH JOIST SHOE CONTINUOUS (OR BETWEEN JOISTS) TO SUPPORT STEEL ROOF DECK (4mm MIN WALL THICKNESS)

**4. STEEL PURLIN SUPPORTED AT LOWER GIRDER BEAM**  
 SHOE TYPE BEARING CONNECTION FOR STEEL BEAM SUPPORTED ON LOWER GIRDER. DESIGN FOR REACTION FORCE SHOWN ON PLAN AND/OR SCHEDULES  
 JOIST SHOE DEPTH  
 200 MIN  
 STEEL JOIST BEYOND (SEE NOTE #5)

**NOTES:**  
 1. READ THIS DETAIL IN CONJUNCTION WITH THE FLOOR/ROOF FRAMING PLANS.  
 2. STEEL DETAILER/FABRICATOR AND JOIST FABRICATOR TO COORDINATE JOIST SHOE DEPTH, ETC. FOR THE PRODUCTION OF SHOP DRAWINGS AND FABRICATION DETAILS.  
 3. ROOF JOISTS MAY BE SLOPED TO ROOF DRAINS (SEE ROOF FRAMING PLAN), PROVIDE JOIST SHOES THAT ALLOW A SLOPED JOIST WHILE THE SHOES BEAR EVENLY ON THE FLAT TOP FLANGE OF THE STEEL BEAM  
 4. SEE TYPICAL DETAIL 4.06 FOR STEEL BEAMS LOCATED WITHIN CONCRETE BLOCK WALLS  
 5. AS MUCH AS POSSIBLE, ENSURE THAT JOISTS (OR JOISTS AND STEEL PURLINS) BEARING ON OPPOSITE SIDES OF A STEEL GIRDER BEAM DO NOT HAVE CONCURRENT BEARING POINTS

**5.05 STEEL JOISTS SUPPORTED ON STEEL BEAMS**

**CONCRETE SLAB REINFORCING NOT SHOWN FOR CLARITY**

**NOTES:**  
 1. 1.22mm (18 GA.) CONTINUOUS SCREED c/w 1.22mm (18 GA.) STRAPS AT 750 o/c SUPPLIED & INSTALLED BY DECK CONTRACTOR. TYPICAL AT DECK EDGES AT OPENINGS AND PERIMETER OF SLAB (UNLESS BENT PLATE OR ANGLE IS SHOWN ON PLAN)  
 2. DEPTH OF SCREED TO MATCH FLOOR THICKNESS. WHERE BEAM SUPPORTS OWSJ, OR BEAMS BEARING ON TOP OF PERIMETER BEAM DEPTH OF SCREED INCREASED TO FLOOR THICKNESS + DEPTH OF JOIST OR BEAM SHOE.  
 3. EDGE OF SLAB FROM CENTRELINE OF BEAM AS SHOWN ON PLAN AND/OR SECTIONS (SEE ALSO ARCHITECTURAL DRAWINGS). LENGTH OF BOTTOM HORIZONTAL LEG OF SCREED TO SUIT THIS DIMENSION.  
 4. IN LOCATIONS WHERE EXISTING FINISHES BELOW MAY BE DAMAGED BY CEMENT PASTE ESCAPING PAST METAL FORMS EXTRA CARE IS REQUIRED TO ENSURE DECK CONTRACTOR DOES NOT LEAVE GAPS WIDER THAN 5mm WIDE. GENERAL CONTRACTOR TO FILL GAPS UP TO 5mm WITH SEALANT.

**5.08 TYPICAL EDGE OF CONCRETE SLAB ON STEEL DECK AT PERIMETER AND SLAB OPENINGS**

**1. FLOOR JOIST BEARING ON CONCRETE BLOCK WALL**  
 PROVIDE L100x100x8 PERIMETER ANGLE WELDED TO EACH JOIST (UNLESS NOTED OTHERWISE ON PLAN)  
 BEARING PLATE (SEE PLAN FOR SIZE). PROVIDE 20# x 300 LONG A. BOLT WITH 50 HOOK UNLESS NOTED OTHERWISE ON PLAN  
 FULLY GROUT CORE WITH A. BOLT. (USE METAL LATH BELOW AS REQUIRED)  
 EXTEND JOIST BOTTOM CHORD AND CONNECT TO WALL PLATE WHEN INDICATED AS 'TJ' ON PLAN (SEE DETAIL 5.03 (DETAIL #1) FOR WALL PLATE DETAILS)

**2. ROOF JOIST BEARING ON CONCRETE BLOCK WALL**  
 BLOCK PARAPET (IF ANY) FILLED SOLID WITH GROUT. SEE ARCH. DWGS.  
 SLOPE JOIST AS SHOWN ON PLAN  
 PROVIDE JOIST SHOE THAT ALLOWS HORIZONTAL BEARING ON PLATE (SEE NOTE #7)  
 PROVIDE 15M (FULL HEIGHT) IN SAME CORE AS A. BOLT IN ADDITION TO VERTICAL BARS SPECIFIED ON PLAN

**3. JOIST PARALLEL TO CONCRETE BLOCK WALL**  
 SEE TYPICAL DETAIL 5.03 FOR DECK SUPPORT AT WALL  
 250x10x100 PLATE ANCHORED TO WALL WITH 2-10# HILTI HIT HY-20 ANCHORS. ENSURE PLATE NOT BELOW CEILING (BY JOIST FABRICATOR)  
 JOIST SPACING  
 TOP CHORD BRIDGING  
 PROVIDE CROSS BRIDGING THIS BAY

**NOTES:**  
 1. READ THIS DETAIL IN CONJUNCTION WITH ROOF PLAN AND BEARING PLATE SCHEDULES.  
 2. ROOF JOIST IS CLASSIFIED AS ANY JOIST SUBJECTED TO WIND UPLIFT LOADS.  
 3. 15M REINFORCING BAR SHOWN IN WALL OF DETAIL #2 IS IN ADDITION TO THE VERTICAL WALL REINFORCING INDICATED ON PLAN. GENERAL CONTRACTOR TO LAYOUT LOCATION OF ALL ROOF JOISTS FOR MASONRY CONTRACTOR FOR CORRECT PLACEMENT OF THIS EXTRA 15M BAR.  
 4. MASONRY CONTRACTOR TO SET ALL JOIST BASEPLATES LEVEL IN A BED OF MORTAR. FILL CORES BELOW BEARING PLATE SOLID AS SHOWN IN DETAILS.  
 5. PROVIDE PERMANENT CONTINUOUS BRIDGING FOR TOP AND BOTTOM CHORDS OF ALL JOISTS IN ACCORDANCE WITH CAN/CSA S16.1.  
 6. OFFSET JOIST BEARING PLATE AND ANY CONNECTION PLATES FROM VERTICAL WALL CONTROL JOINT.  
 7. JOIST SHOE TO BE FABRICATED SUCH THAT THERE IS EVEN BEARING ON THE FLAT BEARING PLATE BELOW WHILE THE JOIST FOLLOWS THE INDICATED SLOPES.

**5.04 STEEL JOISTS SUPPORTED ON CONCRETE BLOCK WALLS**

**1. LENGTH OF BEARING OF JOIST SHOE ON SUPPORT ANGLE (65 MINIMUM - CSA/CAN S16.1 16.6.12.3).  
 2. EFFECTIVE ECCENTRICITY FOR DESIGN OF SUPPORT ANGLE TO COLUMN CONNECTION = (0.5xNOTE #1 + 12) MAXIMUM**

**3. CISC TABLES FOR SEATED BEAM SHEAR CONNECTIONS ARE NOT APPLICABLE FOR THE DESIGN OF THE SUPPORT ANGLE CONNECTION. THE ECCENTRICITIES USED IN THESE TABLES EMPLOY VALUES MUCH SMALLER THAN CALCULATED IN NOTE #2.**

**4. DESIGN FOR TOP CHORD OF JOIST AT END PANEL TO ACCOUNT FOR ECCENTRICITY BETWEEN INTERSECTION OF NEUTRAL AXES (N.A.) OF TOP CHORD & WEB MEMBER AND THE LOCATION OF THE JOIST REACTION ACTING AT THE CENTRE OF BEARING (SEE CSA/CAN S16.1-16.6.12.4)**

**5. EFFECTIVE ECCENTRICITY FOR SUPPORT ANGLE TO COLUMN CONNECTION IS NOT TO BE EXCEEDED AS SPECIFIED IN NOTE #2. STRUCTURAL CONSULTANT MUST BE NOTIFIED IF THIS DIMENSION CANNOT BE MAINTAINED.**

**5.06 OPEN WEB STEEL JOIST SUPPORTED AT STEEL COLUMN**

**1. CONNECTION TO STEEL STUD**  
 SHEET METAL SCREWS INSTALLED THROUGH PREPUNCTURED PILOT HOLES. SEE NOTE 2 BELOW.  
 METAL STUDS  
 BAYONET STYLE FERRO STUD SHEAR CONNECTOR SUPPLIED BY STEEL STUD CONTRACTOR. AT EACH STUD OR FRAMING MEMBER  
 ADJUSTABLE WIRE TIE (FULL 55mm HIGH ADJUSTMENT) AT EACH BAYONET TIE.

**2. TYPICAL WALL CONSTRUCTION**  
 INSULATION SUPPORT  
 METAL STUDS  
 SHEET METAL SCREWS INSTALLED  
 BAYONET STYLE BRICK CONNECTOR  
 4.8mm (HOT DIP GALVANIZED/STAINLESS) WIRE TIE SUPPLIED BY STEEL STUD CONTRACTOR FOR INSTALLATION BY MASONRY CONTRACTOR  
 AIRSPACE PLUS INSULATION - SEE ARCH. DRAWINGS FOR SIZE. ALSO SEE NOTE 2. BELOW.  
 40 TYPICAL

**ANCHOR SPACING TABLE**

ANCHOR SPACING TABLE	
STUD/FRAMING HORIZONTAL SPACING	MAXIMUM VERTICAL ANCHOR SPACING
FRAMING AT 600 O.C.	400mm O.C.
FRAMING AT 400 O.C.	600mm O.C.
FRAMING AT 300 O.C.	800mm O.C.
AT JAMB LOCATIONS OF ALL WALL OPENINGS	300mm O.C.

**NOTES:**  
 1. BAYONET TIES TO BE FERRO STUD SHEAR CONNECTORS (SLOTTED NOT PERMITTED) COMPLETE WITH 4.8mm DIAMETER (HOT DIPPED GALVANIZED/STAINLESS) V-ANCHOR AND INSULATION SUPPORT. NOTE THAT INSULATION SUPPORT IS TO BE PLACED OVER AIR BARRIER SYSTEM.  
 2. MINIMUM GAUGE OF TIE SYSTEM TO BE 16 GAUGE MATERIAL FOR CAVITIES UP TO 127mm WIDE. ANCHOR SUPPLIER TO DESIGN TIE WITH INCREASED THICKNESS FOR WIDER CAVITIES. DESIGN OF ANCHOR TO ASSUME MAXIMUM 0.76kN UNFACTORED ANCHOR LOAD WITH NO LATERAL SUPPORT OF PLATE SUPPLIED BY INSULATION OR EXTERIOR SHEATHING.  
 3. ALL TIE COMPONENTS ARE TO BE HAVE A MINIMUM CORROSION PROTECTION SUPPLIED (HOT DIP GALVANIZING/STAINLESS) AFTER FABRICATION. IF PLATE SYSTEM IS TO BE GALVANIZED, FOLLOW CSA-CAN3-A370 AND ASTM A123 REQUIREMENT OF 401 g/m². V TIE GALVANIZING TO BE IN ACCORDANCE TO CSA CAN-A370 AND ASTM A153 REQUIREMENT OF 458 g/m². REFER TO SPECIFICATIONS IF STAINLESS STEEL REQUIREMENT SUPERSCEEDS MINIMUM GALVANIZED COATING REQUIREMENT.  
 4. STEEL STUD CONTRACTOR IS TO CONSTRUCT A STOREY ROD OF MASONRY COURSING FOR ALL MASONRY VENEER WALLS TO ENSURE ANCHORS ARE INSTALLED AT THE CENTRE OF ALL MASONRY JOINTS TO RECEIVE A MASONRY TIE. IF MASONRY UNIT LAYOUT DOES NOT ALLOW PLACEMENT OF ANCHORS AT THE MAXIMUM VERTICAL SPACING SHOWN IN ABOVE TABLE, EXTRA TIES MUST BE INSTALLED ABOVE AND BELOW EACH MASONRY UNIT AT SMALLER VERTICAL SPACING SUCH THAT THE MAX VERTICAL SPACING IS NOT EXCEEDED.

**5.09 ADJUSTABLE BAYONET STYLE MASONRY VENEER ANCHORS AT METAL STUD WALLS**

**NOTES**

**5.03 STEEL DECK SUPPORTED AT LOAD BEARING CONCRETE BLOCK WALLS**

**VanBoxmeer & Stranges Ltd. STRUCTURAL ENGINEERS**  
 458 Queens Ave. London, ON, Canada N6B 1X9  
 Tel. (519) 433-4661  
 E-mail vbands@vbands.com

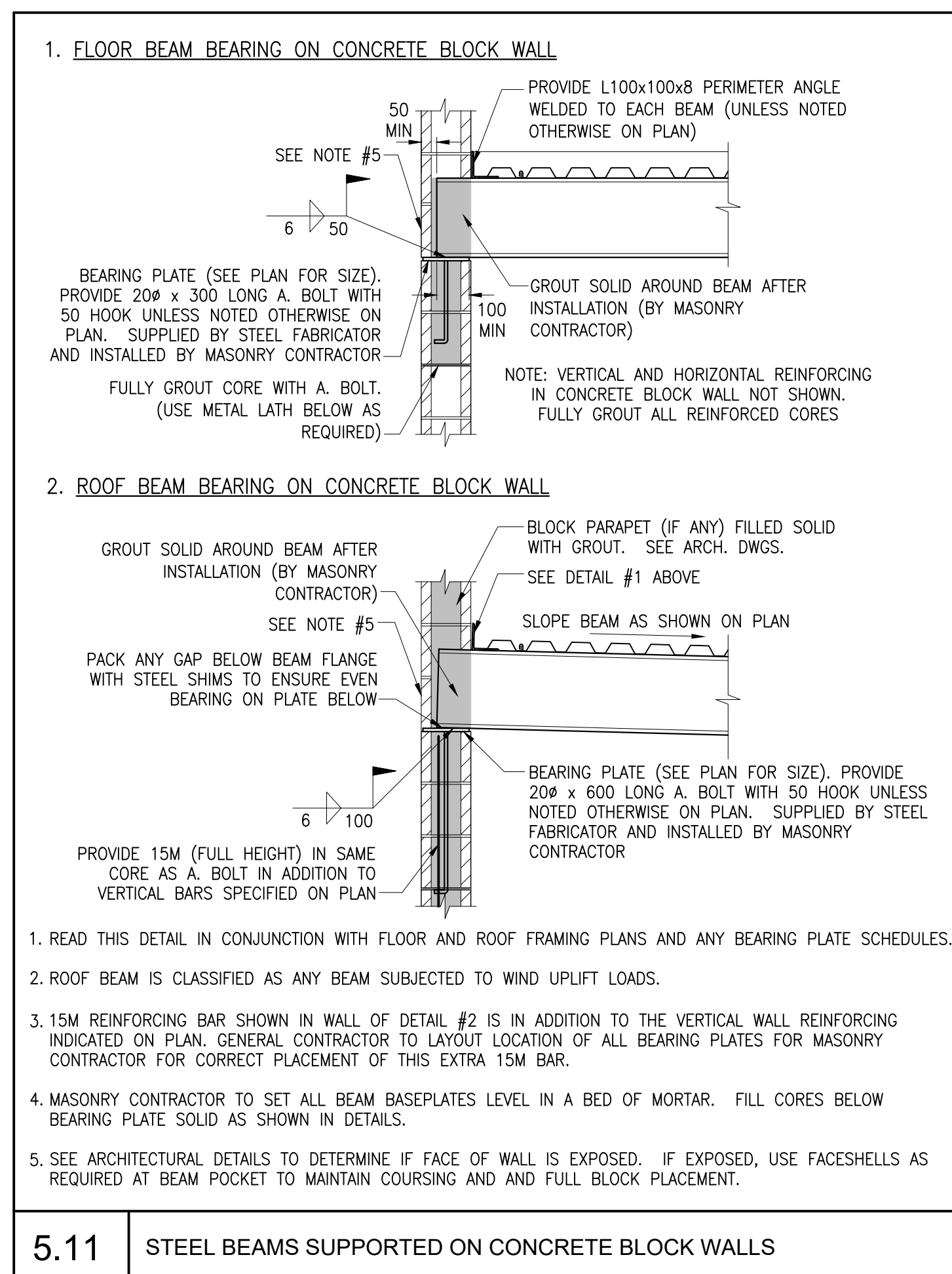
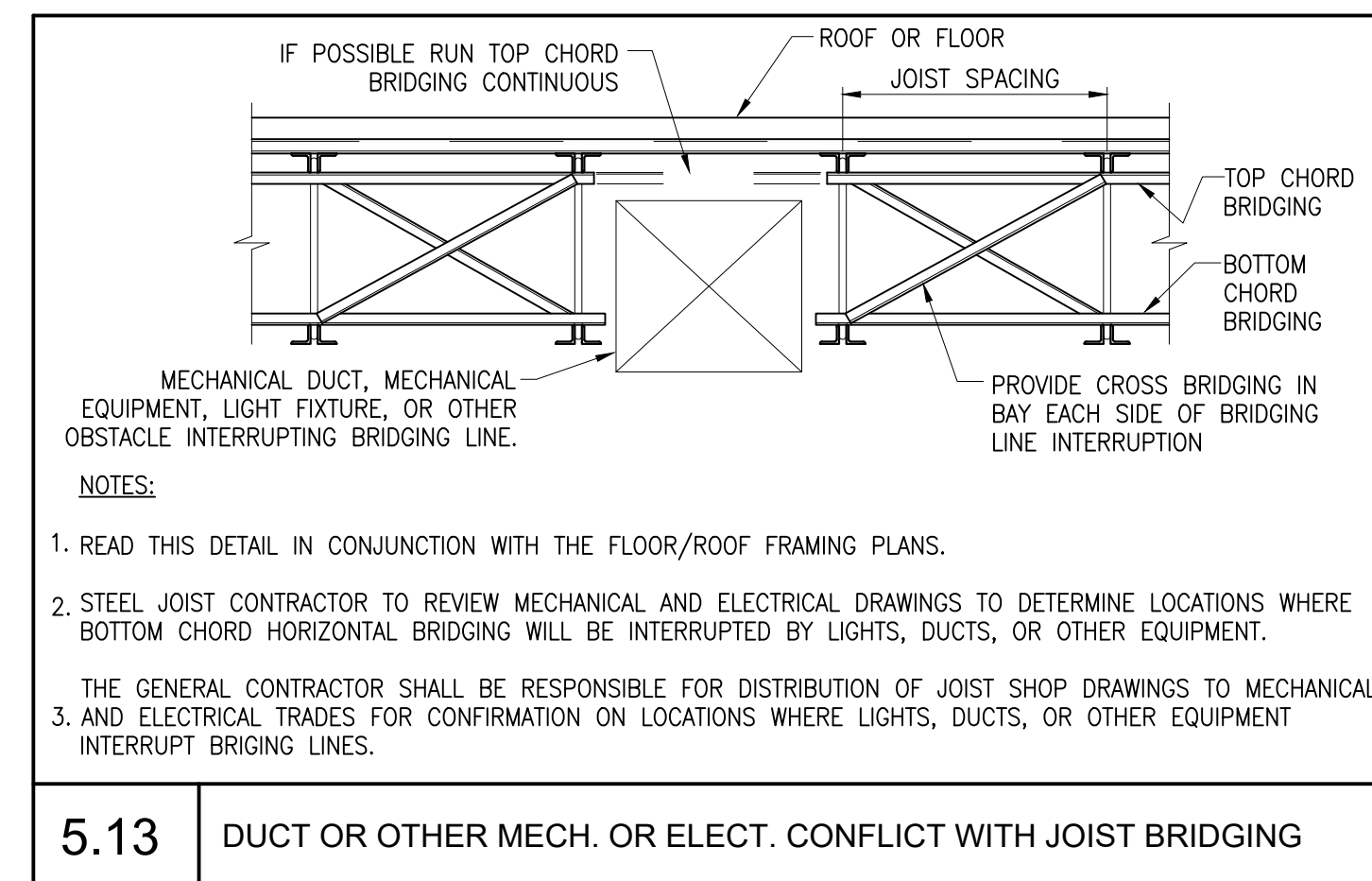
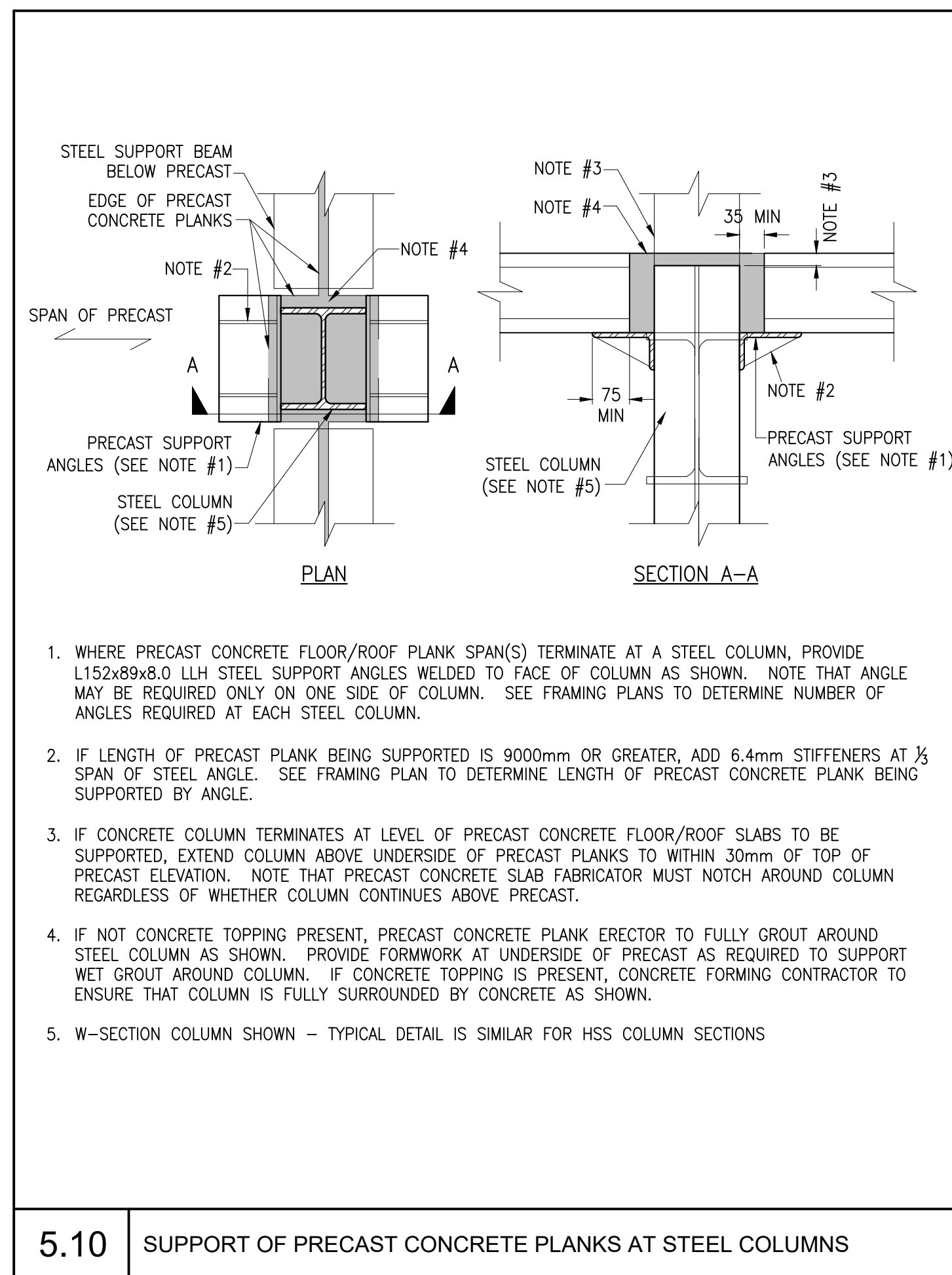
**LEGEND**

Date	Description	No.
JAN 17, 2020	ISSUED FOR 90% REVIEW	1
FEB 13, 2020	ISSUED FOR PERMIT AND TENDER	2

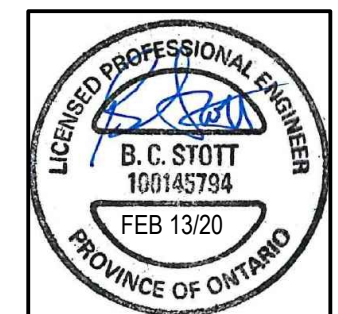
PROJECT TITLE  
**OUR LADY OF FATIMA PHASE 4 RENEWAL**

DRAWING TITLE  
**TYPICAL DETAILS**

DATE: 11/27/2019 DRAWN BY: BCS DRAWING No.:  
 SCALE: As indicated CHECKED BY: GVB **S404**  
 PROJECT No.: 19232



NOTES



**VB&S VanBoxmeer & Stranges Ltd.**  
 STRUCTURAL ENGINEERS  
 458 Queens Ave, London, ON, Canada N6B 1X9  
 Tel. (519) 433-4661  
 E-mail vbands@vbands.com

LEGEND

Date	Description	No.
JAN 17, 2020	ISSUED FOR 90% REVIEW	1
FEB 13, 2020	ISSUED FOR PERMIT AND TENDER	2

PROJECT TITLE  
**OUR LADY OF FATIMA PHASE 4 RENEWAL**

DRAWING TITLE  
**TYPICAL DETAILS**

DATE 11/27/2019	DRAWN BY BCS	DRAWING No.
SCALE As indicated	CHECKED BY GVB	<b>S405</b>
PROJECT No. 19232		