
Bid Documents

St. Clair Catholic District School Board

**St. Joseph Catholic School
535 Birchbank Drive
Corunna, Ontario**

Classroom Renovations

Project No. 634-CP1714-1

Prepared by:

Randy Wilson Architect Inc.
280 Queens Ave, Suite 1Q
London, Ontario
N6B 1X3

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Submitted By: _____

To: **St. Clair Catholic District School Board**

Project: No. 634-CP1714-1

Classroom Renovations

**St. Joseph Catholic School
535 Birchbank Drive
Corunna, Ontario**

1) 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 **St. Clair Catholic District School 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.

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.

2) **CASH ALLOWANCES**

1. Include a Stipulated Sum of Five Thousand Dollar (\$5,000.00) to cover costs associated with Project Contingency.
2. Include a Stipulated Sum of Five Thousand Dollar (\$2,000.00) to cover costs associated with the supply and installation of data cabling and final set up testing. (Wiring Solutions).
3. Time and Materials rates to be applied against Cash Allowance work. Final reconciliation will adjust the cash allowance as credit the SCCDSB for unexpended amounts and extra to the contractor for over expenditure. The contractor shall mark-up subtrade time and materials billing for this portion of work at 10% only.

3) **PRE-ORDERED MATERIAL SUPPLY**

Due to severe time constraints, the St. Clair Catholic District School Board has pre-ordered certain items that require a long lead time for delivery. The contractor agrees to assume the materials ordered for inclusion into the work and pay for the items based upon Board purchase order and invoice. The contractor shall mark-up subtrade time and materials billing for this portion of work at 10% only.

The following items have been pre-ordered:

1. Condenser and A/C unit.
2. Aluminum Windows

4) **INSURANCE**

The undersigned carries Policy # _____ with _____ in the following amounts:

1. Comprehensive General Insurance . . . \$ _____
2. Automobile Liability Insurance . . . \$ _____

Provide a signed standard form provided by the Contractor's insurance company or broker stated its intention to provide insurance to the Bidder in accordance with the insurance requirements of the Contract Documents.

5) **BONDING**

The undersigned has provided with this bid the required Bonding and Surety as outlined in the Instruction to Bidders, Paragraph 1.08.

6) **WORKPLACE SAFETY AND INSURANCE BOARD**

The Bid package is to include a current Certificate of Good Standing from the Workplace Safety and Insurance Board (WSIB).

7) **TIME OF COMPLETION**

The undersigned hereby affirms and states that, if awarded the Contract for said work, the entire contract will be completed within the time frames as stated in the Instructions to Bidders, Paragraph 1.11.

8) **SUMMARY**

The undersigned agrees that the bid price shall remain in effect for a period of 60 (sixty) calendar days from the date of receipt of bids. The undersigned agrees to assume all increases in labour rates and material prices, taxes, duties, cost indexes, or any other rates that may develop during the life of this Contract.

9) **DOCUMENTS AND INFORMATION**

This Bid is based on the following:

1. Bid Form
2. Instructions to Bidders
3. General Conditions
4. Drawings/Sketches
5. Specifications

10) **SCOPE OF WORK**

As described in the drawings and Specifications, the work includes demolition of interior partitions, and finishes to change room and utility areas. New work includes the introduction of new classroom windows including structural work for lintels. New classroom area to include all finishes and millwork. Renovations to include two new change rooms and a smaller utility office area.

11) **ADDENDA**

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 proposal.

12) **SEPARATE PRICES**

Not Applicable

13) **UNIT PRICES**

Not Applicable

14) **ALTERNATE PRICES**

Not Applicable

15) **LIST OF SUBCONTRACTORS**

The following is the list of subcontractors to which reference is made on the submitted Bid Form.

No changes to the List of Subcontractors will be allowed without the Consultant's express written permission.

List each subcontractor by his firm's proper legal designation, and indicate whether his business is carried on as an individual, partnership, or limited company.

The bidder submits that in proposing the listed subcontractors, he has consulted each and has ascertained to his complete satisfaction that those named are fully acquainted with the extent and nature of the work involved and of the proposed construction schedule, and that they will execute their work to conform to the requirements of the Contract Documents.

List of Subcontractors:

- Demolition _____
- Masonry _____
- Flooring _____
- Millwork _____
- Mechanical _____
- Electrical _____

16) **EXECUTION OF CONTRACT**

The Contract form will be a standard Canadian Construction Documents Committee (CCDC) #2 2008 - Stipulated Sum Contract.

SIGNATURE: _____

NAME PRINTED: _____

TITLE: _____

COMPANY: _____

ADDRESS: _____

PHONE: _____

FAX: _____

DATE: _____

END OF BID FORM

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1.01 INVITATION

- .1 **St. Clair Catholic District School Board** (the Owner) invites Bids from General Contractors for **Classroom Renovations** at **St. Joseph Catholic School, 535 Birchbank Drive, Corunna, Ontario**, as described in this Specification and on Drawings.

1.02 FORM OF CONTRACT

- .1 The following documents (all inclusive) shall form a binding Contract between the Owner and the Contractor:
CCDC #2 – 2008 Stipulated Sum Contract
1. Completed Bid Form
 2. Specifications and Drawings
 3. Signed Letter of Intent
 4. Required Bonding
 5. WSIB Clearance Certificate
- .2 No payments may be made without a fully executed CCDC #2 – 2008 Stipulated Sum Contract.

1.03 BID DOCUMENTS

- .1 Each bidder shall receive access to the Bid Documents at:
1. The Windsor & Sarnia Construction Association, The Lambton Area Builders Exchange and London & District Construction Association sites in order to access and download Bid Documents.
 1. Bid Form
 2. Instructions to Bidders
 3. General Conditions
 4. Supplementary Conditions
 5. Drawings/Sketches
 6. Specifications.
- .2 Bids shall be submitted on the form provided. All blank spaces in the form must be completed in full. In addition to the signature, the name and position of the individual signing the Bid shall be printed. Bid proposals not submitted in this manner may be rejected.
- .3 The Bid proposal shall be delivered to:
- St Clair Catholic District School Board
Catholic Education Centre,
420 Creek Street,
Wallaceburg, Ontario
N8A 4C4**
- .4 Bids shall be received no later than **3:00 p.m. on Tuesday, June 20th. 2017** local time as indicated on the timeclock of the SCCDSB Reception.

1.04 BID INELIGIBILITY

- .1 Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind may, at the discretion of the Owner, be declared informal.
- .2 Bids with Bid Forms and enclosures which are improperly prepared may, at the discretion of the Owner, be declared informal.
- .3 Bids that fail to include the security deposit, consent of surety, may, at the discretion of the Owner, be declared informal.
- .4 Bids based upon prices seeming to be so unbalanced as to adversely affect the interests of the Owner may, at the discretion of the Owner, be declared informal.
- .5 Bids based upon an unreasonable period of time for completion of the Work may, at the discretion of the Owner, be declared informal.

1.05 BID SUBMISSION

- .1 Bidders shall be solely responsible for the delivery of their bids in the manner and time prescribed. One envelope is required for submission of tenders.
- .2 Each set of documents contains 1 bid form and Appendices.
- .3 Submit one copy of the Bid Form at the time of bidding in a sealed envelope identified as follows:

BID FOR

**Office, Classroom, and Library Renovations
St. Joseph Catholic School
535 Birchbank Drive, Corunna, Ontario**

1.06 ADDENDA

- .1 If discrepancies in, or omissions from, the Drawings, Specifications or Documents are observed, or if the Bidder shall be in doubt as to their meaning, the bidder shall immediately notify:

Tony Prizio
Procurement Specialist
420 Creek Street
Wallaceburg, ON.
N8A 4C4
Email: Tony.prizio@st-clair.net
CC Email: marcie.myers@st-clair.net

- .2 Certification thereof will be made in addendum form and distributed prior to bid due date. The Architect will not be responsible for any oral instructions or interpretations.
- .3 All addenda issued during the bidding period are to be included and acknowledged in the proposals, and are to be considered part of the Contract Documents.
- .4 Questions shall be received up until 48 hours before close of bid, after which no further communications shall occur between the bidding parties and the architect or representatives of the St. Clair Catholic District School Board.
- .5 The architect will issue no addenda after 46 hours before the close of bid.

1.07 EXAMINATION OF SITE AND CONTRACT DOCUMENTS

- .1 It shall be understood prior to close of bids, that each bidder has visited the site, and has carefully examined the Drawings, Specifications, and all other Contract Documents and other documents referred to therein, the existing site conditions, and thoroughly understands the conditions under which the work will be performed.
- .2 Site Examination
 - .1 The General Contractor shall visit and examine the site and become familiar with all features, characteristics, conditions and suitability of the work affecting the work of the contract. No allowance will be made by the Owner for any errors, misjudgments and/or difficulties encountered by the General Contractor due to any features of peculiarity of the site or surrounding property which exists at the time of the General Contractor's Tender is submitted.
 - .2 Examination of the site is mandatory. A site walk review is scheduled for **Tuesday June 6th. 2017 @ 4:00 p.m.**
 - .3 All interested parties will meet at the main entrance of **St. Joseph Catholic School, 535 Birchbank Drive, Corunna, Ontario**. The site may not be available for viewing at any other time.
 - .4 All General Contractors are invited. No other site review meeting will occur.
 - .5 Attendance will be taken and the General Contract Bidders' List prepared from attendees.
 - .6 Bids will not be accepted from General Contractors who do not attend the Mandatory Site Examination and Bidders Briefing.
 - .7 Attendance by subtrades and suppliers is recommended, but not mandatory.

1.08 BONDING AND SURETY REQUIREMENTS

- .1 **General Requirements:**
 - .1 Bonding requirements are based on the total bid amount **INCLUSIVE** of **ALL** applicable taxes. Bonding requirements are not required for bids less than \$100,000.00.
 - .2 Bid submissions that do not include the required bonding and surety submissions may be declared informal.
- .2 **Performance and Surety Bonds:**
 - .1 For bid amounts greater than \$100,000 and less than \$500,000 each bid must be accompanied by agreements to provide performance and labour and materials sureties or security deposits. The agreements must indicate that the Awarded Bidder will provide either:
 - .1 A security deposit in the form of an irrevocable letter of credit, a certified cheque, or a money order made payable to the Board in the value of 10% of the bid amount, or

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- .2 A surety in the form of a 50% labour and materials and a 50% performance bond to be issued in favour of the Board at the time of contract execution. Only agreements to bond issued by insurers licensed in Canada will be accepted.
 - .2 For bid amounts of \$500,000 and greater, each bid must be accompanied by agreements to bond for 50% performance and 50% labour and materials bonds. Any expense to be incurred must be included in the bid price. Only agreements to bond issued by insurers licensed in Canada will be accepted.
 - .3 The Awarded Bidder must present the bonds to Purchasing Department at the Catholic Education Center within seven (7) working days of the Proponent receiving the letter of intent. Failure to provide the proper surety within seven (7) working days will result in the rejection of that bid.
 - .3 **Bid Bond:**
 - .1 For bid amounts greater than \$100,000 and less than \$500,000 a security deposit in the form of an irrevocable letter of credit, a certified cheque, a bid bond or a money order in the amount of 10% of the bid amount shall be made payable to the St. Clair Catholic District School Board and must accompany the bid.
 - .2 For bid amounts of \$500,000 and greater, a security deposit in the form of bid bond in the amount of 10% of the bid price shall be made payable to the St. Clair Catholic District School Board and must accompany the bid. Only bonds issued by insurers licensed in Canada will be accepted.
 - .3 The security deposit of unsuccessful Proponents will be returned without interest after the contract is awarded.

1.09 ACCEPTANCE OR REJECTION OF THE BID PROPOSAL

- .1 In submitting this Bid, the Contractor recognizes and accepts the right of the Owner to accept any Bid which may be deemed to be most advantageous to the Owner (or any part thereof) at the price submitted, or to reject any or all Bids. Separate Prices and Alternate Prices may be considered in making final decisions.

1.10 GENERAL REQUIREMENTS FOR CONTRACTOR AWARDED CONTRACT

- .1 Before any work may be started on the Contract, the Contractor will be required to:
 - .1 Supply satisfactory evidence of all current primary insurance coverage required to be supplied by the Contractor. A minimum of \$2,000,000.00 per event is required for Liability and Automobile Policies. The Owner shall be included as co-insured.
 - .2 Supply a current Workplace Safety & Insurance Board Clearance Certificate.
 - .3 Provide within five (5) days after award of contract, a detailed work schedule including proposed phasing of work to confirm completion date.
 - .4 Provide information relating to construction safety measures (company Safety Policy).

1.11 TIMING OF PROJECT

- .1 The site is available to commence work on **June 30th, 2017**.
 - .1 Install construction barriers as indicated on the drawings.
 - .2 Provide enclosed perimeter fencing to enclose exterior worksite.
 - .3 Start work on the renovations as indicated on the drawings.
- .2 The Contractor shall include all costs for labour and material to ensure that the entire scope of work for this project must be complete by **Friday, September 1st, 2017**.

1.12 SAFETY

- .1 The Contractor shall carry out this project in strict accordance with Occupational Health and Safety Acts; the regulation for construction projects, Ontario Regulation 213/91 as amended by Ontario Regulation 631/94, and other prescribed regulations as they may pertain to the work.
- .2 This Contractor shall also provide full time supervision of on-site activities by all workers to ensure applicable regulations and specification requirements are followed at all times.
- .3 This Contractor shall take all necessary precautions to ensure the continuous safety of the contract workers, the Owner, the architect, and general public at large on the Owner's property.

1.13 SITE ACCESS

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

1.14 DESIGNATED SUBSTANCES

- .1 The contractor shall conduct work in recognition of the most current regulations related to Designated Substances.

1.15 POST BID REVIEW MEETING

- .1 A Post Bid Review Meeting may be convened and chaired by the Architect who will invite the Contractor and his major Subcontractors and/or suppliers to review the Contract Documents, Bid submitted, and Schedule. This meeting will be prior to the Owner issuing a Letter of Intent or instruction to proceed. This meeting does not constitute or infer any contract award to the proposed contractor or any other contractor, or that the project will proceed.

END OF INSTRUCTIONS TO BIDDERS

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6.0	As Built Information
7.0	Payments to Contractor
8.0	Guarantee
9.0	Meetings

1.0 LEGAL REQUIREMENTS, RULES AND RESTRICTIONS**.1 Definitions**

- .1 **St. Clair Catholic District School Board** and the **Contractor** will be respectively referred to herein as the **Owner** and the **Contractor**. The term subcontractor, as employed herein, includes only those having a direct contract with the Contractor. It includes one who furnishes material worked to a special design according to drawings or specifications, but does not include one who merely furnishes material not so worked.
- .2 These General Conditions are part of the Contract.
- .3 The Supplementary General Conditions are part of the Contract.

.2 Laws, Ordinances and Regulations

- .1 The Contractor shall, in the performance of the Contract, comply with stipulations and representations required by all applicable Federal, Provincial, and Local Laws, Ordinances and Regulations.
- .2 Should the Contractor fail with respect to any of these provisions, he/she shall defend, indemnify and hold harmless the Owner from any liability, damage costs or expenses resulting from such failure.

.3 Permits, Space Fees and Taxes

- .1 The contractor shall pay for the any permits required by authorities having jurisdiction including the Ministry of Labour Notice of Project. The Contractor shall submit applications for permits to the Owner for review before filing. The Contractor shall pay all Federal, Provincial and Local taxes, and duties, of whatever character and description, incident to performance of the Contract.

.4 Municipality Inspections

- .1 The Contractor will be required to complete the inspections required for this project by using the Municipality standard forms to facilitate all inspections required by the Municipality as appropriate. It should be extended to include any other inspections from any statutory authorities. The permits and list shall be displayed together on the site and copies provided to the Consultant and Owner. As each inspection is arranged and completed the process is to be recorded appropriately and copies forwarded to both the Consultant and Owner for record.

2.0 MATERIALS AND JOB REQUIREMENTS**.1 Cutting and Patching Building Openings**

- .1 When it is necessary to cut or drill openings in walls, floors, roofs, etc. precautions shall be taken to prevent dust and falling debris from affecting adjacent areas. All openings shall be patched by the Contractor to match the original construction using workmen skilled in the required crafts.

.2 Inserts and Attachments to Building Structures or Equipment

- .1 Any attachments or inserts in walls, ceilings, or building structural members for the support of equipment, ductwork or piping are to be provided by the Contractor. The Contractor must get permission from the Owner to make attachments to an existing structure. Such attachments must conform to all local laws and requirements.
- .2 Any temporary attachments to the building or equipment for installation purposes shall be removed by Contractor upon completion of work. Any damage or defacement caused by such removal shall be repaired or replaced by and at Contractor's expense.

.3 Interference with Owner's Work

- .1 It is the intention of the Owner to have board staff working in portions of the premises during the term of this Contract.
- .2 The Contractor will be required to cooperate with Owner's workers outside the designated construction site area.

.4 Patching and Replacing of Damaged Work or Property

- .1 All damage to the Owner's property, including that to roadways, sidewalks, floors, fences, doorways, glass damage, etc., that is caused by Contractor's or Subcontractor's work or workers shall be repaired by and at the expense of Contractor and the actual patching, repairing and replacement or work under the Contract shall be done by the firm which installed the work.

.5 Storage of Materials

- .1 The Contractor shall not occupy any space on Owner's premises for storage of materials or handling and storage of materials must be done in such manner that minimum interference occurs in connection with Owner's requirements. Hazardous or dangerous materials may be stored on the premises only if prior approval is obtained from the Owner as to the method of storage and location.

.6 Moving Materials

- .1 If it becomes necessary at any time during the performance of the work to move Contractor's facilities, materials or equipment which have been placed by the Contractor without the Owner's prior approval, the Contractor shall move them or cause them to be moved when so directed by Owner without additional charge.
- .2 No materials and equipment necessary under the Contract and delivered upon the premises shall be removed from the premises without the written consent of the Owner. Refer to General Conditions, Section 3, responsibility for equipment materials, and Owner's property.

.7 Cleaning of Premises

- .1 Each Contractor, and Subcontractor, and/or supplier shall remove rubbish and debris from the site on a daily basis or as directed by the Owner. 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.
- .2 The Contractor is responsible for compliance with all applicable laws for the removal of waste.
- .3 Do not use Owner's equipment or facilities for cleaning or for any other reason.

.8 Owner Requirements for No Smoking

- .1 No Smoking Requirement:
Be advised that the Owner has a no Smoking Requirement on the Owners' property. Contractors are requested to ensure that employees and those of subcontractors and suppliers are advised of the Requirement.

3.0 CONTRACTOR'S RESPONSIBILITY, INSURANCE, PROTECTION**.1 Contractor's Responsibility**

- .1 Contractor assumes all risks of injury to persons including death and/or damage to property resulting from any action or operation under the Contract and/or in connection with the work, except for such injury to persons including death, and/or damage to property caused due to the negligence of the Owner, and undertakes to defend, indemnify and hold the Owner harmless against all such alleged injury or damage.
- .2 The Contractor shall immediately notify the Owner of any workplace injury defined under the Occupational Health and Safety act as a "critical Injury" as the incident has been discovered. All other reportable incident injuries to persons or damage to property must be reported to the Owner within 2 hrs of the discovery of the incident. All reports are to be copied to the owner.
- .3 The Contractor and Subcontractors and/or Suppliers will be responsible for loss of equipment or materials supplied by Contractor or Subcontractor or turned over to Contractor by Owner.

.2 Owner's Insurance Responsibility

- .1 The Owner will maintain insurance for Fire and the Extended Coverage perils of windstorm, hail, smoke, explosion, aircraft, vehicle, riot and riot attending a strike, civil commotion including vandalism, malicious mischief and where applicable, sprinkler leakage damage, upon the entire structure on which work of this contract is done or to be done or upon the equipment and materials installed to one hundred percent of the insurable value thereof and the full value of only that equipment and materials, delivered to the site of the project and which are to be included in and remain a part of the permanent construction whether or not installed.

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- .2 Coverage shall protect the Owner, Contractor and Subcontractors as their interests may appear. Loss, if any, under such insurance shall be adjusted with and payable to the Owner.

.3 **Contractor's Insurance Responsibility**

- .1 It shall be the Contractor's responsibility to effect and maintain adequate Fire and Extended Coverage for perils of windstorm, hail, smoke, explosion, aircraft, vehicle, riot and riot attending a strike, civil commotion and vandalism to cover loss or damage to items of Contractor's equipment including tools, scaffolding, forms and the like, sheds and other temporary structures and their contents, owned or rented by the Contractor or for which the Contractor is liable and which are not to remain as part of the permanent construction.

.4 **Construction Safety Measures**

- .1 The Contractor will be responsible to take all necessary steps to protect personnel (workers, visitors, general public, etc.) and property, from any harm during the course of the Contract.
- .2 All work procedures and equipment will be in accordance with the Owner and legislated standards.
- .3 Only competent personnel will be permitted on site. The Owner will determine during the "site introduction" who is competent, and will cause to remove from the site any persons not observing or complying with safety requirements.
- .4 The contractor shall supply competent personnel to implement their safety program and ensure that the Owner's standards, and those of the OSHA, are being complied with.
- .5 The contractor will report to the Owner, and jurisdictional authorities, any accident or incident involving contractor, university or public; personnel and/or property, arising from the contractor's execution of the work.
- .6 The contractor will include all provisions of this contract in any agreement with subcontractors, and hold all subcontractors equally responsible for safe work performance.
- .7 If the contractor is responsible for a delay in the progress of the work due to an infraction of legislated or Owner health and safety requirements, the contractor will, with additional cost to the Owner, work such overtime, acquire and use for the execution as to be necessary, in the opinion of the Owner to avoid delay in the final; completion of the work or any operations thereof.

.5 **Internal Combustion Engines and Toxic Fumes**

- .1 Before use of internal combustion engines on site or where any toxic fumes may be produced, the precautions required by law are to be in place for review, and the Owner must be advised.

- .2 The duration of the work will be predetermined by the Contractor for everyone's information.

.6 **Insurance (Contractor Coverage)**

- .1 The Contractor agrees to provide and maintain with responsible insurance carriers satisfactory to Owner, the following insurance:

Comprehensive Liability Insurance

- .1 The Contractor shall protect himself and indemnify and save the Owner harmless from any and all claims which may arise from the Contractor's operations under the Contract where bodily injury, death, or property damage is cause and for this purpose shall, without restricting the generality of the foregoing, maintain insurance acceptance to the Owner, to the limits of not less than:

- | | | |
|----|---|------------------|
| .1 | Injury or death to one person |) minimum of |
| | Injury or death to more than one person |) \$2,000,000.00 |
| .2 | Automobile |) \$2,000,000.00 |
| | |) inclusive |

Issue liability insurance in the joint names of the Owner and the Contractor.

.7 **Workplace Safety Insurance Board (WSIB)**

- .1 The Contractor shall include with his bid documents a current WSIB certificate of good standing.
- .2 At each progress invoice the contractor is required to provide a current WSIB certificate of good standing.

.8 **Protection of Premises and Persons**

- .1 The Contractor shall properly protect Owner's and adjoining property from injury. Any damage to same shall be repaired or replaced by the Contractor without delay.
- .2 The Contractor shall provide and properly maintain warning signs, dust proof barriers, welding tarpaulins, barricades and other safeguards for the protection of workmen and others around holes and openings, on, about, or adjacent to the work as required by the conditions and progress of the work or as directed by the Owner.
- .3 At the end of each working day, all construction materials should be accumulated and piled in designated areas.

.9 **Non Compliance with Safety Rules and Regulations**

- .1 Non-compliance of any of the safety requirements contained in this section may result in the Contractor or Subcontractor being requested to remove the offending person or persons from the Owner's premises.

.10 **Substitution of Subcontractors or Suppliers**

- .1 The Contractor must submit in writing at the time of Bid the identified list of Subcontractors and/or Suppliers who will be employed on the Contract. The Contractor must also submit in writing all other sub-contractors and suppliers listed which will be employed on the Contract at the Post Bid Meeting. Substitution of named Subcontractors and Suppliers after submission of Bids will not be accepted unless a valid reason in writing is given to and approved by the Owner. The reason for substitution must be provided to the original listed Subcontractor or Supplier and the Subcontractor or Supplier given an opportunity to reply to the Contractor and Owner. Contractors are expected to be fully aware of the capability (technical, financial, etc.) of their listed Subcontractors and Suppliers and be prepared to work together prior to submission of the Bid. Similarly, the uses of the term 'own forces' and the subsequent use of unlisted Subcontractors or Suppliers is not acceptable and could result in rejection of the Bid. All Subcontractor and Supplier listings must be firm prior to the issue of a letter of intent or contract. Failure to meet these requirements will permit the Owner to cancel the contract at any stage.

.11 **Project Site Supervisor** (Site Superintendent)

- .1 The designated Site Superintendent (i.e. not a replacement) is to remain full time on the project for a minimum period of 1 week after substantial completion of the project, or until all deficiencies are completed, deemed completion has been achieved and approval of the Owner and Consultant has been obtained.
- .2 For the purpose of this Contract, the "Superintendent" shall mean and shall be interchangeable with the term "Supervisor."

4.0 TEMPORARY FACILITIES (CONTROL OF USE AND RESTRICTIONS)

.1 **Water**

- .1 A source of water will be designated by the Owner. Extensions must be approved by the Owner to avoid possible accidental reverse flow.

.2 **Electric Power**

- .1 A source of electric power will be designated by the Owner. The Owner 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 this point to the job site. All electrical connections and extensions must meet ESA requirements and must be approved by the Owner. The Contractor's estimated load requirements must not be exceeded without the Owner's permission.

.3 **Toilet Facilities**

- .1 Contractor's employees shall use only those toilet and washroom facilities designated by the Owner or provide their own facilities.

- .2 In the event that the contractor elects to use board facility washrooms, the contractor will be responsible for the maintenance, stocking and cleaning of the designated washroom. The designated washroom shall be returned to the board in the same condition as received by the contractor. Any and all damages to facilities while under the control of the general contractor shall be repaired at the general contractors cost.

.4 **Telephone**

- .1 The Contractor will be expected to provide and pay for own telephone service as required for the job.

5.0 ARCHITECTS REVIEW

- .1 The architect's review and those of his sub-consultants is for the purpose of assuring the Owner that the plans and specifications are being properly executed. The Owner will not supervise or give instructions to the Contractor's employees other than the Contractor's Superintendent through the architect. While the architect will give the Contractor all desired assistance in interpreting the drawings, specifications and intent, such assistance shall not relieve the Contractor from any responsibility for the work.

- .2 In the event that the architect may have permitted or overlooked faulty work, or work done which is not in accordance with drawings and specifications, shall not prevent the architect from insisting that the Contractor make all work right. Any work, which proves faulty, shall be rectified by the Contractor without delay.

.3 **Contractor to Assist Architect**

- .1 The Contractor shall provide sufficient, safe and proper access facilities at all times for the review of the work by the architect.

.4 **Cooperation between Contractor, Subcontractors and Trades**

- .1 Anything necessary on the part of any one trade to make possible or expedite the work of other trades shall be done as part of the Contract by the Contractor without additional expenses to the Owner.

6.0 AS BUILT INFORMATION

- .1 The General Contractor will provide As Built information in accordance with the architect's instructions.

7.0 PAYMENTS TO CONTRACTOR

.1 **Certificate & Payments (In General)**

- .1 The Owner shall pay within forty-five (45) days after the receipt of the invoices which are received and approved by the architect.

- .2 A 10% holdback of invoiced amounts, plus a 1 ½% completion retention amount will be withheld in accordance with the current provisions of the Provincial Lien Legislation and General Conditions of the contract.

- .3 Upon determination of Substantial completion as certified by the architect and notification of Substantial Completion being duly advertised, the Lien period shall commence. On the 45th day, holdback monies shall be released upon clear search of title by the St. Clair Catholic District School Board.
- .4 Once all as-built drawings and maintenance materials are received and vetted by the architect, the 1 ½ % completion retention shall be released for payment.

.2 **Evidence of Payment to Subcontractors**

- .1 The monthly billing (progress draw) is to be accompanied by statutory declarations (affidavit) indicating payment of obligations to Subcontractors, for purchase of materials, and own payroll to the date of billing.

.3 **Change Notices, Change Orders**

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

- .1 For those items understood to be directly part of the General Contractors work, the Contractor will be permitted to charge a maximum 10% fee.
- .2 On items involving changes to work of a subcontractor, the subcontractor may charge a maximum 10% fee. The General Contractor may charge a maximum of 5% fee in addition to subcontractor's fees.

8.0 GUARANTEE

- .1 The guarantee shall be for a period of 1 year from and after completion of the entire job and acceptance thereof by Owner unless a different period of time is specified with the Owner's approval. The Contractor's guarantee shall cover all work under the Contract whether or not any portion or trade has been sublet.
 - .1 The Contractor agrees to correct promptly, at the Contractor's own expense, defects or deficiencies in the Work which appear prior to and during the period of guarantee, or such longer periods as may be specified for certain products or work.
 - .2 If the Contractor fails to make any replacements or repairs required hereunder, after notice from Owner and reasonable opportunity to do so, Owner may have such work done at Contractor's expense, including all necessary labour costs in connection therewith. Owner shall inform Contractor in advance of the approximate cost of any such work to be done by Owner.

9.0 MEETINGS**.1 POST BID REVIEW MEETING**

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

.2 PROGRESS MEETINGS

1. During the course of Work, schedule progress meetings as may be required and at the call of the Consultant until Project Completion.

.3 OWNERS'S CONTRACTED SERVICES PROGRAM

1. Contractors, their employees and subtrades must complete the SCCDSB Contracted Services Program and obtain an identification badge which must be worn at all times while working on any SCCDSB project. Obtain the information regarding this program from the St. Clair Catholic District School Board's website at www.st-clair.net.

END OF GENERAL CONDITIONS



ST. CLAIR CATHOLIC
DISTRICT SCHOOL BOARD

CCDC 2- 2008
Stipulated Price Contract

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Supplementary Conditions

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, insurance and bonding; 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*.

4. Amend Definition 4 by adding the following to the end of the Definition:

For the purposes of the *Contract*, the terms “*Consultant*”, “*Architect*” and “*Engineer*” shall be considered synonymous.

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 in indicated locations and arrangements, 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, 1.1.7.8, 1.1.7.9 and 1.1.7.10 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 Schedules of Division 01 – General Requirements of the *Specifications* shall form part of and be read in conjunction with the technical specification section as listed in the table of contents of the *Specifications*.

- .8 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.
- .9 fixturing drawings provided by the *Owner* shall have precedence over architectural drawings insofar as outlining, determining and interpreting conflicts over the required design intent of all architectural layouts.
- .10 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.

1.1.11 Add new paragraph 1.1.11 as follows:

The *Contract Documents* shall be signed in triplicate (3) by the *Owner* and the *Contractor*, and each of the *Contractor*, the *Owner* and the *Consultant* shall retain one set of signed and sealed (if required by the governing law of the *Contract*) *Contract Documents*.

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*, which consent may be unreasonably withheld. 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 either investigated for itself the character of the *Work* to be done and all local conditions, including the location of any utility which can be determined from the records or other information available at the offices of any person, partnership, corporation, including a municipal corporation and any board or commission thereof having jurisdiction or control over the utility that might affect its tender or its acceptance of the *Work*, or that, not having so investigated, 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 *Owner* and the *Consultant*, all defective work and deficiencies throughout the *Work*, whether or not they are specifically identified by the *Consultant*.

2.4.1.2 The *Contractor* shall prioritize the correction of any defective work, which, in the sole discretion of the *Owner*, adversely affects the day to day 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. The *Owner* may request that the *Contractor* rectify any such deficiencies to other contractors' work, at the *Contractor's* expense.

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 and 3.4.4 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*.

3.4.4 Notwithstanding the foregoing, errors, inconsistencies, discrepancies and/or omissions shall not include lack of reference on the *Drawings* or in the *Specifications* to labour and/or *Products* that are required or normally recognized within respective trade practices as being necessary for the complete execution of the *Work*. The *Contractor* shall not use subsequent *RFIs*, issued during execution of the *Work* to establish a change and/or changes in the *Work* pursuant to Part 6 – CHANGES IN THE WORK.

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.
- 3.7.4 Change the word “shall” to “may” in the second line.

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, 3.8.9 and 3.8.10 as follows:

- 3.8.4 Upon receipt of a written notice from the *Consultant*, the *Contractor* shall immediately dismiss, from the *Place of the Work*, tradesmen and labourers whose *Work* is unsatisfactory to the *Consultant* or who are considered by the *Consultant* to be unskilled or otherwise objectionable.
- 3.8.5 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.
- 3.3.9 No consideration will be given to claims by the *Contractor* of unsuitability or unavailability of any *Products*, nor to the *Contractor's* unwillingness to use, or to produce first class work with, any *Products*, or to provide the specified warranties or guarantees.
- 3.8.10 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 14 days to review *Shop Drawings* from the date of receipt. If resubmission of *Shop Drawings* is required, a further 14 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, 3.13.6 and 3.13.7 as follows:

- 3.13.4 In the event that the *Contractor* fails to remove waste and debris as provided in this GC 3.13, then the *Owner* or the *Consultant* may give the *Contractor* twenty-four (24) hours written notice to meet its obligations respecting clean up. Should the *Contractor* fail to meet its obligations pursuant to this GC 3.13 within the twenty-four (24) hour period next following delivery of the notice, the *Owner* may remove such waste and debris and deduct from payments otherwise due to the *Contractor*, the *Owner’s* costs for such clean up, including a reasonable mark-up for administration costs.
- 3.13.5 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.

3.13.6 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.

3.13.7 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 CCDC 9A – 2001 form, up to the date of the application for payment, in a form approved by the Consultant. Each application for payment (including the first), 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*, in a form approved by the *Consultant*, 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 30 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 30 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 marked-up record or as-built drawings from the construction trailer.

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 *Contractor* shall submit full and complete digital record or as-built drawings to the *Consultant* within forty-five (45) days of the issuance of the certificate of *Substantial Performance of the Work* and the *Owner* shall be at liberty to 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 such digital record or as built drawings.

GC 5.5 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

- 5.5.1.1. Add to end of sentence “, and the application by the *Contractor* shall be accompanied by:

- .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 application for payment, and that coverage will remain in force for at least sixty (60) days thereafter; and,
- .2 a declaration by the *Contractor*, in a form approved by the *Consultant*, verifying performance of the *Work* in compliance with all applicable regulatory requirements respecting environmental protection, fire safety, public safety and occupational health and safety.

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;
- .3 the evidence of workers' compensation compliance required by GC 10.4.1.

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 The *Contractor* is deemed to assume all risk of conditions or circumstances now existing or arising in the course of the *Work* which could make the work more expensive or more difficult to perform than was contemplated at the time the *Contract* was executed. 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 *Contract 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”**

Delete paragraph 7.1.2 and replace with the following:

- 7.1.2 If the *Contractor* should neglect to prosecute the *Work* properly, fails or neglects to maintain the latest schedule provided pursuant to GC 3.5, or otherwise fails to comply with the requirements of the *Contract*, and if the *Consultant* has given a written statement to the *Contractor* that sufficient cause exists to justify such action, the *Owner* may notify the *Contractor*, in writing, that the *Contractor* is in default of the *Contractor's* contractual obligations and instruct the *Contractor* to correct the default in the five (5) *Working Days* immediately following the receipt of such notice.

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

- 7.2.2 Delete paragraph 7.2.2 in its entirety.
- 7.2.3.1 Delete subparagraph 7.2.3.1 in its entirety.
- 7.2.3.2 Delete subparagraph 7.2.3.2 in its entirety
- 7.2.3.3 Delete subparagraph 7.2.3.3 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".

Re-number 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 8.1 AUTHORITY OF THE CONSULTANT

Delete paragraph 8.3.1 in its entirety and substitute as follows:

8.1.3 If a dispute is not resolved promptly, the *Consultant* will give such instruction as in the *Consultant's* opinion are necessary for the proper performance of the *Work* and to prevent delays pending settlement of the dispute. The parties shall act immediately according to such instructions, it being understood that by doing so neither party will jeopardize any claim the party may have.

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 paragraphs 9.2.10 and 9.2.11 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*.

9.2.11 The *Contractor* shall indemnify and hold harmless the *Owner*, its parent, subsidiaries and affiliates, the *Consultant* and their respective partners, officers, directors, agents and employees from and against any and all liabilities, costs, expenses, and claims resulting from bodily injury, including death, and damage to property of any person, corporation or other body politic, that arises from the use by the *Contractor*, *Subcontractors* and *Suppliers* of any toxic or hazardous substances or materials 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 9.5 MOULD

Delete subparagraph 9.5.3.3 and replace with the following:

- 9.5.3.3 extend the *Contract Time* for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor* and the *Owner*. If, in the opinion of the *Consultant*, the *Contractor* has been delayed in performing the *Work* and/or has incurred additional costs under paragraph 9.5.1.2, the *Owner* shall reimburse the *Contractor* for the reasonable costs incurred as a result of the delay and as a result of taking those steps, and

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, the *Consultant* and their respective partners, trustees, officers, directors, agents and employees 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

- 1.0 **GENERAL**
- .1 **Related Work**
- .1 Hoarding and Protection due to Excavation, included in this Section.
- .2 **Shop Drawings**
- .1 Indicate & describe in detail complete perimeter hoarding and side walk protection. Include all means of access/vehicular entrances.
- .2 Provide Shop Drawings to and obtain from, approval from both the Consultant and the authorities having jurisdiction. Make all revisions as required by these authorities at no additional cost to the Owner.
- .3 **Permits and Fees**
- .1 Apply for, obtain and pay for all necessary permits required by authorities having jurisdiction for the Work of this Section.
- .4 **By-laws**
- .1 Comply with the By-laws of the City of Sarnia, and all others having jurisdiction over the Work of this Section including the Occupational Health and Safety Act and Regulations for Construction Projects
- 2.0 **PRODUCTS**
- .1 **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 Waterproof Membrane: "Bituthene" Regular by W.R. Grace Materials Ltd., or approved alternative.
- .4 Exterior alkyd paint to approved manufacturer.
- .5 Interior fire retardant paint to approved manufacturer.
- .6 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.
- .7 Gypsum Board: To meet specified requirements of CAN/CSA-A82.27-M91; **fire rated board classified for hazard by ULC and labelled as such.**
- .2 **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.**

3.0 EXECUTION

.1 Fabrication and Installation

.1 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.

.2 Barrier

- .1 Install barrier within the existing building to separate a work area from the remainder of the building.
- .2 Barrier 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 09250 and ULC Design No.W408 or W409
- .4 Barrier 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 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.

.2 **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

1.1 Related Sections

- .1 Comply with Division One as applicable.
- .2 Restrictions on noise, dust, interference, obstructions, access, and hours of work as described in the Instructions to Bidders and General Conditions.
- .3 Temporary facilities, public safety, weather and dust barriers or partitions: General Instructions, and Section 01530.
- .4 Work described in Division 15000 and 16000.
- .5 The requirements of this Section apply to all other Sections of the specifications.

1.2 References

- .1 CSA S350-M1980, Code of Practice of Safety in Demolition of Structures.

1.3 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.

1.4 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.

1.5 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

3.1 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 terrazzo floor, VCT and sheet flooring.

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- .2 Door openings in walls, bulkheads, overhead lintels, portions of masonry walls.
 - .3 Miscellaneous plumbing, mechanical and electrical items.
 - .4 Windows as indicated.
 - .5 Ceiling systems as indicated.
 - .6 Portions of roof as indicated.
 - .7 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 re-route 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.

3.2 Safety Code

- .1 Comply with all applicable legislation.

3.3 Dismantling and Demolition

- .1 Do all work in a manner to prevent endangering safety of building 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.

3.4 Restoration

- .1 Upon completion of work, remove debris, trim surfaces and leave work site clean.
- .2 Reinstall areas and existing works outside areas of demolition to conditions that existed prior to commencement of work.

End of Section

PART 1 - GENERAL

.1 Description

.1 General Instructions

Division 1 and General Requirements are a part of this section and shall apply as if repeated here.

.2 Related Work Specified Elsewhere

Division 4 - Masonry
Division 9 - Floor Finishes

.2 Applicable Standards

- .1 All standards to be latest issue with amendments.
- .2 Ontario Building Code.
- .3 CSA Standard CAN3-A23.1, A23.2 and A23.3.
- .4 ACI Standard 302, "Recommended Practice for Concrete Floor and Slab Contraction".
- .5 ACI Standard 347, "Formwork for Structural Concrete".

.3 Shop Drawings

- .1 Examine all drawings forming a part of this contract and conform to the requirements of all such drawings.
- .2 Prepare reinforcing steel placing drawings and detailed bending lists to supplement the drawings prepared by the Architect. Show sizes, position, extent, type and arrangement of bars and their steel grades. Scale of plans to be a minimum of 1:100; sections/details minimum 1:50.
- .3 Submit shop drawings in accordance with the General Instructions.
- .4 Do not cut or fabricate reinforcing steel material until the Engineer and Architect have reviewed and approved the shop drawings.

- .5 The Engineer and Architect's review will cover the general arrangement of the reinforcing steel, but the responsibility for errors in sizes, spacings, dimensions and details shall remain with the contractor.

.4 Coordination and Cooperation

- .1 Coordinate the work of this section with the General Contractor's scheduling in accordance with the General Instructions.
- .2 Coordinate the work of this section with the work of other sections and advise other trades when materials to be built into concrete will be required.
- .3 Install any items furnished by others, miscellaneous iron work, anchors, anchor bolts, pipe sleeves, etc., that are to be built into any part of the concrete work. Form all holes and openings required to accommodate the work of other trades.
- .4 Make good all openings left in construction around pipes, pockets for anchorages, etc., for other trades for where existing concrete must be broken out.

.5 Design and Detailing Criteria

- .1 Formwork - in accordance with CAN3-A23.1 and the recommendations of A.C.I. Standard 347.
- .2 Concrete - design concrete mixes for the compressive strengths, workability requirements, etc., specified in Article 2.2 of this section in accordance with CAN3-A23.1. Submit mix designs for the review of the consultant, if requested, prior to commencement of construction.
- .3 Reinforcing - detail all reinforcing bends, hooks, splices, and anchorages in accordance with CAN3-A23.1 and the standards of the Reinforcing Steel Institute of Ontario.
- .4 Shoring of the composite metal floor deck will not be required.

PART 2 - PRODUCTS

.1 Materials

- .1 Cement - in accordance with CSA Standard CAN3-A5, "Portland Cement", Type 10. Consultant approved cementitious substitutes permitted to a maximum of 10% of the total cement mass.
- .2 Aggregates
 - .1 Fine and coarse aggregate materials and grading in accordance with Section 5 of CSA Standard CAN3-A23.1.
- .3 Reinforcing Steel - new deformed bars in accordance with CSA Standard G30.8, G30.12-M or G30.13 with a guaranteed yield stress of 400 MPa. (58,000 psi.)
- .4 Welded Wire Fabric - in accordance with CSA Standard G30.5-1967. Supply in sheets only.
- .5 Concrete Admixtures - type 1, water reducing admixtures currently approved for use by the Ontario Ministry of Transport in accordance with O.P.S.S. Form 1303, "Material Specification for Air Entraining Agents and Chemical Admixtures".
- .6 Premoulded Filler - 10 mm thick, asphalt impregnated Flexcell as manufactured by G.F. Sternson or approved equal.
- .7 Spray-Applied Membrane - in accordance with ASTM Standard C309, Type 1, Class B - VOCOMP-20 by Meadows.
- .8 Vapour Barrier - 10 mil polyethylene to CAN/CGSB 51.34.
- .9 Floor Sealer - 1 part moisture-cured (non-staining) acrylic - VOCOMP-25 by Meadows.
- .10 Grout - non-ferrous, non-shrink grout.
- .11 Superplasticizer - Melment by Sternson or Conchem S.P.N.
- .12 Circular Column Forms - fibre glass without spiral pattern. Steel forms are not acceptable for this project.
- .13 Carborundum Grits - 8/16 (rice size) grits.
- .14 Non-Metallic Integral Hardener - pre-mixed Colorcron by Master Builders (colours to be selected later).
- .15 Plywood - in accordance with CSA A23.1.
- .16 Form Ties - for general wall areas, removable snap-off metal ties that, after removal of forms, no metal is within 25 mm of the finished surface.
- .17 Structural steel support angles. – Pre-manufactured galvanized steel support shelf angles as detailed on drawings

.2 Concrete Mixes

- .1 Job-mixed concrete will not be allowed on this project.
- .2 Provide mixed-in transit, ready-mixed concrete in accordance with CSA Standard CAN3-A23.1 obtained from a supplier approved by the Engineer for use on this project.
- .3 Mix all concrete with materials so graded and proportioned produce a plastic mass of such consistency that it will flow slowly under its own weight and which can be readily worked into corners of forms and under and around reinforcing without forming voids or honeycombed surfaces.
- .4 Furnish to the contractor, a 'delivery ticket' for each batch of concrete delivered to the site, which shall be kept on record for the inspection of the Engineer. Each ticket shall show the following.
 - .1 Date and truck number.
 - .2 Contractor's name.
 - .3 Job designation.
 - .4 Specified concrete strength, slump, air content and admixture.
 - .5 Batch volume.
 - .6 Time of batching.
- .5 Proportion the materials in accordance with the mix designs supplied under Article 1.7 of this section to provide the following specified design strengths and slumps.

MIX LOCATION	SPECIFIED 28 DAY COMPRESSIVE STRENGTH MPa.	SLUMP (m.m.)	ENTRAINED AIR
Lean Fill	15	125	nil
Footings, Interior Walls and Piers	25	75 ± 25	nil
Interior Slabs, Slabs-on-Deck	25	75 ± 25	nil
Exterior Slabs, Piers, Ramps and Perimeter Foundation Walls	30	75 ± 25	6% ± 1%

- .6 Fine and coarse aggregate grading in accordance with CSA Standard CAN3-A23.1-M77.
- .7 Chemical admixtures if used shall be used in strict accordance with the manufacturer's directions. The use of calcium chloride or any other type of accelerating chemical admixture will not be allowed.
- .8 Note that the required average compressive strength must be greater than the specified compressive strength to allow for the appropriate standard deviation of the particular batch plant.

.3 Fabrication of Reinforcing Steel

- .1 All reinforcing steel shall be provided and bent by a supplier approved by the Engineer.
- .2 Fabrication of bends, hooks and other shapes in accordance with CSA Standard CAN3-A23.3-M and the Reinforcing Steel Institute of Ontario Standards.
- .3 Fabrication and detailing of splices and laps in accordance with CSA Standard CAN3-A23.3-M for the appropriate specified yield strengths except that all lapped splices in welded wire fabric shall be lapped on full mesh plus 50 mm.

.4 Quality Control

- .1 Provide such samples of materials and mill test reports as may be required by the Architect at no cost to the Owner.

PART 3 - EXECUTION

.1 Examination

- .1 Examine and obtain all necessary measurements of previously executed work which may affect the work of this section prior to commencing operations.
- .2 Report any discovered discrepancies to the Architect so that instructions can be given for the necessary remedial action.

.2 Workmanship

.1 Formwork

- .1 Construct all forms to have sufficient strength, stability and rigidity to prevent bulging or deflection under the liquid weight of concrete and to support in addition, all construction loads to which they may be subjected.

- .2 Erect forms to the lines, dimensions and elevations shown on the drawings such that the completed work is within the tolerance limits for reinforced concrete buildings in accordance with ACI Standard 347. Note that dimensional tolerances for anchor bolt locations is more restrictive. Conform to erection diagrams and CISC Code of Standard Practice.
- .3 Immediately prior to concreting, inspect all forms to ensure that they are properly placed, sufficiently rigid and tight, thoroughly clean, properly treated and free from snow, ice, or other foreign materials.
- .4 Provide for all openings, offsets, risers, brackets, haunches, depressions and curbs as shown or required in the formwork.
- .5 For interior columns exposed to view in the completed structure, horizontal construction joints are to be at least 2800 above the floor. For exterior columns, no horizontal construction joints are to be visible in the completed structure. For exposed circular columns, forms must not leave spiral appearance.
- .6 For typical wall surfaces, arrange form ties such that after removal of the forms, no metal is within 25 of the finished surface.
- .7 Clean forms of all debris prior to concreting. Provide temporary openings at the base of walls, column forms and at other locations where necessary to facilitate cleaning and inspection. Place openings so that 'wash water' will have a clear run to the outside of the forms.
- .8 Provide 25 x 25 chamfers on all corners of concrete, exposed to view in the finished structure.
- .9 Coat forms with a non-staining mineral oil prior to the placing of reinforcing steel in accordance with CSA Standard CAN3-A23.1. Where concrete surfaces are to receive a final coat of paint, plaster, etc., omit the form oil and wet down the forms just prior to concreting.
- .10 Place continuous dovetail anchor slots (supplied by Division 4) as required to support the ends of abutting masonry walls and vertically at 6000 o.c. (maximum) on concrete surfaces which are faced with masonry, including walls and column faces.
- .11 Place anchors required for the support of mechanical or electrical equipment, structural steel, and miscellaneous iron which is to be cast into the concrete as supplied by other Divisions.
- .12 Place continuous pre-manufactured Galvanized steel support shelf angles as detailed on drawings. Anchor steel tails to reinforcing steel to prevent rotation during pours.

- .13 Immediately prior to concreting, inspect all forms to ensure that they are properly placed, sufficiently rigid and tight, thoroughly clean, properly treated and free of snow, ice or other foreign materials. Do not use chemicals for snow/ice control.
- .14 Composite steel deck will not require shoring.
- .15 Formwork approved for concreting shall be properly protected until concrete is placed.
- .16 Exercise particular care in stripping the tops of foundation walls and piers to avoid chipping, spalling, or gouging of concrete edges.
- .17 Stripping of forms shall be in accordance with Section 11 of CSA Standard CAN3-A23.1 and subject to the approval of the Consultant.

.2 Reinforcing Steel

- .1 Placing, spacing, splicing and protection of reinforcement in accordance with CSA Standard CAN3-A23.3
- .2 Maintain the cover required for reinforcement as shown on the drawings. Where not specifically shown, refer to CSA Standard CAN3-A23.1
- .3 Supply and install 100 x 100 x 75 brick chairs for the support of reinforcing in slabs-on-grade of a type and in a manner which will not puncture the vapour barrier. Space chairs 1200 on centre each way. Lap welded wire fabric at least one mesh plus 50 mm at all splices.

.3 Vapour Barrier

- .1 After all subgrade work is complete and approved, place vapour barrier for slabs on grade.
- .2 Lap sheeting minimum 150 at all joints and turn up at perimeter walls and piers 100 min.

.4 Concrete Placing

- .1 All conveying, depositing and compaction of concrete in accordance with CSA Standard CAN3-A23.1-M.
- .2 Maximum elapse of time between mixing and placing shall not exceed 1 1/2 hours. In hot weather, this time period may be reduced, or the use of a retarding admixture may be authorized by the Consultant to ensure satisfactory concreting.

- .3 Thoroughly compact all concrete during placing by the use of electrical internal vibrators to be a type and design approved by the Engineer to ensure that the finished concrete is free of voids or other defects.
- .4 Maintain sufficient vibrators on site to keep pace with the rate of pouring but in any case, not less than two shall be available at the site for any pour.
- .5 Carefully concrete in all piping, sleeves, conduits, etc., furnished by the Mechanical and Electrical trades.
- .6 Where concrete is placed on a membrane vapour barrier, take any necessary precautions to ensure that the membrane is not damaged by screeding, reinforcing or concreting operations. Place concrete for slab-on-grade from buggies properly supported on runways and not run directly on the reinforcing and/or membrane.
- .7 Strike off floor surfaces at the level shown on the drawings by means of previously set, continuous pipe screeding, set on adequate supports.
- .8 Notify the Engineer at least 24 hours in advance of any scheduled pour so that reinforcing and forms may be reviewed as determined by the Engineer.
- .9 Ensure that reinforcement, inserts, etc., are not disturbed during concrete placement.

.5 Concrete Protection and Curing

- .1 Protection and curing of concrete in accordance with Section 21 of CSA Standard CAN-A23.1. Note that wet curing of all elements is required for a period of 7 days or until the concrete reaches the design strength.
- .2 Maintain all equipment and materials for the protection and curing of concrete on site, ready to use before concrete placing is started.
- .3 Completely cover slabs with 4 mil polyethylene sheeting, properly lapped at side and edge laps and weighted down.
- .4 A sprayed-on membrane curing compound may be used for surfaces listed under paragraph 3 in lieu of polyethylene sheeting for concrete poured between April 1 and October 14. Sprayed-on curing compounds must be of a type which will not affect the adhesive of flooring materials and must be approved for use by the Engineer. Apply in strict accordance with the manufacturer's directions.

.6 Cold Weather Requirements

- .1 All concreting operations during cold weather in accordance with Section 21 of CSA Standard CAN3-A23.1.
- .2 Remove and replace all concrete damaged by frost or freezing at the direction of the Engineer at no cost to the Owner.
- .3 Accelerating chemical admixtures or calcium chloride shall **not** be used.

.7 Hot Weather Concreting

- .1 All concreting operations during hot weather in accordance with Section 21 of CSA Standard CAN3-A23.1.
- .2 The use of a water reducing-retarding chemical admixture in the concrete mix may be required at the Engineer's discretion.

.3 Finishing of Horizontal Surfaces

.1 Floors

- .1 Refer to ACI Standard 302 for recommended procedures for concrete floor and slab construction and finishing and to ACI Standard 301, Specification for Structural Concrete. Maintain surface tolerances in accordance with Section 11.9 of that ACI 301 for Class A tolerance.
- .2 Concrete floors which are to receive carpet, resilient flooring, mosaic tile, or be left exposed shall be steel floated with a disc type power floating machine, have a 600 mm disc, and weighing at least 135 kg. Continue the floating operation until sufficient moisture is brought to the surface to fill all voids. After floating when the floor has hardened sufficiently so that excess fines will be brought to the surface, trowel with a steel trowel to a surface free of all pin holes. The floor must not be used for seven (7) days after completion of trowelling, and only light use shall be permitted for an additional seven (7) days.
- .3 Concrete floors shall be sloped where required to floor drains at 1:50 and/or as directed by the ARCHITECT.
- .4 Concrete floor areas designated in the room schedule to be left exposed shall be finished as per Items 2 and 3 above with the addition of a factory pre-mixed non-metallic hardener. Apply in two separate shakes in strict accordance with the manufacturer's instructions for a combined application of 3.5 kg/m². Following finishing operations, apply unthinned

sprayed-on curing and sealing compound in strict accordance with the manufacturer's instructions. Just prior to turn-over, clean these areas and apply one coat of compatible floor sealer in strict accordance with the manufacturer's instructions.

- .5 Exposed concrete stairs and slabs shall receive two 1.3 kg/m² "shakes" of carborundum grits in accordance with the manufacturer's directions, followed by a light broom finish to provide a neat, non-slip surface.

.4 Construction Joints

- .1 Construction joints shall only be placed in locations approved by the Engineer or as shown on the drawings.
- .2 Construction joints shall be keyed and dowelled to the adjoining pour as detailed on the drawings.
- .3 Before placing adjoining concrete at construction joints, clean the existing surface of dirt, laitance and loose aggregate.

.5 Isolation Joints

- .1 Provide asphalt-impregnated fibreboard as follows:
 - .1 At locations shown and noted on the drawings.
 - .2 Isolation joints in the walls shall be as shown on the drawings.

.6 Control Joints

- .1 Provide control joints as follows:
 - .1 Where shown and noted on the drawings in walls and in floor slabs. Control joints in floor slabs shall be sawcut to the depth shown as soon after placing the concrete as the surface will allow without chipping but not later than 24 hours after placing.
 - .2 In general, control joints will be required in foundation walls, approximately 3000 each way from corners and intersections, and spaced not further than 9,000.

.7 Corrections and Remedial Work

- .1 The contractor will immediately correct by remedial work or replacement of the work, any items which do not conform with the Contract Documents or which are not within the specified dimensional tolerances.

.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 Architect.
- .2 The cost of all inspection and testing except as noted hereafter will be paid for by the Owner in accordance with the General Conditions.
- .3 Provide unhindered access to the project for the purposes of inspection and testing. Provide storage space and the necessary protection for test specimens against damage or loss while on site.
- .4 Provide representative samples of the materials as required by the testing and inspection company at no cost to the Owner.
- .5 All field tests for concrete quality and all criteria relating to failure to meet test requirements in accordance with CSA Standard CAN3-A23.1, Section 17, except as follows:
 - .1 Each test shall consist of three standard cylinders accompanied by a slump test and measurement of air content (where applicable). Unless otherwise directed by the Engineer, one cylinder shall be tested in 7 days and the remaining two at 28 days.
 - .2 The inspection company shall take concrete tests for:
 - .1 Not less than one test for each class of concrete placed each day, and
 - .2 Not less than one test for each 100 yards or portion thereof placed in any day.
- .6 The cost of any additional testing and/or the cost of replacement of any part of the structure, resulting from failure of the concrete to meet the test requirements shall be borne by the contractor.
- .7 Notify the testing company of the pouring schedule sufficiently in advance so that tests may be made.

.9 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

PART 1 – GENERAL

.1 **Description**

.1 **General Requirements**

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**

Section 03300: Concrete grout

.3 **Work Specified by This Section Performed by Other Sections**

Section 04200: Unit Masonry

.2 **Quality Assurance**

.1 **Requirements of Regulatory Agencies:**

Modify requirements of the Specifications only as jurisdictional authorities may direct.

.3 **References**

.1 **Reference Standards**

ASTM C207, Specification for Hydrated Lime.
ASTM C270, Specification for Unit Masonry.
CAN/CSA-A5/A8/A362-M88, Portland Cements.
CAN3-A371-M84, Masonry Construction for Buildings.
CAN3-S304-M84, Masonry Design for Buildings.
CSA Standard A82.30-M1980, Interior Furring, Lathing and Gypsum Plastering.
CSA Standard A179-94, Aggregate for Masonry Mortar.
CSA Standard A179-94, Mortar and Grout for Unit Masonry.

.4 **Submittals**

.1 **Affidavits**

Submit to Architect affidavits of an inspection company that mortar materials conform to requirements of the Specifications, if requested.

.5 **Delivery, Storage and Handling**

- .1 Handle and store cementitious materials protected against moisture.
- .2 Handle and store all mortar materials to prevent contamination by foreign materials, and damage by freezing or excessively high temperatures.

.6 **Site Conditions**

.1 **Environmental Requirements:**

- When air temperature is less than 5 °C, mix mortar as specified in the applicable reference standard.
- .2 When outside temperature is below or likely to drop below 4°C the temperature of materials and surrounding air shall be heated to maintain at least 10°C during period of laying and for 72 hours thereafter. Submit for approval methods for protecting masonry against low temperatures. Do not add salt or anti-freeze to mortar to lower freezing point. Work to be executed in enclosure heated by smokeless means when temperature drops below -1°C.

PART 2 - PRODUCTS

.1 Materials

- .1 Use materials only as specified in CSA Standard A179 referenced from CAN/CSA-A371-M84 and CAN/CSA-S304-M84. Ensure that water and aggregate used in mortar, other than in walls buried in earth, will cause no efflorescence.
- .2 **Cement:**
Portland Cement; Type 10, to meet specified requirements of CAN/CSA A5-M83.
- .3 **Sand Aggregate**
.1 **For Normal Mixes**
A clean, masonry type, free of iron compounds in accordance with CSA A179-94, not less than 100% passing a No.8 sieve.
- .4 **Lime**
A Dolomitic lime, Type S conforming to ASTM C207 and CSA Standard A179-94.
- .5 **Water**
Verify that water used contains no salts to cause efflorescence.
- .6 **Mortar Colouring**
.1 Lime and alkali-proof, non-fading, mineral oxide pigments manufactured especially for mortar use.
.2 For "white" mortar, use Federal White.
- .7 **Non-Shrink Grout**
Embeco Pre-mixed Grout as manufactured by The Master Builders Company, or In Pakt as manufactured by C.C. Chemicals Limited, or Tartan Grout by Webster & Sons Ltd., V1,2 or3 manufactured by W.R. Meadows .

.2 Mixes

- .1 Mix mortars as specified in CSA Standard A179. Use only dry aggregate. Test for bulking to determine accurate proportioning.
- .2 **Only** pre-mixed portland cement/lime mortar mixes will be acceptable for this Project. Materials may be pre-bagged or shipped in bulk containers.
- .3 Acceptable suppliers shall include "Betomix Plus by Daubois Inc.", "Mega Mix Canada" by Macdonald Aggregates Inc., "Jiffy Mortar Systems " by Jiffy Concrete Products, "Maxi-Mix " dry pre-blended mortar system by Maxi-Mix Corp., or an approved alternative.
- .4 Use grey mortar unless otherwise specified.
- .5 **Match colour of mortar to existing concrete masonry units where exposed to view by incorporation of suitable cement and aggregate and colouring.**

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- .6 At glass unit masonry blocks, use "super" white sand and Federal White.
 - .7 Limit quantity of mortar colour to following percentages of cement content by weight.
 - : 15% for mineral oxides
 - : 3% for carbon black.
 - .8 Concrete Grout: (for reinforced masonry)
Mix one part portland cement with three parts sand with water.

PART 3 - EXECUTION

.1 Preparation

.1 Protection

Provide waterproof protection over construction surfaces at mixing areas to prevent deposit on them of mortar and mortar materials.

.2 Mortar Types

- .1 For laying masonry use portland cement/lime mortar types as follows:
 - : "M" in masonry walls in contact with earth.
 - : "S" for exterior masonry veneer including load-bearing back-up block.
 - : "N" unless otherwise specified.

End of Section

PART 1 - GENERAL

.1 **Description**

.1 **General Requirements**

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**

Section 07920: Caulking and Sealants
Section 09250: Gypsum board closers at steel joists.
Section 09900: Painting and Finishing

.3 **Supply of Work Installed by This Section but Specified Elsewhere**

Section 03300: To furnish reinforcing steel for masonry lintels and reinforced masonry walls
Section 05120: To furnish bearing plates
Section 05120: To furnish masonry anchors attached to steel structure
Section 05120: To furnish loose lintels

Masonry inserts and attachment devices to support the installations of other Sections, frames, and miscellaneous metal work.

.4 **Performance of Work Included in This Section, Specified in Other Sections**

Section 04100: Mortar

.2 **System Description**

.1 **Tolerances**

Lay masonry to tolerances specified in CAN/CSA-A371-M84 and:

- .1 Level within 6 mm in any bay or 6m maximum distance, and 13 mm in 12 m or more.
- .2 Located from position shown, and from related position of columns, walls and partitions within 13 mm in any bay or 6 m maximum distance, and 19 mm in 12 m or more.
- .3 Opening sizes within 6 mm of designated dimension.
- .4 Columns and wall cross-section dimensions within minus 6 mm and plus 13 mm.
- .5 With joints to dimensions indicated, but in no case greater than 13 mm.

.3 **Quality Assurance**

.1 **Requirements of Regulatory Agencies**

- .1 Construct masonry as required by jurisdictional authorities.
- .2 Before commencing masonry work, verify that site conditions will allow construction of masonry within required limitations for wall heights, wall thicknesses, openings, bond, anchorage, lateral support, and compressive strengths of masonry units and mortars.

- .3 Construct masonry fire rated assemblies, which are validated by ULI, ULC, or NRC fire tests, in complete accordance with the test design specification. Fire rated assemblies constructed otherwise shall be approved only on presentation of affidavits that they are acceptable to the authorities having jurisdiction.

.4 **References**

.1 **Reference Standards**

- .1 Conform to CAN3-S304-M84 for Masonry Design and CAN3-A370-M84 and CAN3-A371-M84 for Masonry Construction specified in this Section.
- .2 Reference standards quoted in Contract Documents refer to:
ASTM A116-81, Specification for Zinc Coated (Galvanized) Iron or Steel Farm-Field and Railway Right-of-Way Wire Fencing.
ASTM A153-80, Specification for Zinc-Coating (Hot-Dip) on Iron and Steel Hardware.
CGSB Specification 1-GP-109M, Paint, Acid and Alkali Resistant, Black.
CAN3-A165 Series-M85, Concrete Masonry Units
CAN3-A370-M84, Connectors for Masonry.
CAN3-A371-M84, Masonry Construction for Buildings.
CSA Standard G30.12-M1977, Billet-Steel Bars for Concrete Reinforcement.
CAN/CSA-S304-M84, Masonry Design for Buildings.
CSA Standard G42-1962, Galvanized (Zinc-coated) Steel Farm-Field Wire Fencing
CAN/CSA-G164-M92, Hot Dipped Galvanizing of Irregularly Shaped Articles.

.5 **Submittals**

.1 **Shop Drawings**

Submit shop drawings of masonry reinforcement.

.2 **Samples**

Submit samples of each type of masonry unit specified, and of accessories, if requested.

.6 **Delivery, Storage, and Handling**

- .1 Isolate masonry units from contact with ground and other materials until laid, to prevent staining.
- .2 Ensure that moisture content of concrete masonry units is maintained within specified limits from time of shipment from plant to time of installation.
- .3 Cover masonry unit stockpiles while stored to prevent exposure to weather. Keep water out of all holes and reglets in units during freezing weather.
- .4 Handle and store masonry units to prevent soiling and chipping.
- .5 Deliver products to the place on site as directed, and to meet installation schedule.

.7 **Environmental Conditions**

.1 **Environmental Requirements**

- .1 When outside temperature is below or likely to drop below 4 C, materials and surrounding air shall be heated to maintain at least 10EC 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.
- .2 Do not lay masonry units when air temperature is below -1° C.
- .3 Do not lay masonry during rain unless work is protected by sufficient enclosure.
- .4 Protect new masonry work from direct rays of sun to prevent fast drying and shrinkage.
- .5 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.
- .6 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

.1 **Materials**

- .1 Meet specified requirements of CAN/CSA-A370-M84 and CAN/CSA-A371-M84 for materials unless specified otherwise.

.2 **Damp-proof Flashing**

Polyvinyl chloride flexible flashing membrane, 20mil thick, black; Rodoply by Sternson or Sealtight Flexguard by W.R. Meadows.

.3 **Damp-proofing Flashing Lap Cement**

To meet specified requirements of flashing manufacturer.

.4 **Joint Packing at Walls**

- .1 Expansion Joint Packing: Glass fibre insulation, rigid board, density of 48 kg/cu.m.

.5 **Joint Reinforcement**

- .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.
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.

- .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.)

.6 **Dovetail Anchor**

25.5 mm x 2 mm steel dovetail anchor, galvanized, with end crimped and bent.

.7 **Dovetail Anchor Slots**

Fabricated of minimum .55 mm metal, galvanized after fabrication, minimum 27 mm depth, with cellular foam filler; by Richmond Acryo or "Beehive".

.8 **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.

.9 **Weep Holes**

DA 1069 Cell vent by Dur-O-Wal Ltd. or Weephole Ventilator by Blok-Lok Limited.

.10 **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.

.11 **Sheet Metal**

- .1 Expansion Joint: 0.55 mm thick cold rolled copper to meet specified requirements of ASTM Specification B370, formed with 63.5 mm deep bellows and 75 mm wide flanges with hemmed or offset edges to form anchorage in mortar joint.
- .2 Through Wall Flashing Support: 0.55 mm thick cold rolled copper to meet specified requirements of ASTM Specification B370, formed with 75 mm wide flanges with hemmed or offset edges to form anchorage in mortar joint.

.12 **Through Wall Flashing**

- .1 Polyvinyl chloride flexible membrane, 20 mil thick, black; Rodoply by Sternson or Sealtight Flexguard by W.R. Meadows.

.13 **Bituminous Paint**

- .1 To meet specified requirements of CSGB Specification 1-GP-108.

.14 **Concrete Masonry Units**

- .1 To meet specified requirements of CSA Standard A165-M83.
- .2 Include all 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, vertical external corners and where otherwise indicated on Drawings.

- .3 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.
- .4 Provide 100% solid units where required by jurisdictional authorities.
- .5 Moisture controlled ("M") units as approved by Architect.
- .6 **Lightweight Units**
Of slag aggregate manufacture. For use in all exposed partitions and exterior wall backup.
Hollow Units: H/7.5/C/M
Solid Units: S/15/A/M
American Imperial and Metric as indicated in .3
Colour: Grey
- .7 **Face Block Units**
CMU 1 : Standard Smooth Face to match existing block in texture density and Colour.
- .15 **Architectural Masonry Units**
- BR-1**
Existing to be reused or match existing if available.
- .16 **Precast Concrete Sill Unit**
Provide new precast sill unit to match existing adjacent sill units.

PART 3 - EXECUTION

- .1 **Preparation**
- .1 **Shelf Angles**
Install shelf angles supplied by Sections 05100 and 05500. Level, adjust and secure angles permanently in place.
- .2 **Protection**
- .1 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.
- .2 Protect exposed external corners of masonry with materials which will not damage or soil finished surfaces.
- .3 Protect all finished surfaces from mortar droppings.
- .4 Take particular care to protect faces of concrete unit masonry from mortar droppings and smears as laying proceeds.
- .5 Turn over or cover scaffolds and mortar board at completion of each day's work to avoid staining of finished surfaces by splashed rain.
- .2 **Laying Masonry**
- .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 **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:
 - : at juncture of interior and exterior walls with columns.
 - : at interior with exterior walls.
 - : intersections of walls and partitions where joint reinforcement is installed.
 - : 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.
- .9 Stop off horizontal runs of walls by racking back 1/2 unit in each horizontal course; do not tooth.
- .10 Wet clay masonry units before placing. Wet faces of masonry in place before laying new masonry. Ensure that units have no water adhering to their surfaces when laid; but shall be wet only to ensure that complete hydration takes place during hot drying weather, and when unit absorption rates are greater than 0.11 ml/sq.cm/minute, so that the initial rate of absorption does not exceed above rate when laid.
- .11 Do not wet concrete units or existing brick units.
- .12 Distribute masonry units of varying colours and textures to avoid spotty appearance over wall surfaces exposed to view. Do not use units which contrast too greatly with overall range.
- .13 Use chipped and blemished concrete or brick units only where concealed. Do not use defective or broken units. Do not lay concrete units with markedly smooth face that will appear slick where exposed to view, whether painted or not.
- .14 Maintain continuous walls/piers bracing during construction until structure provides support.
- .15 **Lintels**
Build in lintels supplied by Section 05100. Set and level lintels on a bed of mortar.
- .16 **Built In Items**
 - .1 Verify that built-in items specified in other Sections are available for building in before laying of masonry commences. Cooperate in the setting and aligning of built-in items and provide for later installation of items which are installed by other Sections, to avoid cutting, fitting, and patching.

- .2 Build masonry around pressed steel door frames supplied and set as specified in other Sections. Ensure that anchors are well secured and that frames are true and plumb. Completely fill frames with mortar as each course is laid. Maintain protective frame covering and ensure that no mortar is left on frame faces.
- .3 All structural steel columns which require masonry shall be built in solid with masonry.
- .17 Cope, cut and split concrete masonry units and brick with power driven abrasive discs. Cut units wherever electrical outlets, grilles, and pipes occur. Allow 3.2 mm clearance around items which are incorporated in walls.
- .18 Do not expose open cells, cores or frogs of masonry units to view.
- .19 Flush surface smooth with mortar masonry against which flashing rests to ensure that it is not punctured.
- .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. 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.
- .21 **Bonding**
Where bond pattern is indicated on Drawings use masonry bonding, or clip headers and install metal bond anchors.
- .22 **Masonry Anchorage**
 - .1 Use dovetail anchors for slots at concrete construction.
 - .2 Use flexible anchors at steel structure.
 - .3 Build masonry tight to faces of structural members or as indicated on Drawings.
 - .4 Bed anchors solidly in mortar joints.
 - .5 Coordinate with Section 03300 to ensure that dovetail anchor slots in concrete are located correctly. Assist in their installation if requested.
- .23 **Lateral Support**
 - .1 Lateral support clips are specified in Section 05500.
 - .2 Coordinate with Section 05500 to ensure that lateral supports are located correctly. Assist in their installation if requested.
- .24 **Joint Reinforcement**
 - .1 Install joint reinforcement in:
 - : solid walls and partitions, including foundation walls, constructed of concrete masonry units.
 - : single wythes of concrete masonry units in cavity walls.
 - : single wythe concrete masonry walls and partitions.
 - : Combination solid walls and partitions incorporating concrete masonry unit backup.
 - : single wythes of brick masonry in exterior cavity walls.
 - .2 Place reinforcement continuously in horizontal joints at 400 mm o.c., beginning with course 400 mm above bearing, unless otherwise specified or indicated.
 - .3 Place reinforcement additionally in courses 200 mm, 400 mm and 800 mm above and below openings, and extending 600 mm beyond jambs of openings.
 - .4 Where changes in wall thickness occur, extend reinforcement of lesser width 450 mm beyond changes of width.
 - .5 Lap reinforcement a minimum of 150 mm at splices.
 - .6 Do not run reinforcement through control or expansion joints.
 - .7 Wherever walls and partitions intersect one another, or each other, continue reinforcement through. Do not carry reinforcement through intersections where lateral support anchors are installed or at intersections of walls and partitions with solid piers.

- .8 At masonry cladding for protected steel columns, lay specified reinforcement at every second course. Ensure that reinforcing is lapped to wall reinforcement and columns ties at least 150 mm.
- .25 **Deflection Space**
- .1 Incorporate a deflection space between tops of non load bearing walls and partitions and structure to prevent transference of structural loads to masonry.
- .2 Fill deflection space with glass fibre board compressed to 50% of original thickness to completely seal space.
- .3 Coordinate laying of masonry with installation of lateral support specified in this Section and as provided by Section 05500.
- .26 **Cavity Walls**
- .1 Bond cavity wall wythes with joint reinforcement.
- .2 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.
- .3 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 1 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.
- .4 Install weep holes in vertical joints at 600 mm o.c. in courses immediately above flashings, or at bottom of cavities, or as otherwise may be suitable to ensure that weep holes provide drainage of the cavity space.
- .27 **Through Wall Flashings**
- .1 Install flashing at locations indicated on Drawings.
- .2 Place flashing over sheet metal for support.
- .2 Coat surface of flashing in contact with masonry with two coats of adhesive.
- .3 Lap joints between lengths of flashing a minimum of 100 mm and seal with adhesive.
- .28 **Penetration of Masonry**
- .1 Fill voids of masonry to within 19 mm of structural members, pipes, ducts and conduit that penetrate masonry walls and partitions, unless otherwise indicated.
- .2 Keep masonry units similarly clear of such penetrations.
- .3 Finish mortar smooth at face of masonry.
- .4 Pack remainder of annular void surrounding penetrating item with fire separation packing to within 12.7 mm of face of masonry to allow for sealant.
- .29 **Shrinkage Control Joints**
- .1 Incorporate vertical shrinkage control joints in walls of which concrete masonry units are a part.
- .2 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.
- .3 Ensure complete vertical separation through walls incorporating control joints. Make control joints 9.5 mm wide, rake back 19 mm at junctures with concrete, and leave joints free and clear for caulking, as specified in Section 07920

- .4 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.
- .30 **Expansion Joints**
 - .1 Incorporate expansion joints in walls where indicated on Drawings.
 - .2 Build in metal bellows with joints between lengths lapped a minimum of 50 mm and flanges anchored in joint between wythes.
 - .3 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.
 - .4 Leave clean space in joints for caulking as specified in Section 07920.
- .31 **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.
- .32 **Fire Protection**
 - .1 Install masonry fire protection of structural steel columns as indicated on Drawings, for fire ratings indicated.
 - .2 Completely enclose structural steel columns with masonry for their entire length. Do not fill webs.
- .33 **Grouted Reinforced Masonry**
 - .1 Incorporate reinforcing steel and construct masonry to meet specified requirements of CAN/CSA-A371-M84 and CAN/CSA-S304-M84, and as indicated on Structural Drawings.
- .3 **Field Quality Control**
 - .1 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.
 - .2 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.
 - .3 Payment for inspection and testing will be made from cash allowance specified in Section 01020.
- .4 **Adjustment and Cleaning**
 - .1 Patch damaged masonry walls which have been rejected.
 - .2 Point all holes in mortar joints except weepholes.
 - .3 Point all voids in concrete unit masonry faces.
 - .4 Cut out defective mortar joints to a minimum depth of 13 mm and repoint.
 - .5 Wash down and brush masonry to remove mortar and stains. Use only detergents, or proprietary masonry cleaners as recommended by brick manufacturer.
 - .6 Clean concrete masonry units with brushes and as otherwise recommended by the supplier to remove mortar and stains.
 - .7 Do not use wire brushes for cleaning.
 - .8 Should specified cleaning methods be insufficient, proceed with other methods only with approval.
 - .9 Protect adjacent materials, construction and finished surfaces from damage while cleaning.
 - .10 Ensure that all efflorescence and mortar deposits are removed from surfaces to receive coating.

End of Section

PART 1 - GENERAL

.1 **Description**

.1 **General Requirements**

Division 1 and 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**

Section 06200: Finish Carpentry

.3 **Installation of Work Supplied by This Section, Specified in Other Sections**

Section 03300: To install bolts, inserts, etc.

Section 04200: To install bolts, inserts, etc.

.2 **Quality Assurance**

.1 **Requirements of Regulatory Agencies**

Mark each piece of wood, which is rated non-combustible by fire retardant pressure treatment, with ULC Fire Hazard Classification label.

.3 **References**

.1 **Reference Standards**

.1 Grade lumber in accordance with rules and regulations of the National Lumber Grades Authority.

.2 Dimensions of lumber shall conform to dressed sizes specified in CSA Standard O141-91.

.3 Reference standards quoted in Contract Documents refer to:
ASTM E84-81a, Test for Surface Burning Characteristics of Building Materials.

CAN/CSA O80 Series-M89, Wood Preservation.

CAN/CSA O141-91, Softwood Lumber.

CSA Standard B111-1974, Wire Nails, Spikes and Staples.

CSA Standard O121-M1978, Douglas Fir Plywood.

.4 **Site Conditions**

.1 **Environmental Conditions**

When it is required that wood maintain dimensional stability and tolerances to ensure accurate installation of later work, store and install it only in dry areas, and where no further installation of moist materials is contemplated.

PART 2 - PRODUCTS

.1 **Materials**

- .1 For lumber and fastenings conform to Ontario Building Code, Section 4.3.
- .2 Grade mark lumber by the appropriate association under authority of the National Lumber Grades Authority.
- .3 Moisture content of lumber at time of building-in shall not exceed 19%.
- .4 **Lumber**
 - .1 Spruce-Pine-Fir Species Group Designation, framing lumber, with no more than 15% of next lesser of specified grade included.
 - .2 For utility use where concealed: sound and free of imperfections or deficiencies making unsuitable for use.
- .5 **Plywood**
 - .1 Douglas Fir, in conformance with CSA Standard 0121-M1978.
 - .2 For utility use: Unsanded Sheathing Grade.
- .6 **Nails, Spikes and Staples**

In conformance with CSA Standard B111-1974; galvanized at exterior locations, at interior high humidity locations and for treated lumber; plain finish elsewhere. Use spiral shank nails generally.
- .7 **Fasteners**

To hollow masonry use toggle bolts: to solid masonry and concrete use expansion shields and lag bolts; to steel use bolts or welded stud fasteners. Use lead or inorganic fibre plugs for fasteners in concrete and masonry. Provide washers at bolt heads and nuts. Galvanize fasteners at exterior locations, at high humidity interior locations and for treated lumber.
- .8 **Wood Preservative**

Copper naphthenate or pentachlorophenol solution to meet specified requirements of CSA Standard O80.
- .9 **Dampproof Membrane**

0.051 mm polyethylene film.

PART 3 - EXECUTION

.1 **Installation**

- .1 **General**
 - .1 Lay out items installed by this Section carefully and to accommodate requirements of other Sections. Cut and fit members accurately; erect them in position indicated by Drawings; align, level, square, plumb, and secure them permanently in place. Brace work temporarily as required. Join members only over solid backing.
 - .2 Bore holes true to line and to same size as bolts. Drive bolts into place for snug fit, and use plates and lag screws tightly when installed, and again just before being concealed by other installations or at completion of the work.
 - .3 Cooperate with other Sections to ensure that unity of actions will ensure orderly progress to meet construction schedule.
 - .4 Supply anchors, bolts, and inserts, required for installations of this Section, to those performing the work of other Sections and who are responsible for their installation.

.5 Include rough hardware such as nails, bolts, nuts, washers, screws, clips, hangers, connectors, and strap iron required for installations by this Section; and for all operating hardware required by this Section for temporary use.

.6 Do not attach installations of this Section by wood plugs or blocking in concrete or masonry. Use lead shields, expansion shields, concrete nails, or similar methods only as approved.

.2 **Blocking, Nailers, Strapping, Furring, Grounds & Miscellaneous Rough Framing**

.1 Do not regard nailers, blocking, and such other fastening provisions as shown on drawings as exact or complete. Install required provisions for fastening, located and secured to suit site conditions, and adequate for intended support.

.2 Cut members into lengths as long as practicable and with square ends.

.3 Install rough bucks for opening jambs, heads, and sills of minimum nominal 38 mm thickness, and of width of casings or as otherwise indicated. Set bucks plumb, level, and anchored securely in place.

.4 Verify that grounds required for fastening of components and equipment are located correctly, and that they provide adequate support.

.5 For general strapping, set preservative treated nominal 19 mm x 38 mm wood strips vertically and spaced at 400 mm o.c., unless otherwise indicated. Shim to provide a true face plane. Install intermediate horizontal strapping at all joints to wall finishes applied over grounds.

.2 **Adjustment**

.1 Ensure that bolted fasteners are drawn up tightly.

End of Section

PART 1 - GENERAL

.1 **Description**

.1 **General Requirements**

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**

Section 06100: Rough Carpentry
Section 06410: Casework
Section 09900: Painting & Finishing

.2 **References**

- .1 Conform to CSA Standard O141-91 for dressed dimensions of wood members.
- .2 Reference standards quoted in Contract Documents refer to:
 - ASTM E84-81a, Test for Surface Burning Characteristics of Building Materials.
 - CAN3-O188.1-M78, Interior Mat-Formed Wood particleboard
 - CAN/CSA-A172-M79, High Pressure, Paper Base, Decorative Laminates
 - CAN/CSA-O80 Series-M89, Wood Preservation
 - CAN/CSA-O141-91, Softwood Lumber
 - CSA Standard O115-1982, Hardwood Plywood
 - CSA Standard O121-M1978, Douglas Fir Plywood
 - CSA Standard O151-M1978, Canadian Softwood Plywood
 - CSA Standard O153-M1980, Poplar Plywood
 - CGSB Specification 11-GP-3M, Hardboard
- .3 Fabricate millwork as specified in Finish Carpentry Schedule to meet specified requirements of Custom Quality Standard of either:
 - : AWI Specification, Architectural Woodwork Quality Standards and Guide Specifications, 1973, by Architectural Woodwork Institute, or
 - : AWMAC Specification, Quality Standards for Architectural Woodwork of the Architectural Woodwork Manufacturers Association of Canada, Seventh Edition, 1984.

.3 **Submittals**

.1 **Shop Drawings**

Submit detailed shop drawings of all millwork and finished carpentry items.

.2 **Samples**

Submit samples of each specified finish wood species, and in each cut if requested.

.4 **Delivery, Storage and Handling**

- .1 Protect materials from damage during handling, delivery, and storage.
- .2 Receive finish hardware supplied by Section 08710 and store, secure against theft.
- .3 Do not deliver wood materials to site until storage areas are completed, and conditions are such that no damage will occur to them while in storage and during installation.

.5 **Site Conditions**

.1 **Environmental Requirements**

Ensure that relative humidity in areas where wood materials are stores and installed does not exceed 55%.

.6 **Warranty**

.1 **Extended Warranty**

Warranty installation specified in this Section covering the period for one (1) year beyond the expiration of the warranty period specified in the General Conditions to the Contract.

PART 2 - PRODUCTS

.1 **Materials**

.1 **General**

- .1 Provide rough hardware required for finish carpentry specified in this Section. Use non-corrosive hardware at exterior locations.
- .2 Moisture content of wood at time of installation shall be for interior locations at an average of 7%, with a permitted range of individual pieces of 5% to 9%; and for exterior locations at an average of 12%, with a permitted range in individual pieces of 10% to 15%.
- .3 Use only adhesive and fastenings that develop sufficient strength for intended use, are non staining, and are unaffected by the environment to which exposed.

.2 **Wood**

- .1 Grade mark softwood and hardwood lumber by the appropriate association under authority of the National Lumber Grades Authority.
- .2 Where not exposed to view, use wood of grades suitable for fabrication, utility and structural needs.
- .3 Where exposed to view, use Appearance Grade wood for structural lumber, as otherwise specified. Meet requirements of specified AWI or AWMAC Quality Grade Standard, where applicable.
- .4 Ensure that surfaces exposed to view and given a natural or stained finish are free from markings and stains caused by milling, treatment, storage, handling and other causes.

- .5 Ensure that veneered panels, and solid finger jointed and edge laminated members, where admissible for incorporation as approved, are matched for grain configuration and uniformity of colour throughout all surfaces exposed to view which are to receive a natural or stained finish.

.3 **Plywood**

- .1 Douglas Fir; To meet specified requirements of CSA Standard O121-M1978; Sanded Grade, Good Two Sides where both sides are exposed to view, and Good One Side where only one side is exposed to view.
- .2 Softwood: To meet specified requirements of CSA Standard O151-M1978, Sanded Grade, Solid Two Sides where both sides are exposed to view, and Good One Side where only one side is exposed to view.
- .3 Hardwood: To meet specified requirements of CSA Standard O115-M1978 veneer core, Type II, smooth sanded, rotary cut face veneers, Good Grade where exposed to view and Sound Grade where not.
- .4 Poplar: To meet specified requirements of CSA Standard O153-M1980.
- .5 Birch: Rotary cut Select Grade veneer where transparent or clear finish specified.

.4 **Particleboard**

To meet specified requirements of CAN/CSA-O188.1-M78, Grade S.

.5 **Plastic Laminate**

To meet specified requirements of CAN/CSA-A172-M79.

- .1 Colour: Selected from manufacturer's standard solid colour range.

.6 **Hardboard**

To meet specified requirements of CGSB Specification 11-GP-3, Type 2.

.7 **Fire Retardant Treatment**

Pressure treat lumber in accordance with CSA Specification O80 Series-M89, C20 and plywood with O80 Series-M89 C27, or to ULC Specifications; to ensure a flame spread rating of less than 25 when tested in accordance with ASTM Standard E84.

.8 **Wood Preservative**

Clear pentachlorephenol, to meet specified requirements of CSA Standard O80 Series-M89.

.2 **Fabrication**

.1 **General**

- .1 Assemble fabricated millwork units in mill in units as large as possible. Design units to fit together if site assembly is required.

-
- .2 Edge plywood where specified or indicated with solid wood to match face veneer, with profiled pressure glued edge joint and finished level with plywood surfaces.
 - .3 Fabricate custom casework specified in this Section to meet workmanship specifications in Section 400, Casework, of AWI/AWMAC Custom Quality Standard, except as modified, and as follows:
 - .1 Conceal edge grain of exposed and semi-exposed plywood and particleboard using solid hardwood edges for stain finish or plastic laminate.
 - .2 Assemble cabinet body members with adhesive.
 - .3 Where permitted, drive power-driven Tee head nails or staples with long dimension parallel to grain.
 - .4 Install dust panels between drawers.
 - .4 Shop fabricate work of this Section in as large units as possible.
 - .5 Incorporate services, fixtures, and trim in units as indicated on drawings or specified in Divisions 15 or 16, or both. Make all necessary cutouts to template information.
- .2 **Trim**
- .1 Rout or groove backs of flat trim members.
 - .2 Kerf backs of wide flat member.
- .3 **Fastening**
- .1 Fasten assemblies with nails generally, but use screws or special fasteners at critical joints where strain, and excessive usage and shrinkage is anticipated, and where required by specified quality grade standards.
 - .2 Glue built-up assemblies as well as nailing and screwing.
 - .3 Bind nail unless impossible.
 - .4 Set finish nails below finished surfaces.
- .4 **Plastic Laminate Facing**
- .1 Apply plastic laminate for counters to poplar faced phenolic bonded plywood, or to particleboard, minimum 19 mm thick, or as otherwise indicated on Drawings. Apply plastic laminate for doors, drawer fronts, gables, etc. of cabinets to minimum 19 mm thick wood core, Birch faced plywood.
 - .2 Bond plastic laminate to backing with urea formaldehyde adhesive, or by methods of equal or better quality recommended by the plastic laminate manufacturer.
 - .3 Seal edges of cutouts with plastic laminate, or where concealed from view by other methods that will prevent entry of moisture into core.
 - .4 Apply plastic laminate backing sheet to core on back side of panels faced with plastic laminate.
 - .5 Ensure that both face and backing sheet have been sanded in same direction.
 - .6 Bond plastic laminate self-edges under pressure, and bevel and finish smooth finished corners.

- .7 Round corners of holes cut through plastic laminate and file them smooth.
- .8 Make joints only when lengths of plastic laminate facing exceeds 3660 mm. Butt joints together, reinforce core with 6.4 mm hardwood blind splines, and lock together with Tite Joint fasteners located at a maximum of 75 mm from edges.

.5 **Finishing**

- .1 Finish each surface of millwork to specified quality grade standard where exposed or semi exposed. Consider that all visible surfaces are exposed, including underside surfaces above 1200 mm from floor and interiors of fitments behind glass doors. Consider that underside surfaces within 1200 mm of the floor, top surfaces more than 1800 mm above the floor, interiors of fitments behind opaque doors and the backs of fitment doors are semi-exposed.
- .2 Fine sand surfaces level and smooth after fabrication.

PART 3 - EXECUTION

.1 **Examination**

- .1 Before commencing installation, ensure that grounds, strapping, and other constructions and surfaces to which finish carpentry is installed are satisfactory for fitting and adequate for its securement.
- .2 Take site measurements of construction to which finish carpentry installations must conform, and through which access must be made, before fabricated units are delivered to site, to ensure that adaptation is not required which would result in construction delay.

.2 **Preparation**

.1 **Protection**

- .1 Ensure that finish carpentry materials are protected from damage and deterioration during installation, and otherwise until project completion in accordance with General Conditions.
- .2 Take particular care that wood made fire retardant by pressure treatment is not exposed to dampness.

.3 **Installation**

.1 **General**

- .1 Backprime exterior and interior millwork specified in this Section immediately after delivery to site under work of Section 09900. Ensure that cut ends are primed. Scrape or sand smooth surfaces by this Section. Notify those who are responsible for backpriming in sufficient time to enable them to schedule their work.
- .2 Coordinate the installation of casework manufactured under section 06410 and determine which section will be responsible for the installation of casework. Notify the architect of section responsibility for installation of casework.

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- .3 Install finish carpentry plumb, level and straight, and fasten it securely to backing to support itself and anticipated superimposed loads.
 - .4 Build finish carpentry into construction as indicated on Drawings or specified in other Section of the Specifications, or both.
- .2 **Trim**
- .1 Install in single lengths except where material limitation makes impossible. Stagger joints where they occur and locate over solid backing for fastening.
 - .2 Install wood bases after finish flooring is laid.
 - .3 Cut returns of stool and apron ends to match face profile.
- .3 **Cutting and Fitting**
- .1 Cut moldings with sharp true profiles.
 - .2 Cope trim and mouldings at interior corners and at returns.
 - .3 Miter trim and mouldings at exterior corners. Glue and lock shop miters that are over 100 mm from heel to point.
 - .4 Scribe and join members accurately together, and to other surfaces, to fit tightly and with flat smooth surfaces. Install trim or filler panels to close gaps.
 - .5 Ensure that all cutouts for electrical devices and plumbing are fully coordinated and neatly completed for work under this section and Section 06410.
- .4 **Fastening**
- .1 Fasten finish carpentry with nails generally, but use screws or special fasteners at critical joints where strain, usage and excessive shrinkage is anticipated, and where specified quality grade standards require.
 - .2 Blind nail unless impossible.
 - .3 Set finish nails below finished surfaces to receive putty.
- .5 **Installation of Doors**
- .1 Install wood doors after finishing of walls.
 - .2 Fit wood doors with 2 mm clearance at jambs and heads, and 9.5 mm over finished flooring.
 - .3 Trim hinge side of wood doors to fit, and bevel latch edges as required.
 - .4 Ensure that top and bottom edges of wood doors are primed under Work of Section 09900 after they are cut to fit.
 - .5 Undercut wood doors where indicated on Door Schedule.
- .6 **Installation of Finish Hardware**
- .1 Install finish hardware
 - .2 Make cuts in wood doors neatly
 - .3 Accurately locate and adjust hardware to meet manufacturer's instructions. Use special tools and jigs as recommended.
 - .4 Install hardware in wood doors at same locations as for hollow metalwork installed in project.
 - .5 Locate door stops to contact doors 75 mm from latch edge.

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- .6 Install hardware and trim square and plumb to doors.
 - .7 Replace missing hardware to ensure specified installation at time of building completion.
 - .8 After installation, replace wrappings for hardware provided by manufacturer.
 - .9 Safeguard keys to keep them out of unauthorized hands, tag them with opening number, and deliver them to person designated by Architect at building completion.

.7 **Finishing**

- .1 Sand wood surfaces after installation to leave surfaces in true planes and free of machine or tool marks.

.8 **Wood Preservative**

- .1 Give wood installed at exterior of building and which is specified for painting a soaking coat of wood preservative on all surfaces. Give freshly cut ends two additional soaking coats.

.4 **Adjustment and Cleaning**

- .1 Adjust hinged doors to swing freely and easily, to remain stationary at any point of swing, to close evenly and tightly against stops without binding, and to latch positively when doors are closed with moderate force. Ensure that when doors are installed with hinged stiles adjacent, both doors can open simultaneously without binding.
- .2 Adjust hardware so that latches and locks operate smoothly and without binding, and closers act positively with the least possible resistance in use. Lubricate hardware if required by supplier's instructions.
- .3 Clean hardware after installation in accordance with supplier's instructions.
- .4 Sand and clean woodwork to leave free from finish defects in any exposed part.

End of Section

PART 1 - GENERAL

.1 **Description**

.1 **General Requirements**

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

.2 **Work Performed by This Section**

Work of this section includes the supply and installation of architectural woodwork including, but not limited to the following:

- .1 Standing and running trim.
- .2 Cabinetry and hardware.
- .3 Wood panelling and related wood doors.
- .4 Wood frames and Jamb
- .5 Plastic laminate countertops.
- .6 Solid surfacing countertops and fabrications
- .7 Wood wall panels.
- .8 Acoustic panels.
- .9 Factory and site finishing of architectural woodwork.

.3 **Work Performed by Other Sections Related to This Section**

Section 06200: Finish Carpentry

Section 09900: Painting and Finishing

Division 15: Mechanical Services to be coordinated with work of this section.

Division 16: Electrical Services to be coordinated with work of this section.

.4 **Installation of Work Supplied by This Sections Specified Other Sections**

Section 03300: To install blocking, anchors and inserts.

Section 04200: To install blocking, anchors and inserts.

Section 09250: To install support framing.

.2 **Quality Assurance**

.1 **Subcontractor Qualifications**

Provide custom casework specified in this Section only by a fabricator 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.

.3 **References**

.1 **Reference Standards**

- .1 Reference standards quoted in Contract Documents refer to:
CAN/CSA-A172-M79, High Pressure, Paper Base, Decorative Laminates.
- .2 Fabricate custom casework to Custom Quality Standard of either:
: AWI Specification, Architectural Woodwork Quality Standards and Guide Specifications, current edition, by Architectural Woodwork Institute.
: AWMAC Specification, Quality Standards for Architectural Woodwork of the Architectural Woodwork Manufacturers Association of Canada, Current Edition.

.4 **Submittals**

.1 **Shop Drawings**

- .1 Submit shop drawings for the work of this section.
- .2 Include plans, sections and large scale details indicating components, methods of assembly, materials and their characteristics, fastenings, finishes along with all other fabrication information required for the work of this section.
- .3 Include full scale drawings of all exposed to view edge conditions.
- .4 Indicate assembly joint lines.
- .5 Submit coordination drawings indicating locations of concealed grounds, cut-outs, plates, access points, and other required coordination references and fabrications.
- .6 Show relations to adjoining construction, details of outside and inside corners and door openings, including interference with swings, slides and active assemblies.

.2 **Samples**

- .1 Submit samples of each specified finish species solid wood and wood veneer showing the full range of grain variation, finish and patterns proposed for the specified wood product and in each cut. Provide two samples of each showing the finish specified. If colour is specified include the original specified sample and one set with lighter tone and one set darker tone.
- .2 Submit samples of melamine with specified self edge to match existing millwork in panel pieces of 300mmx300mm by specified thickness completely finished and matched.
- .3 Submit samples of solid wood with specified wood trim in panel pieces of 300mmx300mm by specified thickness completely finished and matched cut.
- .4 Submit 2 identical samples of plastic laminate showing edge profile and integrated backplash profile.
- .5 Submit 2 identical samples of plastic laminate for cabinet doors showing edge profile to match existing.
- .6 Submit 2 samples of each item of hardware specified.

.5 **Delivery, Storage, and Handling**

- .1 Package and otherwise protect custom casework from damage during handling, delivery, and storage. Provide temporary skids under large or heavy units.
- .2 Do not deliver custom casework to site until conditions are such that no damage will occur to it while in storage. Ensure that relative humidity in storage areas does not exceed 55%.

.6 **Warranty**

.1 **Extended Warranty**

Warrant installation specified in this Section covering the period for four (4) years beyond the expiration of the warranty period specified in the General Conditions to the Contract. Warranty shall be against defects of material and workmanship.

.7 **Maintenance Manual**

Provide maintenance information to be incorporated into the project manual detailing the maintenance procedures for finishes requiring specific care, or procedures or materials which will cause damage to finished surfaces.

.8 **Extra Materials**

Deliver 2 new sets of each hardware component actually used in the supply and installation to be used as maintenance replacement. Ensure that a complete labeled duplicate set of cabinet and drawer keys are delivered upon completion.

.9 **Prices**

.1 **Separate Prices**

Separate prices concerning Work of this Section is specified in Section 01206, Prices.

PART 2 - PRODUCTS

.1 **Products**

- .1 Specified manufacturer's catalogue reference to establish minimum acceptable standards for products specified in this Section.
- .2 Unspecified materials which form a part of complete assemblies shall be of manufacturer's standard.
- .3 Acceptable alternatives for the Work of this Section are:

.2 **Materials**

- .1 Conform to AWI or AWMAC quality grade standards defined in specified reference standards and as specified for custom casework items for lumber and plywood materials and their machining and sanding.

- .2 Ensure that veneered panels and solid finger jointed and edge laminated members, where admissible for incorporation are matched for grain configuration and uniformity of colour throughout all surfaces exposed to view which are to receive a natural or stained finish.

.3 **Solid Wood**

- .1 Exposed for Transparent Finish:
Grade: 1
Cut: Plain sawn (quarter cut)
Species: Clear birch.
- .2 Semi-Exposed: Same as for exposed.
- .3 Concealed: At option of fabricator.

.4 **Plywood**

- .1 Backing Grade, veneer core, with no added urea-formaldehyde used in composition.
Softwood plywood to CSA O 151-04
Douglas Fir plywood to CSA O 121- M1978

.5 **Particleboard : Medium Density**

- .1 Melamine: Match 992 Hard Rock Maple.
To meet specified requirements of ANSI A 208.1 - 1999, Grade M3
19mm thick with matching non-yellowing edge trim.
- .2 Use Melamine board for all tops, bottoms, shelves, and backs of all cabinets. Edge all exposed edges.

.6 **Plastic Laminate**

- .1 To meet specified requirements of CSA A172-96, GRADE GP OR GF, Type S, min. 1.2 mm thick. Colour to be selected by consultant. Allow for 3 colours and 3 patterns.
- .1 For all cabinet doors: Plastic Laminate: 992 Hard Rock Maple.
Covered for all interior and exterior door faces and edges.
- .2 For Teachers Cabinet doors: Plastic Laminate: 992 Hard Rock Maple.
Covered for all interior and exterior door faces and edges.
- .3 For Postformed Counter Tops: Type 2, Postforming, 2a Standard, 1.25 mm thick.
- .4 For Exterior Faces of Cabinets only where specified: Type 1, General Purpose 1b Standard, 1.6 mm thick
- .5 For Cabinet Lining and Shelves: Liner Sheet, Type 1, General Purpose, 1c Light Duty, 0.75 mm thick.
- .6 Backing Sheet: In same thickness as face sheet.
- .7 Surface Finish: Furniture Finish, except for backing sheet.
- .7 Acceptable Manufacturers:

Formica
Nevamar
Laminart
Wilsonart

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- .7 **Fasteners and Adhesives**
Fasteners and anchors to be capable of supporting 2.5 times the load carrying capabilities of the panels or the loaded intended use of any millwork cabinetry, shelves, brackets, etc. in both the horizontal and vertical application. All cabinetry is to be securely anchored to walls to prevent tipping or falling in the fully loaded use condition. Refer to general conditions for further requirements.
- .1 Wood Screws; FF-s-111D amendment #1 (1989), Type size, material and finish as required for the completed conditions of use.
 - .2 Nails: FED FF-N-105, Type size, material and finish as required for the completed conditions of use.
 - .3 Anchors: Type size, material and finish as required for the completed conditions of use.
 - .4 Fastening devices shall be set or countersunk flush with surface of framing members. No exposed fasteners permitted, except where accepted by the consultant. Exposed fasteners shall be flat head hex socket cap screws and matching joint connector sex bolts as supplied by Murakoshi, finish and sample approval by the Consultant.
 - .5 Concealed panel hanging strips: Extruded aluminum interlocking strips and fasteners.
 - .6 Adhesives: Moisture resistant complying with FS MMM-A125, Type II or FED MMM_A_188, Type I, II or III: best suited for the purpose.
- .8 **Hardware**
Refer to cabinetry and casework schedule to be supplied and installed.
- .9 **Wood Finishes**
- .1 Polyurethane type conforming to CGSB Specification 1-GP-175M, semi-gloss finish, in colours to be selected from manufacturer's standard range.
- .3 **Fabrication**
- .1 Fabrication shall be in accordance with the Architectural Woodwork Standards, 8th Edition, 2003, Premium Grade, unless otherwise indicated or scheduled, and as follows:
 - .1 Panel Products:
 - .1 Fabricate in accordance with Architectural Woodwork Standards, 8th Edition, 2003, Section 200.
 - .2 Standing and Running Trim:
 - .1 Fabricate in accordance with Architectural Woodwork Standards, 8th Edition, 2003, Section 300.
 - .3 Architectural Cabinetry:
 - .1 Fabricate in accordance with Architectural Woodwork Standards, 8th Edition, 2003, Section 400.
 - .2 Construction: Flush overlay.

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- .4 Panelling and Related Wood Doors:
 - .1 Fabricate in accordance with Architectural Woodwork Standards, 8th Edition, 2003, Section 500.
 - .2 In addition, wood doors shall be in accordance with Section 08140.
 - .5 Frames and Jambs:
 - .1 Fabricate in accordance with Architectural Woodwork Standards, 8th Edition, 2003, Section 900.
 - .2 Fabricate woodwork to dimensions, profiles, and details indicated with openings and mortises pre-cut, where possible, to receive hardware and other items of work.
 - .3 Complete fabrication, assembly, finishing, hardware application, and other work before shipment to maximum extent possible. Trial fit in shop and disassemble components only as necessary for shipment and installation. Where necessary, provide ample allowance for scribing, trimming, and fitting. Reassemble with concealed fasteners.
 - .4 Pre-cut openings: Provide woodwork, solid tops and other indicated materials with pre-cut openings, where possible, for hardware, appliances, plumbing fixtures, electrical work, communication/data cut-outs and similar items. Locate openings accurately and provide proper size and shape. Smooth edges of cut-outs and, where located in countertops, seal edges of cut-outs with a water-resistant coating. Provide manufactured grommets as indicated.
 - .5 Measurements: Before fabrication of woodwork to be fitted to other construction, obtain field measurements and verify dimensions and shop drawing details as required for accurate fit.
 - .6 Provide lumber framing for architectural woodwork, complete with all bracing and fastening devices as required for a rigid installation, and as required to sustain the imposed loads.
 - .7 Do fabrication from field measurement with provision for scribing and transportation as required meeting built-in conditions.
 - .8 Maintain relative humidity and temperature during fabrication, storage and finishing operations matching that of the areas of installation.
 - .9 Reinforcing shown is minimum. Provide additional reinforcing as required to ensure a rigid assembly. Exposed surfaces shall be free from dents, tool marks, warpage, buckle, glue and open joints, or other defects. Accurately fit all joints, corners and mitres.
 - .10 Provide balancing sheets as required, and specified, complying with the Architectural Woodwork Standards, 8th Edition, 2003.
 - .11 Provide necessary cut-outs on a through the furniture to accommodate architectural woodwork and work of other sections.

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- .12 Provide surface mount blocking & strapping necessary to support the work of this section. Such blocking shall not be exposed upon completion of work.
 - .13 Prefinish work at the factory, except where specified or indicated otherwise.
 - .14 Take responsibility for the stability of furniture and fitments.
 - .15 At plastic laminate surfaces, mitre fold at cabinet corners and countertop.
 - .1 Plastic laminate countertops: unless otherwise indicated: Fabricate countertops with plastic laminate to top side of minimum 15.9 mm (5/8") particle board, with a 180° full wrap finished bullnose front edge, with 100 mm (4") back and sidesplashes. Joints in plastic laminate will not be permitted on countertops except at mitred corners.
 - .16 No end grain shall be visible: mitre external corners; house internal corners.
- .4 **Fabrication – Solid Surfacing**
- .1 Fabrication to be performed by a solid surface manufacturer's certified fabricator/installer.
 - .2 Wherever possible, fabricate in single piece accurately made to fit space.
 - .3 Fabricate components in shop to greatest extent practical to size and shape indicated, in accordance with reviewed shop drawings and manufacturer's written requirements.
 - .4 Form joints between components using manufacturer's standard joint adhesive. Joints shall be inconspicuous in appearance and without voids. Attach 100 mm (4") wide solid surfacing material reinforcing strip under joints.
 - .5 Provide holes and cut-outs as indicated or as required.
 - .6 Rout and finish component edges to a smooth, uniform finish. Rout cut-outs then sand edges smooth. Repair or reject defective or inaccurate work.
 - .7 Surfaces shall have a uniform finish.
- .5 **Finishing of Interior Architectural Woodwork**
- .1 Quality Standard: Comply with the Architectural Woodwork Standards, 8th Edition, 2003 unless otherwise indicated.
 - .2 General: The entire finish of Interior architectural woodwork is specified in this section, regardless of whether factory applied or applied after installation.
 - .3 Preparations for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces and similar preparations for finishing of architectural woodwork, as applicable to each unit of work.
 - .4 Transparent finish for hardwood veneer and solid hardwood:

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- .1 Comply with requirements indicated below for grade, finish system, staining, and sheen.
 - .1 Grade: Premium
 - .2 Sheen: Low
 - .3 Factory finish with Premium grade transparent, clear, catalysed lacquer in accordance with the Architectural Woodwork Standards, 8th Edition, 2003, Section 1500.
 - .5 Shop fabricate work of this Section in as large units as possible.
 - .6 Incorporate services, fixtures, and trim in units as indicated on drawings or specified in Divisions 15 or 16, or both. Make all necessary cutouts to template information.
 - .7 Fabricate counter tops with post-formed plastic laminate facing.
- .6 **Containers** (upper and base cabinet units, cubbies and open boxes)
- .1 Fabricate of 19mm Melamine: Match 992 Hard Rock Maple, with interlocking tongue and groove joints using fasteners in accordance with specifications.
 - .2 Provide Melamine: Match 992 Hard Rock Maple at all edges of unit.
 - .3 Router cut slots and holes to permit coupling and to accept standard shelving and accessory parts.
- .7 **Shelving**
- .1 Fabricate of 19mm Melamine: Match 992 Hard Rock Maple, in sizes to suit containers.
 - .2 Router cut openings and holes for shelf supports.
- .8 **Drawers**
- .1 Fabricate of 15mm plywood rails, 19mm Melamine: Match 992 Hard Rock Maple and 9mm particle board bottom.
 - .2 Fabricate in sizes to suit containers.
 - .3 Router cut openings for pulls and drawer slides.
- .9 **Doors** (cabinets)
- .1 Fabricate of 19mm Plastic Laminate: 992 Hard Rock Maple, in sizes to suit containers.
 - .2 Router cut openings for pulls and hinges.
- .10 **Doors** (Tall storage and teacher closet)
- .1 Fabricate of 40mm doors with Plastic Laminate: 992 Hard Rock Maple on honeycomb core door panels, in sizes to suit containers.
 - .2 Router cut openings for pulls and hinges.

.11 **Bases**

- .1 Fabricate of laminated plywood, 100mm high.
- .2 Base to be levelling type, located at each corner of base.
- .3 Finish on exterior base to match door/container finish.

.12 **Finishing**

- .1 Conform to requirements of Section 09900.
- .2 Sand each coat between applications of finish.
- .3 Shop finish with polyurethane finish, 3 coat system using oil modified polyurethane, conforming to CGSB Specification 1-GP-175M, semi-gloss finish.

PART 3 - EXECUTION

.1 **Preparation**

- .1 Condition woodwork to average prevailing humidity conditions in installation areas before installing.
- .2 Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including back priming and removal of packing.
- .3 Provide all grounds, nailers and other required fabrications which are to be built into other work when required.

.2 **Installation**

- .1 Quality Standard: Install woodwork to comply with Section 1700 of the Architectural Woodwork Standards, 8th Edition, 2003 for same grade specified in Part 2 of this section for type of woodwork involved.
- .2 Install woodwork plumb, level, true, and straight with no distortions. Shim as required with concealed shims. Install to a tolerance of 3 mm in 2400 mm (1/8" in 8') for plumb and level (including tops) and with no variations in flushness of adjoining surfaces.
- .3 Scribe and cut woodwork to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.
- .4 Anchor woodwork to anchors or blocking built or directly attached to substrates. Secure to grounds stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fastener heads are required, use fine fishing nails for exposed nailing, countersunk and filled flush with woodwork and matching final finish where transparent finish is indicated.
- .5 Complete the finishing work specified in this section to whatever extent not completed at shop or before installation of woodwork.

.3 **Protection**

- .1 Provide final protection and maintain conditions, in a manner acceptable to manufacturer and installer, that ensure that woodwork is without damage or deterioration at time of *Substantial Performance of the Work*.

.4 **Adjustment and Cleaning**

- .1 Adjust operating parts of units to move freely, without excessive play, and to fit accurately.
- .2 Clean, lubricate and adjust hardware.
- .3 Ensure that when doors are installed with hinged stiles adjacent, both doors can open simultaneously without binding.
- .4 Refinish damaged and defective custom casework before completion of project. Refinishing of exposed surfaces shall show no discernible variation in appearance.
- .5 Clean custom casework respecting specified finishing.
- .6 Final cleaning is specified in Section 01700.

.5 **Casework**

- .1 Work of this Section will include the supply, fabrication and installation of cabinetwork and shelving. Refer to drawings for items and locations.

End of Section

PART 1 - GENERAL

.1 **Description**

.1 **General Requirements**

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**

Section 04200: Raking of Masonry Joints
Section 03300: Cast-in-place Concrete

.3 **Work Included Elsewhere but Performed in Compliance with This Section**

Section 04200 - Unit Masonry
Section 08110 - Steel Doors and Frames
Section 06200 – Rough Carpentry
Section 06200 – Finish Carpentry
Section 09250 - Gypsum Board
Section 10800 - Washroom Accessories

.2 **Quality Assurance**

.1 **Subcontractor Qualifications**

Seal joints specified in this Section by Subcontractor approved by manufacturers of sealants; who has equipment adequate for Project, skilled tradesmen to perform it expeditiously; and known to be responsible for satisfactory installations similar to that specified during at least the immediate past five years.

.3 **References**

.1 **Reference Standards**

Reference Standards quoted in Contract Documents refer to:
CGSB Specification 19-GP-5M, Sealing Compound, One Component, Acrylic Base, Solvent Curing.
CGSB Specification 19-GP-9Ma, Sealing Compound,
One Component, Silicone Base, Chemical Curing
CAN/CGSB-19.13-M82, Sealing Compound, One Component, Elastomeric,
Chemical Curing.
CAN/CGSB-19.24-M80, Sealing Compound, Multi-Component, Chemical Curing.

.4 **Submittals**

.1 **Samples**

Submit samples of sealant and backing if requested.

.2 **Product List**

Submit manufacturer's and product name for each sealant which will be used for Project, before commencing joint sealing.

.5 **Site Conditions**

.1 **Environmental Conditions**

Apply sealants only to completely dry surfaces, and at air and material temperatures above minimum established by manufacturer's specifications.

.6 **Warranty**

.1 **Extended Warranty**

- .1 Submit a warranty of the joint sealant 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, including materials and application. 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 or adjacent materials or surfaces.

PART 2 - PRODUCTS

.1 **Materials**

- .1 All materials utilized in a sealant system shall be compatible.
- .2 Specified proprietary products are minimum acceptable quality. Products of other manufacturers of equal or superior quality will be accepted where specifically approved by Architect.

.3 **Sealants**

- .1 Provide sealant formulation recommended by manufacturer for type of joint, substrate and service conditions applicable.
- .2 Refer to Caulking Schedule for utilization of the following sealants.
- .3 Colours of sealants will be selected from manufacturer's standard range.
- .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 Two Part Urethane Sealant:
To meet specified requirements of CAN/CGSB-19.24-M80, and as recommended by manufacturer for conditions.
Dymeric 240 by Tremco Canada.
- .6 One Part Urethane Sealant:
To meet specified requirements of CAN/CGSB-19.13-M82, and as recommended by manufacturer for conditions.
Vulkem 45 SSL by Tremco Canada
Tremco Canada Dymonic FC
- .7 Silicone Sealant: One Part Sealant:
To meet specified requirements of CAN/CGSB-19.13-M82. Tremsil 200 by Tremco (Canada) Ltd., or as otherwise approved.
- .8 Two Part Polyepoxide Urethane Sealant:
To meet specified requirements of CAN/CGSB-19.24-M80. Dymeric by Tremco (Canada) Ltd.
- .9 One Part Polysulphide Sealant:
To meet specified requirements of CAN/CGSB-19.13-M82.

- .10 Two Part Polysulphide Sealant:
For use in joints except where subjected to traffic:
To meet specified requirements of CAN/CGSB-19.24-M80, non-sag, with a Shore "A" hardness range of 20 to 35.
- .11 Two Part Polysulphide Sealant:
For use at surfaces subjected to traffic:
To meet specified requirements of CAN/CGSB-19.24-M80, self-levelling, with a Shore "A" hardness range of 35 to 40.

- .4 **Primer**

Specifically designed for use with sealant compounds on surfaces encountered, and as specified by the compound manufacturer to assure adhesion of compound to prevent staining of substrate materials.

- .5 **Sealant Backing (Bedding Material)**

Extruded, foamed, closed cell, round, polyethylene, urethane, neoprene or vinyl rod, 30% greater diameter than joint width, with Shore "A" hardness of 20, and 830 - 900 kPa tensile strength, and manufactured especially for the purpose.

- .6 **Void Filler**

Mineral fibre as specified in Section 07200.

- .7 **Bond Breaker**

For installation where minimum specified depth of joints is unobtainable. Pressure sensitive plastic tape, 3M 3266 or #481.

PART 3 - EXECUTION

- .1 **Examination**
 - .1 Before commencing joint sealing, verify at site that 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 sealant to be applied.
 - .2 Ascertain that sealers and coatings applied to sealant substrate 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 comparability and bond if necessary.
 - .3 Verify specified environmental conditions are ensured before commencing joint sealing.
 - .4 Defective sealed joints resulting from application to unsatisfactory joint conditions will be considered the responsibility of this Section.

- .2 **Preparation**
 - .1 Remove loose mortar, dust, oil, grease, oxidation, mill scale, coatings, all other materials affecting bond of compounds to surfaces that 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 method 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 **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. Refer to Article 3.05, Caulking Schedule. Include, but do not restrict it to, sealing the following joints:
 - .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.
- .2 Prime surfaces to receive sealants as required by substrate and manufacturer's specifications to ensure positive and permanent adhesion, and to prevent staining.
- .3 Pack joints tightly with sealant backing set at depth specified for sealant. Fill other voids with filler.
- .4 Install bond breaker tape in bottom of joints in lieu of sealant backing where proper depth cannot be obtained when backing is installed.
- .5 Maintain depth of sealant as follows for joint widths of
 - : 6 mm (minimum joint width): joint depth 6 mm.
 - : 6 to 13 mm: depth equal to joint width.
 - : 13 to 25 mm: depth equal to 1/2 joint width.
 - : 25 to 50mm: maximum depth of 13 mm.
- .6 Install sealant in joints over 50 mm wide only after consultation with and approval of sealant manufacturer.
- .7 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.
- .8 Tool surface of joints to a slight concave profile.
- .9 Make compounds workable only as manufacturer specifies.
- .10 Caulk joints in site painted materials after adjacent surfaces have been painted. Match compound to paint colour.
- .11 Do not allow sealants to cover or spot surfaces outside of joints. Use masking tape protection to prevent coating of adjacent surfaces if necessary.

.4 **Cleaning**

- .1 Remove sealant smears and drippings, 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 drippings are removed. Make good materials damaged by cleaning by the installer of the damaged material and at the expense of this Section.
- .3 Instruct Contractor on proper final cleaning methods.

.5 **Caulking Schedule**

.1 **Type 1 Sealant**

One or Two Part Polysulphide Sealant, or
One or Two Part Urethane Sealant, or
One Part Silicone Sealant, or
Use at all locations except where another is specified.

.2 **Type 2 Sealant**

Use at exterior joints between window frames and masonry.

.3 **Type 3 Sealant**

One part Clear Silicone Sealant, mildew resistant.
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 **Description**

.1 **General Requirements**

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**

Section 06200: Hanging of Wood Doors
Section 07920: Caulking Frames
Section 08710: Supply of Finish Hardware
Section 09900: Painting and Finishing

.3 **Installation of Products Supplied by This Section is Specified in**

Section 04200: To build anchors/frames in masonry.
Section 06200: To set up frames in masonry openings.
Section 06200: To install hollow metal doors.
Section 09250: To install and anchor frames in drywall partitions.

.2 **Quality Assurance**

.1 **Subcontractor Qualifications**

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 CAN4-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.

.3 **References**

.1 **Reference Standards**

Reference standards quoted in Contract Documents refer to:
ASTM A366-72, Specification for Steel, Carbon, Cold-Rolled Sheet, Commercial Quality.
ASTM A525-81, Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, General Requirements.
ASTM A526-80, Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Commercial Quality.

ASTM A780-80, Standard Practice for Repair of Damaged Hot-Dip Coatings.
CGSB Specification 1-GP-132M, Primer, Zinc Chromate, Low Moisture Sensitivity.
CGSB Specification 1-GP-140M, Primer, Red Lead, Iron Oxide, Oil Alkyd Type.
CGSB Specification 31-GP-105M, Coating, Conversion, Zinc Phosphate, for Paint Base.
CGSB Specification 1-GP-181M, Coating, Zinc Rich, Organic, Ready Mix.
CSA Standard G164-M1981, Hot-Dip Galvanizing of Irregularly shaped Articles.

.4 **Submittals**

.1 **Shop Drawings**

Submit shop drawings.

.5 **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

.1 **Materials**

.1 **Steel Sheet**

Cold-rolled, stretcher levelled to meet specified requirements of ASTM Specification A366 or SAE Specification 1010: galvanized sheet, commercial quality, to meet specified requirements of ASTM Specification A526.

.2 **Prime Paint**

- .1 General: Ensure that primers are compatible with specified finish paint.
- .2 Primer: To meet requirements of CGSB Specification 1-GP-132, 1-GP-81, or 1-GP-140.

.3 **Galvanizing**

- .1 Full galvanized sheet steel; coating to meet specified requirements of ASTM Specification A525, zinc coating designation Z275.
- .2 Wiped coated sheet steel; zinc wiped coating to meet specified requirements of ASTM Specification A525, zinc coating ZF75.
- .3 Galvanized accessories; zinc coating to meet specified requirements of CSA Standard G164, including Appendix A.

.4 **Zinc Rich Paint**

To meet specified requirements of CGSB Specification 1-GP-181.

.5 **Panel Insulation**

At exterior: Polyurethane: closed cell rigid board, density; 32 kg/cubic metre.

.6 **Grilles**

E.H. Price, Series STG1, steel, prime painted, sizes as shown on Door Schedule.

.7 **Door Bumpers**

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/m³ (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 CAN4-S104—M80, ASTM E2074-00e1 or NFPA 252-2008.
- .3 Polystyrene: EPS polystyrene, Type 1, density: 16 to 32 kg/m³ (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 **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: Wood by 08210.
- .2 Door sizing shall be of the metric size shown in Door and Frame Schedule or to suit existing openings.

.3 **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
 - : 1.6 mm thick flush bolts, locks & strikes.
 - : 6.4 mm for hinges.
 - : 4.8 mm for push/pulls and panic devices.
 - : 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 cutouts 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 joints 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 weatherstripping 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.
 - .1 Adhesive assisted with edge seams visible.

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- .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
 - .1 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.

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- .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

- .1 **Examination**
- .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.
- .2 **Installation**
- .1 **Pressed Steel Frames**
 - .1 Setting up of pressed steel frames in masonry walls is included in Section 06200.
 - .2 Building in of pressed steel frames is included in Section 04200 of Specification.
 - .3 Setting up and building in of pressed steel frames in metal stud drywall partitions is included in Section 05500 and Section 09250.
 - .4 Secure frames to floor construction with two fasteners each jamb, set and brace securely to maintain true alignment until built in.
 - .2 **Doors**
 - .1 Wood Doors by Section 08210, installation by Section 06200 finish hardware supplied and installed by Section 08710.
- .3 **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 01710.

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 Related to this Section Performed by Other Sections

Section 08520: Aluminium Windows

.3 Work Performed by this Section but Specified Elsewhere

Section 07920: To specify joint sealants.
Section 08800: To specify glazing.

.2 System Description

.1 Tolerances

- .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.
- .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.
- .3 Maintain tolerances for glazing as recommended by glass manufacturer.
- .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.

.2 Design

- .1 The entire exterior skin execution shall be based on the rain screen principle.
- .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.
- .3 The air and vapour seals required to eliminate air borne vapour infiltration from the building into the system cavities.
- .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.
- .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.

.3 **Structural Requirements**

- .1 Entrances must withstand a minimum windload of (30 psf) 1500 Pa with a maximum deflection of span/200.

.4 **Performance**

- .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.
.2 There shall be no water infiltration into the building under 50% of design wind load.
.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.

.3 **Quality Assurance**

.1 **Glazing Requirements**

Conform to recommendations of Flat Glass Marketing Association (FMGA), Glazing Manual 1980 (GM) and Glazing Sealing Systems Manual 1970 (GSSM).

.2 **Subcontractor Qualifications**

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.

Approved Suppliers:

Kawneer
Windspec Inc.
Alwind Ltd.
Alumicor

.3 **Welder Qualifications**

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.

.4 **Requirements of Regulatory Agencies**

Conform to requirements of authorities having jurisdiction in the fabrication and installation of components specified in this Section.

.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 CSA W47.2-M1987 for welding of aluminum.
.2 CSA W59-M1989 for welding of steel.
.3 AAMA Aluminum Curtain Wall Design Manual.

.4 References

.1 Reference Standards

Reference standards quoted in Contract Documents refer to:

ASTM A167-81a, Specification for Stainless and Heat Resisting Chromium-Nickel Steel Plate, Sheet and Strip.

ASTM A480-81, Specification for General Requirements for Flat Rolled Stainless and Heat Resisting Steel Plate, Sheet and Strip.

ASTM A525-76, Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, General Requirements.

ASTM A780-80, Standard Practice for Repair of Damaged Hot-Dip Coatings.

CGSB Specification 41-GP-19Ma, Rigid Vinyl Extrusions for Windows and Doors.

CGSB Specification 79-GP-1M, Screens, Aluminum Frame, Window.

CGSB Specification 1-GP-108M, Paint, Acid and Alkali Resistant, Black.

CGSB Specification 1-GP-132M, Primer, Zinc Chromate, Low Moisture Sensitivity.

CGSB Specification 1-GP-181M, Coating, Zinc Rich, Organic, Ready Mix.

CAN/CSA3-G40.20/G40.21-M92, Structural Quality Steel.

CSA Standard G164-M92, Hot Dip Galvanizing of Irregularly Shaped Articles.

CSA Standard W47.1-92, Certification of Companies for Fusion Welding of Steel Structures.

CSA Standard W47.2-M1987, Aluminum Welding Qualification Code.

CSA Standard W59-M1989, Welded Steel Construction (Metal Arch Welding).

.5 Submittals

.1 Shop Drawings

.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.

.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

.2 Samples

.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.

- .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.

.3 **Maintenance Instructions**

Submit maintenance instructions for incorporation into Project Data Book.

.6 Delivery, Storage and Handling

- .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.
- .2 Under conditions of high humidity, heating or forced ventilation shall be provided to prevent the accumulation of surface moisture.
- .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.
- .4 Protection of this work shall be the responsibility of this Section and the methods used shall be agreed with the Contractor.
- .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.

.7 Warranty

.1 **Extended Warranty**

- .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.
- .2 Without restricting the generality of the warranty, defects shall include failure to maintain true lines, plumbness and weather tightness under all conditions.
- .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

.1 Materials

.1 Aluminum

- .1 Extrusions: AA6063-T5, alloy and temper for framing, and otherwise where not exposed to suit specified and fabricator's requirements.
- .2 Exposed Anodized Sheet and Plate: AA 5005-H14, alloy and temper, or AA 1100-H14, anodizing quality.
- .3 Exposed sheets where painted: AA100-H14, alloy and temper.
- .4 Non-exposed sheets: AA3003-H14, alloy and temper, mill finish, or Alcan "Utility Sheet".
- .5 Exposed surfaces of aluminum shall be free of die marks, scratches, blisters, "leave-off" marks, or other blemishes which are visible.

.2 Steel

- .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.

.3 Stainless Steel

ASTM Specifications A480-81, and A167-81a, Type 304.

.4 Finishes

Anodic clear coating, Architectural Class 1, AA-M12C22A41 (.0007")

.5 Glass

To meet specified requirements of Section 08800; 25 mm sealed insulating units and as specified herein.

.6 Glazing Gaskets

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.

.7 Glazing Tape

Polyisobutylene, with continuous molded-in synthetic rubber shim, in colour selected, Polyshim Tape by Tremco (Canada) Limited, or equivalent as approved.

.8 Sealants and Sealant Materials

To meet specified requirements of Section 07920 and design performance requirements.

.9 Fastenings

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.

.10 **Exposed Anchors**

Aluminum or stainless steel with aluminum materials; and otherwise to match metal anchored. Non-exposed: as for exposed or may be galvanized steel.

.11 **Bituminous Paint**

To meet specified requirements of CGSB Specification 1-GP-108.

.12 **Separator/Slip Gaskets**

Nylon as suitable for connection detail at moving faces of connections.

.13 **Thermal Separator**

Solid extruded and thermally resistant sections with a durometer hardness of Shore "A" 50, ± 5 .

.14 **Supporting Angles, Plates, Bars, Rods and Other Steel Accessories**

- .1 Mild steel CAN3-G40.21-M78, thickness as required to sustain imposed loads and in no case less than 4.8mm thick.
- .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.

.15 **Thermal Insulation**

- .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 Loose Insulation: Glass fibre, density of 12 kg/cu.m., by Fiberglas Canada Inc.
- .3 **Foam Insulation**
 - .1 One or two part, polyurethane, with a nominal density of 40 kg/m³, coefficient of linear expansion of 0.00006 mm/m/°C, water vapour transmission of 73 Ng/Pa5m² and thermal conductivity of 0.02 W/m°K.
 - .2 Similar to products as produced by BASF Canada Inc.

.16 **Hardware**

Refer to Section 07810.

.2 **Products**

- .1 Specified manufacturers' catalogue references to Alumicor Inc. establish the minimum standards for the products listed in this Section.
- .2 Unspecified materials which form a part of completed assemblies shall be of manufacturers' standard.
- .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
Windspec Limited
Alwind Industries

.3 Screens and Framing

- .1 Framing: 2200 Series by Alumicor.
- .2 Finish:
 - : exterior: clear anodized
 - : back sections: clear anodized
- .3 Glazing: 25mm insulating glass units at exterior locations; Type 2.
- .4 Sills: extruded aluminum, with concealed anchor system or hold down clips, colour and finish to match framing.
- .5 Style: Combination of mullion depths, glazing rebates and caps as required by Drawings, and including door stops and cut pile weatherstripping.

.4 Hinged Doors

- .1 Type: series 2200 thermally broken entrance framing by Alumicor. Refer to drawings for dimensions of bottom, mid and top rails and stiles.
- .2 Glass: 25mm insulating glass units at exterior locations.
- .3 Finish:
 - : clear anodized.
- .4 Threshold: Extruded aluminum, clear finish, 12mm riser, overall width to match frames.
- .5 Weatherstripping: Cut pile weatherstripping and adjustable door bottoms for exterior doors.
- .6 Door Sweep: KN Crowder W-24S628.
- .7 Hinges: continuous, heavy duty Rotun hinge

.3 Fabrication

- .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 aluminum extrusions.
- .2 Provide structural support for air barrier tie-in.

.3 Framing Members

- .1 Fabricate generally to dimensions/profiles indicated on drawings. Meet specified requirements and clearances to other construction components.
- .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.
- .4 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.
- .5 Design system to ensure that site glazing may be performed in accordance with construction scheduling within environmental limitations specified in Section 08800.

- .4 **Assembly of Units**
- .1 Join members by welding where specified and otherwise where practicable.
 - .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.
 - .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.
 - .4 Join members in shop fabricated units to fit flush with hairline joints.
 - .5 Incorporate weepholes to drain off pocketed water. Baffle to prevent entry of driven water to conform to specified performance.
 - .6 Except where shipping makes impossible, fabricate units in shop and ship completely assembled.
- .5 **Vapour Retarder and Air Barrier**
- Maintain integrity of vapour retarder and air barrier system within systems installed by this Section and between systems and adjoining construction.
- .6 **Dissimilar Materials**
- .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 Protect aluminum concealed in contact with masonry with two coats of bituminous paint.
- .7 **Anchors**
- .1 Incorporate anchorage to structure to support units adequately when subjected to specified loads.
 - .2 Allow for complete adjustment in anchorage for levelling and positioning of units during installation.
- .8 **Doors**
- .1 Fabricate doors with stiles and rails of extruded aluminum with major portions of 3mm minimum thickness.
 - .2 Join stiles to rails with sigma deep penetration welds and mechanical fastening.
 - .3 Provide flush glazing.
 - .4 Incorporate weatherstripping.
 - .5 Provide for master-keyed lock cylinders.
- .9 **Fastenings**
- .1 Where fastenings are exposed to dampness or moisture, use cadmium plated steel for steel-to-steel, aluminum for aluminum-to-aluminum, and stainless steel otherwise or alternatively for all above.
 - .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.

.10 **Thermal Movement**

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.

.11 **Mullions**

Fabricate mullions to provide for specified thermal movement without damage to adjacent units.

.12 **Dissimilar Materials**

- .1 Protect material from electrolytic action when dissimilar metals are in contact with one another.
- .2 Protect aluminum concealed in contact with masonry with a heavy coating of bituminous paint.

.13 **Anchors**

- .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 Allow for complete adjustment in anchorage for levelling and positioning of units during installation.

.14 **Attachment of Hardware**

- .1 Match hardware fastenings to metal of hardware.
- .2 Attach hardware by bolts or machine screws into tapped reinforcing plates.

.15 **Weatherstripping**

- .1 Secure weatherstripping in place by mechanical means only, and in a manner to enable its removal and replacement without special tools.
- .2 Ensure that continuity of weatherstripping is maintained around openings.
- .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.
- .4 Install adjustable sweeps at bottom rails of doors.

.16 **Thermal Break**

- .1 Incorporate a thermal break in frames in which insulating glass units are installed.

.17 **Finishing**

- .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

.1 Examination

- .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.
- .2 Ensure that anchors and inserts, installed by others, are adequate to meet specified requirements, and make adaptations before installation.

.2 Installation

.1 General

- .1 Coordinate fabrication of components specified in this Section with requirements of other Sections to ensure proper anchorage and fitting.
- .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 Do not force units into place, nor superimpose on them loads for which they were not designed.
- .4 Install vapour retarder and air barrier to ensure complete continuity and integration of vapour retarder and air barrier system.
- .5 Provide structural support for air barrier to prevent its displacement or its loss of seal when subjected to forces specified for design performance.
- .6 Install metal flashing to drain cavities in system. Secure flashings permanently to prevent displacement, leaks, and noise.
- .7 Provide for thermal movement to take place between shop fabricated assemblies and between assemblies and adjacent construction.
- .8 Secure units by non-corrosive anchorage materials. Use of wood or fibre is not acceptable.
- .9 Conceal anchors, clips, blocking, and all other attachments.
- .10 Install reinforcing and supporting members as indicated and required structurally as part of the work of this Section.
- .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.
- .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.
- .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.
- .16 Coat all damaged prime painted surfaces of anchorage with rust inhibiting paint after welding is completed.
- .17 Apply two coats zinc rich paint to metal surfaces bared by removal of galvanizing.
- .18 Apply one coat of prime paint to metal surfaces bared by removal of shop applied primer.

.2 **Welding**

- .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.
- .2 Detailed welding procedure covering specified welds on erection and shop drawings may be requested for approval by the Consultant.
- .3 Take precautions during welding to prevent damage or staining of adjacent surfaces.
- .4 Remove prime paint from surfaces to be welded.

.3 **Caulking**

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.

.4 **Glazing**

- .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 **Adjustment and Cleaning**

.1 **Adjusting**

- .1 Adjust doors to operate smoothly and fit tightly when closed and locked.
- .2 Adjust hardware to operate smoothly, with proper tension and lubricate.
- .3 Ensure that weatherstripping does not cause binding to prevent closing and locking, and that it makes weathertight contact.
- .4 Adjust closers after doors are glazed, and other hardware and vestibule doors are installed.

.3 **Cleaning on Completion of Installation**

- .1 Remove deposits which affect appearance or operation of units.
- .2 Remove protective materials.
- .3 Clean interior and exterior surfaces by washing with clear water; or with water and soap or detergent; followed by a clear water rinse.
- .4 Clean and restore stained metal surfaces in accordance with manufacturer's recommendations. Replace if cleaning is impossible.
- .5 Final cleaning is specified in Section 01710.

.4 **Protection**

- .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.
- .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 Remove protection from metal glazing surfaces before installation of glass.
- .4 Maintain protection from time of installation to final cleanup in accordance with Sections 01040 and 01500.

End of Section

PART 1 - GENERAL

.1 Description

.1 General Requirements

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

Section 06410: Cabinet hardware as specified by schedule.

.3 Hardware Specified This Section, Supplied Only, Installed by Other Sections

Section 06200: Finish Carpentry: To install hardware other than as specified.

.4 Selected hardware supplier will become a Subcontractor of the Contractor.

.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

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 This Section specifies work which shall be performed by:

Section 08440: Aluminum Framed Glazing Systems

.2 References

.1 Reference Standards

Reference Standards quoted in Contract Documents refer to:

CAN/CGSB-12.20 - M89

CAN/CGSB-12.1-M79, Glass, Safety, Tempered or Laminated.

CAB/CGSB-12.3-M76, Glass, Polished Plate or Float, Flat, Clear.

CAN/CGSB-12.8-M76, Insulating Glass Units.

CAN/CGSB-12.10-M76, Glass, Light & Heat Reflecting

CGSB Specification 19-GP-5M, Sealing Compound, One Component, Acrylic Base, Solvent Curing.

CAN/CGSB-19.13-M82, Sealing Compound, One Component, Elastomeric, Chemical Curing.

CAN/CGSB-10.24-M80, Sealing Compound, Multi-Component, Chemical Curing.

.3 Submittals

.1 Submit Samples in accordance with section 01300

.2 Submit two 216 mm x 280 mm samples of each specified type of glass, including tinted glass.

.4 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.

.5 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.

- .2 Without restricting the generality of warranty, defects shall include
 - : warping of spacer blocks;
 - : dust or film of fogging formation on internal glass surfaces resulting from any cause except glass breakage;
 - : 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.
- .3 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

.1 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 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: Tempered as required to meet design requirements.
 - .2 Insulating Glass Units:
 - .1 Warm edge, hermetically sealed, minimum 13 mm air space - air 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.
 - .2 IGMAC Certified.
 - .3 Low E coating:
 - .1 Acceptable Products: .1 AGC/AFGD'Comfort Ti-AC 40'
 - .2 PPG 'Solarban 60'
 - .3 Cardinal 'LoE2 -172'
 - .4 Versalux
 - .5 Viracon 'Solarscreen 2000 VE 1-2M'
 - .4 Glass Thickness: 6mm minimum or as required to meet design requirements.
 - .5 Glass Type: Annealed, heat strengthened, or tempered as required to meet design requirements.

- .6 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.
- .7 Glass Colour: Tinted, unless otherwise noted.
 - .1 Light Bronze as selected by the architect.

- Type 1 exterior lite: tinted, tempered, body colour by architect.
interior lite: clear, low emissivity coating on third surface

- Type 2 exterior lite: tinted, tempered, body colour by architect
interior lite: clear, tempered, low emissivity coating on third surface of interior lite

- .3 Wired Glass: Polished Georgian wired plate, to CAN/CGSB-12.11M90, type 1 wire mesh style 6mm thickness. As and where noted GL-6 - Sand blasted with clear coat finish.

- .4 Heat Treated Safety Glass:
 - .1 Tempered glass to meet specified requirements of CAN/CGSB-12.1-M90 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 to 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

- .5 Annealed(float) glass: Clear, annealed glass, 6mm thick minimum as required to meet design requirements. To CAN/CGSB-12.3 - M 91, Glazing Quality. As and where noted - Acid Etched or sand blasted with clear coat finish.
- .6 Mirrors: Annealed glass to ASTM C 1503.
 - .1 Grade: Mirror cut size.
 - .2 Quality: Mirror select quality, allowable distortion shall be less than 80degrees vision interferenc angle to ASTM C1036-01.
 - .3 Colour: Clear
 - .4 Thickness: 6mm.
 - .5 Exposed edges shall be ground and polished.
- .7 Products supplied by AFG Glass Inc. are considered as acceptable alternatives.

.3 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.

.4 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-M82, in glazing hardness grade.
- .6 One Part Polysulphide Glazing Sealant: To meet specified requirements of CAN/CGSB-19.13-M82, in glazing hardness grade.
- .7 Two Part Polysulphide Sealant: To meet specified requirements of CAN/CGSB-19.24-M80, in glazing hardness grade.

PART 3 - EXECUTION

.1 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.

.2 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 Glazing Preparation and 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.

.4 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.

.5 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.

.6 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.

.2 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 01710.
- .2 Final cleaning of glass is specified by Section 01710.
- .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 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. **Description**

.1 **General Requirements**

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:**

Section 07920: Sealants and Caulking
Section 09510: Acoustic Ceilings
Section 09900: Painting and Finishing

.3 **Supply of Work Installed by This Section is Specified in:**

Division 15: To furnish access panels.

.2 **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.

.3 **Quality Assurance**

.1 **Requirements of Regulatory Agencies**

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.

.4 **References**

.1 **Reference Standards**

Reference standards quoted in Contract Documents refer to:
ASTM A116-81, Specification for Zinc Coated (Galvanized) Iron or Steel Farm Field and Railroad Right-of-Way Wire Fencing.
ASTM 153-80, Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
ASTM A525-81, Specification for Steel Sheet, Zinc Coated (Galvanized) by the Hot-Dip Process, General Requirements.
ASTM C475-64, Standard Specification for Joint Treatment Materials for Gypsum Wallboard Construction.
ASTM C646-76a, Specification for Steel Drill Screw for the Application of Gypsum Sheet material to Light-Gauge Steel Studs.

CGSB Specification 1-GP-118M Finish, Interior, Alkyd, Flat.
CAN/CSA-A82.27-M91, Gypsum Board.
CAN/CSA-A82.31-M91, Gypsum Board Application.

.5 **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.

.6 **Site Conditions**

.1 **Environmental Requirements**

- .1 Install interior gypsum board systems only in areas closed and protected against weather, and maintained between 10 C and 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

.1 **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.

PART 3 - EXECUTION

.1 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.

.2 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 manufactured' 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 fitments, 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 is 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, fittings, 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 07920.

.3 **Adjustment and Cleaning**

- .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 **Description**

.1 **General Requirements**

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:**

Section 09250: Gypsum Drywall, Bulkheads, Ceilings
Drawings: Mechanical Services
Drawings: Electrical Fixtures

.2 **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.

.3 **Quality Assurance**

.1 **Subcontractor Qualifications**

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.

.4 **References**

.1 **Reference Standards**

Reference standards quoted in Contract Documents refer to:
CAN/CSA-A82.27-M91, Gypsum Board Products

.5 **Submittals**

.1 **Samples**

Submit two samples of each specified acoustical board and exposed grid material.

.6 **Delivery, Storage, and Handling**

- .1 Package finish materials.
- .2 Store materials in protected dry area.
- .3 Ensure that finish metal members are not bent, dented, or otherwise deformed.

PART 1 - GENERAL

.1 **Description**

.1 **General Requirements**

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:**

.2 **Quality Assurance**

.1 **Subcontractor Qualifications**

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.

.3 **References**

.1 **Reference Standards**

Reference standard quoted in Contract Documents refer to:
CSA Standard A126.1-M1984, Vinyl Asbestos and Vinyl Composition Floor Tile.
CSA Standard A126.3-M1984, Sheet Vinyl Flooring Products.

.4 **Submittals**

.1 **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.

.2 **Affidavits**

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.

.3 **Maintenance Instructions**

Submit maintenance instructions for incorporation in Project Data Book.

.5 **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.

.6 **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

.1 **Materials**

- .1 Provide each flooring material from same production run for one area, and from same manufacturer for entire project.

.2 **Flooring**

- .1 Vinyl Quartz Composite Tile: 2.5 mm thick, 300 mm X 300 mm; Versa Tile - Quartz Tile as supplied by Centura. No more than 2 colours selected for project.
- .2 Rubber Base: Roppe 100mm high Pinnacle.

.3 **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.

.4 **Flooring Accessories**

- .1 Ensure that accessories are compatible with, and match appearance and thickness of abutting flooring materials.

.5 **Filler/Subfloor Preparation.**

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.

- .1 Assume an overall average levelling compound thickness of 4mm.
- .2 Provide for shotblasting of all existing surfaces in preparation for filler and levelling compound.
- .3 Provide Bonding agent as recommended by manufacturer.
- .4 Levelling Compound: Ardex K15
- .5 Cementitious bulk concrete filler: Ardex

.6 **Primers and Adhesives**

As recommended by manufacturer of each material for each subfloor condition. Use clear adhesive for vinyl polymer flooring.

Porcelain Tile: Mortar TEC 382
Vinyl Quartz Tile: TEC Rollfast or TEC 752
Sheet Vinyl: TEC 744

.7 **Cleaner**

Neutral chemical compound that will not damage tile or affect its colour.

.8 **Floor Protection**

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

.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.
- .4 Defective resilient flooring resulting from application to unsatisfactory surfaces will be considered the responsibility of this Section.

.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 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 **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 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.

.5 **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.

.4 **Adjustment, Cleaning, Sealing, and 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.

.5 **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.

.6 **Extra Stock**

- .1 Deliver to Owner on completion of Project construction, and as he directs, 5% of the quantity of flooring installed, of each material and colour, in labelled packages.

End of Section

.7 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

.1 Materials

.1 Accessories

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 Hangers

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.

.3 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 and steel deck.
: SDI-3822 for use in steel floor deck, with screw screw eye bolts to suit inserts.

.4 Exposed Tee Ceiling Grid System

- .1 Two directional, 610 mm X 1220 mm.
- .2 Main Beams: 0.508 mm steel, bulb tees.
- .3 Cross Tees: 0.508 mm steel, with tongues to interlock with main beams.
- .4 Wall Moulding: Angle section to match tees.
- .5 Finish: Baked vinyl enamel, white.

.5 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 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

PART 3 - EXECUTION

.1 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.

.2 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. Adapt installation to provide ceiling access where required for services.
 - .18 Mark access panels in an unobtrusive manner.
 - .19 Where retention clips are specified for Type 3 ceilings, install clips in accordance with manufacturers' written instructions.
- .3 **Adjustment and Cleaning**
- .1 Clean soiled/dicoloured surfaces of exposed ceiling surfaces on ceiling installation completion.
 - .2 Replace components which are visibly damaged, marred, or uncleanable.
- .4 **Extra Stock**
- .1 Provide 2 sealed cartons of each specified acoustical board for Owner's use. Deliver to site at conclusion of project.

End of Section

PART 1 - GENERAL

.1 **Description**

.1 **General Requirements**

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

.2 **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 but does not include Mechanical Rooms.

.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.

.3 **Related Work Specified Elsewhere**

Section 06200: Finishing of Millwork

.2 **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:

Flame Spread: 25 for exits, 150 otherwise

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.
- .2 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.

.3 **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.

.3 **List of Materials**

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.

.4 **Affidavits**

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.

.5 **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.

.6 **Inspection Reports**

A painting inspector shall review and submit reports on the quality of the painting contract.

.4 **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.

.5 **Delivery, Storage, and Handling**

- .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.

.6 **Site Conditions**

.1 **Environmental Requirements**

- .1 Apply painting materials only when air and surface temperatures exceed 5°C, except for:
7°C for latex paint at interior locations
10°C for latex paint at exterior locations
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.

.7 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

.1 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. 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

.1 **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.

.2 **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.
 - .1 **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.
 - .2 **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.
 - .3 **Concrete Floors:** Shot blast and etch.

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- .4 **Galvanized Steel and Iron:** Washing (Etching).
 - .5 **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.
 - .6 **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.
 - .7 **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 **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.

.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.

.4 **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 **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:
 - 2 different light colours
 - 1 different dark colours (deep and bright included) Black Included.

.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 manufacturers 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.
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.
"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.

.4 **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.

.5 **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.

.6 **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.

.7 **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**

Steel lintels where exposed to view.

Interior ferrous metal hardware, fasteners and accessories, new and existing.

Interior galvanized hardware, fasteners and accessories, new and existing.

Exterior ferrous metal hardware, fasteners and accessories, new and existing.

Exterior galvanized hardware, fasteners and accessories.

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.

Paint exposed plywood edges of new and existing doors to match stained finish.

Paint new and existing metal door grilles to match door faces.

New and existing sheet metal ducts in interior spaces where exposed to view.

Sprinkler system except for heads where exposed to view.

Access doors, new and existing.

Baseboard units, new and existing.

Convactor covers, new and existing.

Prime painted louvres, grilles, and diffusers at interior.

Prime painted louvres, grilles, and diffusers at exterior.

Prime painted fire hose and extinguisher cabinets.

Prime painted electrical panel doors and frames.

Paint new and existing piping and conduit exposed to view in finished areas.

Colours to match adjacent surfaces.

Ensure that no colour coding or other identification of services that are applied by others are painted over by this Section.

Fill pipes.

Electrical service entry.

Mechanical, electrical and other equipment and accessories on roof including any existing items.

.3 **Surfaces That Do Not Require Finishing**

Painting or finishing of the following surfaces is not included in this Section:
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.

.4 **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.

.8 **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 **Exterior Woodwork** (Fences, Plywood, Partitions)

Ext. 1-A, Exterior Alkyd Finish, premium grade.

Ext. 1-D, Exterior Solid Colour Stain Finish, premium grade.

Ext. 1-F, Exterior Fire Retardant

.3 **Exterior Wood Trim** (Doors, Door and Window Frames, Fascia)

Ext. 2-A, Exterior Alkyd Finish, premium grade.

Ext. 2-G, Exterior Pigmented Polyurethane Finish Type 2, premium grade.

.4 **Exterior Concrete, Concrete Block, Masonry, Stucco, Stone**

Ext. 6-A, Latex Finish, Stucco, Bricks and Render, premium grade.

Ext. 6-B, Latex Finish, Concrete Block, premium grade.

.5 **Exterior Structural and Misc. Steel** (Factory Primed)

Ext. 11-A, Alkyd Finish, premium grade.

Ext. 11-C, Aluminum Paint Finish, premium grade.

Ext. 11-D, Two Component Epoxy Finish, premium grade.

.6 **Exterior Galvanized Metal** (Zinc Coated Steel)

Ext. 12-A, Alkyd Finish, premium grade.

Ext. 12-B, Aluminum Finish, premium grade.

Ext. 12-C, Bituminous Finish (Unexposed - next to concrete), Custom grade.

.7 **Exterior Aluminum** (Flashings, misc. work, downpipes, etc.)

Ext. 13-A, Alkyd Finish on Exposed Aluminum, premium grade.

Ext. 13-C, Bituminous Finish on unexposed aluminum, custom grade.

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- .8 **Exterior Copper**
- Ext. 14-A, exposed Alkyd Finish, premium grade.
Ext. 14-C, Bituminous Finish unexposed next to concrete or wood, premium grade.
- .9 **Exterior Steel - High Heat**
- 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.)
- Int. 1-B, Latex Finish, premium grade.
Int. 1-C, Semi Transparent Alkyd Stain Finish, premium grade.
Int. 1-D, Semi Transparent Stain Polyurethane Varnish, premium grade.
Int. 1-I, Clear Polyurethane, premium grade.
Int. 1-J, Fire Retardant Solvent Base Pigmented Finish, follow manufacturers' instructions to apply.
Int. 1-K, Fire Retardant Clear Finish, follow manufacturers' instructions to apply.
Int. 1-L, Chemical Resistant Finish Shelving, Cupboards, Etc, premium grade.
- .11 **Interior Plaster, Drywall Etc.**
- Int. 4-B, Latex Finish, premium grade.
Int. 8-D, 1 coat: Glidden Professional, GP 1000 High Hide Interior Primer Sealer
 2 coats: Glidden Professional, 4426 Tru-Glaze-WB 4426 Waterborne Epoxy
 Semi-Gloss Coating
Int. 4-G, Fire Retardant Coating Latex. Follow manufacturers' recommendations for application.
- .12 **Interior Canvas And Cotton Insulation Coverings** (pipes, and ductwork, boilers)
- Int. 5-B, Aluminum Paint Finish, premium finish.
Int. 5-C, Latex Finish, premium grade.
- .13 **Interior New Acoustic Plaster, Tile and Textured Ceilings**
- Int. 6-C, Custom grade.
- .14 **Interior Concrete, Masonry, Stucco.**
- Int. 7-A, Latex Finish, premium grade.
Int. 7-D, Water Based Tile-Like Finish on Smooth Concrete, premium grade.
- .15 **Interior Concrete Block, and Concrete Brick**
- Int. 8-A, Latex Finish, premium grade.
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)
- Int. 12-A, Alkyd Finish, premium grade.
Int. 12-D, Two Component Epoxy Finish, premium grade.

.17 **Interior Galvanized Metal**(Zinc Coated Steel)

Int. 13-A, Alkyd Finish, premium grade.
Int. 13-D, Latex Finish, premium grade.

.18 **Interior High Heat Steel**(Boilers, Breeching, pipelines. etc.)

Int. 14-B, Heat Resistant Enamel Finish, follow manufacturers' instructions for application.
Int. 14-E, Heat Resistant Enamel Finish, for temp. between 315 to 425 deg. C. follow manufacturers' instructions for application.

.19 **Interior Aluminum**

Int. 15-A, Alkyd Finish, premium grade.

End of Section

PART 1 - GENERAL

.1 Description

.1 General Requirements

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

Section 04200: Unit Masonry
Section 06100: Wood furring

.2 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.

.3 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.

.4 Submittals

.1 Shop Drawings

Submit Shop Drawings.

.2 Samples

Submit samples of chalkboard, tack board, Marker board and trim.

.5 Delivery, Storage, and Handling

- .1 Deliver products to site only immediately before installation.
- .2 Package materials to protect finish surfaces during handling and storage.

.6 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 Chalkboards and Tackboards and Markerboards

.1 Chalkboard

- .1 Face Panel: 22 gauge enameling 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 Sheet: 28 gauge zinc coated stretcher level steel, in one section.
- .4 Thickness: 12.7 mm.
- .5 Colour: Green
- .6 Markings: Where indicated on Drawings, provide chalkboards with special line markings.
- .7 Acceptable Manufacturer: Vitrite by Architectural School Products or Clark Porcelain.

.2 Tackboards

- .1 Tackboards shall be 12.7 mm thick, factory prelaminate, 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 chalkboard's finish and size.

.3 Markerboard

- .1 Face Panel: 22 gauge enameling 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.

.4 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 chalkboard/tackboard combination.
- .5 Chalktray: 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 chalk rails.
- .2 Include perimeter trim divider bars, map rails, and chalk rails as indicated on Drawings. Chalk rail shall run full width of chalkboard.
- .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 chalkboard 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 General Instructions

- .1 Read and be governed by conditions of the Contract and sections of Division 1 and General Conditions.

.2 Installer Qualifications

- .1 Installation of the work of this section shall be by forces in the direct employ or under control of the system manufacturer, skilled, trained, and experienced in work of similar scope and complexity.

.3 Submittals

- .1 Submit required submittals in accordance with Section 01300.

.2 Shop Drawings:

- .1 Submit shop drawings or fully dimensioned catalogue cuts.
- .2 Clearly indicate general construction, configurations, jointing methods and locations, fastening methods and installation details.

.3 Samples:

- .1 Submit samples of each material and finish colour selected and each accessory for review.

.4 Mock-Up:

- .1 Erect mock-up in accordance with Section 01400.
- .2 Erect 1 full size mock-up each roller shade type at the Place of Work for review. Completed and accepted mock-up shall act as the standard to which balance of the work of this section will be judged.

- .5 Maintenance Instructions: Submit in accordance with Section 01700.

.4 Protection

- .1 Before delivery to the Place of the Work, check each shade for operation; remove finger marks and smudges.
- .2 Tightly wrap Products in polyethylene or other protective covering and leave in open position until directed.

.5 Delivery, Storage and Handling

- .1 Package Products to prevent distortion in shipment and handling. Label packages and crates, and protect finish surfaces by sturdy wrappings.

.6 Warranty

- .1 The warranty period with regard to the work of this section is 2 years, in accordance with Section 01780.

PART 2 – PRODUCTS

.1 Window Shades Systems

- .1 Roller shade systems as manufactured by Solarfective Products Ltd. and distributed by Patry Products Inc., Tel 416-282-1771, or approved alternative.
 - .1 Surface mounted motorized roller shades with fascia covers.
- .2 Shade systems specified in this section shall be one manufacturer who shall take full responsibility for the total project.
- .3 Operation:
 - .1 Manual: Easy-Lift Action, chain operated, with infinite positioning. Left or right hand operation as applicable to suite Place of the Work condition.
 - .1 Drive Assembly:
 - .1 must allow finger tip control and include a built in shock absorber system to prevent chain breakage under normal operating conditions.
 - .2 factory set for the size and travel of the shades;
 - .3 capable of being field adjusted from the exterior of the shade unit without having to disassemble the hardware.
 - .4 Drive Chain: No. 10 stainless steel bead chain formed in a continuous loop. The chain shall have a 40 kg (90 lb) load test. Chain may be positioned at either, or both, ends of the shade without disassembly of the shade unit.
 - .5 Each shade shall have a counter balancing mechanism designed to offset the weight of the shade and give fingertip control.
- .4 Assembly:
 - .1 Provide fully factory assembled shade unit consisting of 2 end shade brackets, shade tube, extruded aluminum fascia, hembar and fabric as specified.

-
- .2 End Brackets: a two piece molded ABS construction with a 6.35 mm (1/4") diameter nylon drive sprocket. Bracket colour shall coordinate with the fascia colour.
 - .3 Shade Tube: 1.52 mm (0.060") thick extruded aluminum with three equally spaced continuous stiffening fins 4.82 mm (3/16") high.
 - .1 Manual shade rollers: 38 mm (1-1/2") diameter.
 - .2 Motorized shade rollers: 64 mm (2-1/2") diameter.
 - .4 Fascia: 1.7 mm (0.067") thick extruded aluminum. Finish to be clear anodized.
 - .5 Exterior Hembar: extruded aluminum with matching plastic end finials. Finish to be clear anodized.
 - .6 Mounting: Mounting type to be face of mullions as indicated. Removal of shade system shall not require the disassembly of the shade unit.
- .5 Shade Mounting System:
- .1 Extruded aluminum bracket designed to accept preassembled shade system. Brackets to be used to facilitate the alignment of the shade opening with the ceiling. TELE-VENT Bracket to be of sufficient strength to prevent encroachment by other trades into shade space, and to ensure the underside of the fascia is within 1.5 mm (1/16") of the ceiling elevation. Brackets are not intended to be a ceiling support member. Brackets shall be supplied to Section 09250 for positioning and installation.
 - .2 Modular Construction: Shades must be removable as a complete modular unit without any component disassembly required.
- .6 Shade Cloth:
- .1 Solar Shade fabric: 300 Series woven of 0.018 opaque vinyl coated polyester yarn consisting of approximately 75% PVC and 25% polyester core yarn. The fabric shall be tensioned in the finishing range prior to heat setting to keep warp ends straight and minimize or eliminate weave distortion to keep the fabric flat. Fabric: dimensionally stable, 3% openness factor, 21 oz/yd² weight. Colour to be Grey.
 - .2 Performance: Fabric shall hang flat, without buckling or distortion. Edge, (where trimmed) shall hang true and straight, without shifting sideways more than 3 mm (1/8") in either direction due to warp distortion or weave design.
 - .3 Flame Retardance: Certified by an independent Laboratory to pass CAN/LUC-S109 Large Flame Test.

-
- .4 Incorporate reinforcing, fastening and anchorage required for installation of shades.

PART 3 – EXECUTION

.1 Installation

- .1 Shades to be snapped into place without screws or visible fasteners once initial cleanup is completed.
- .2 Securely attach all installation fittings to their mounting surfaces with stainless steel or hardened aluminum screws of correct length and type, and with compatible plugs or anchors where required.
- .3 Install shade roller true and level, and with cloth to hang flat without buckling or distortion.

.2 Adjustment and Cleaning

- .1 Verify that installed shade system functions properly, and adjust it accordingly to ensure satisfactory operation.
- .2 Refinish damaged or defective work so that no variation in surface appearance is discernible.

END OF SECTION

ST. CLAIR CATHOLIC DISTRICT SCHOOL BOARD

ST. JOSEPH CATHOLIC SCHOOL

535 BIRCHBANK DR, CORUNNA, ONTARIO N0N 1G0

SCCDSB PROJECT # 634-CP-1714

ARCHITECTS
RANDY WILSON ARCHITECT INCORPORATED
 280 QUEENS AVE, SUITE 1Q.
 LONDON, ONTARIO
 N6B 1X3
 T: (519) 439-0611
 F: (519) 438-5962

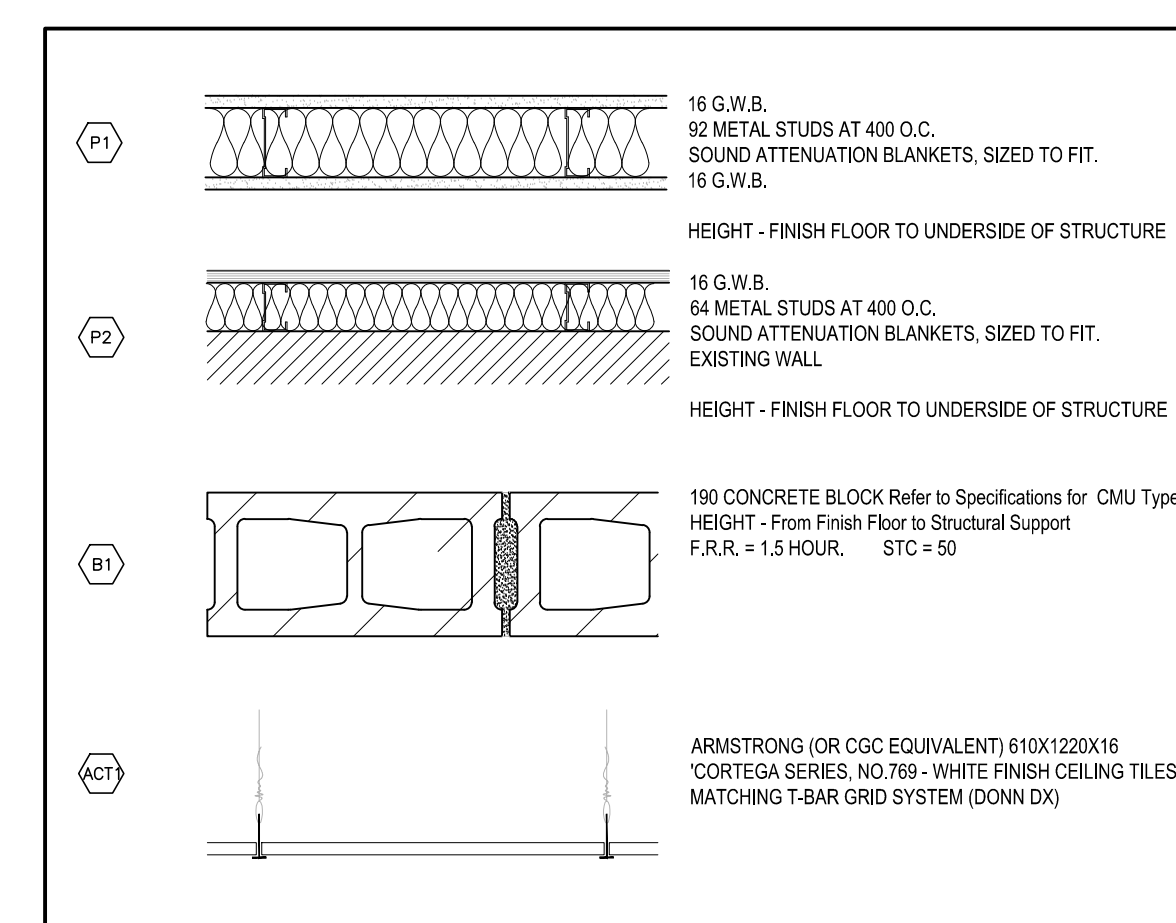
MECHANICAL & ELECTRICAL ENGINEER
CALLIDUS ENGINEERING
 1385 N ROUTLEDGE PARK.
 LONDON, ONTARIO
 N6H 5N5
 T: (519) 472-7640

STRUCTURAL ENGINEER
VANBOXMEER & STRANGES LIMITED
 458 QUEENS AVE.
 LONDON, ONTARIO
 N6B 1X9
 T: (519) 433-4661

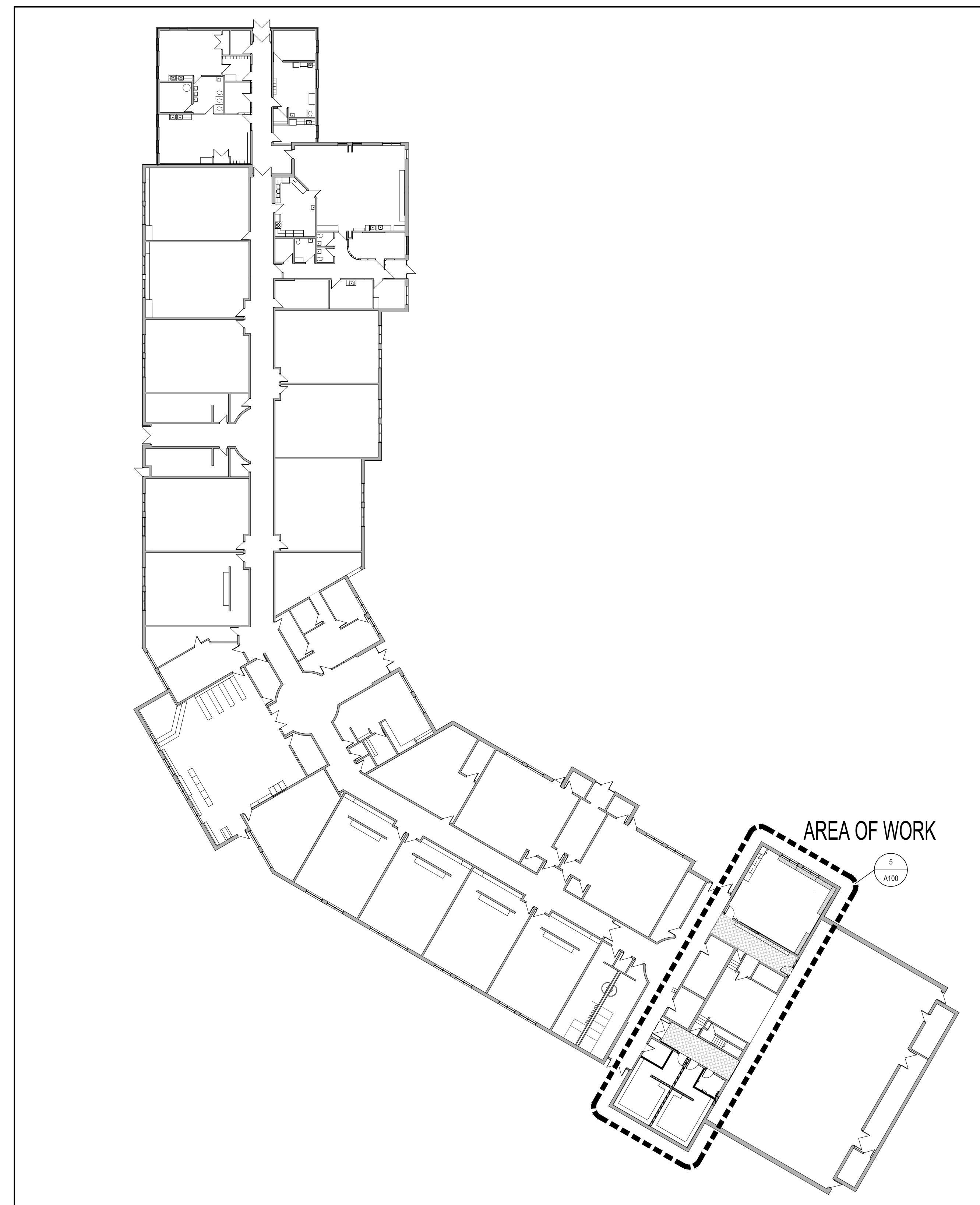
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 - A100 DEMOLITION PLAN, CONSTRUCTION FLOOR PLAN
 - A200 DEMOLITION REFLECTED CEILING PLAN, REFLECTED CEILING PLAN
 - A500 SECTION DETAILS, SCHEDULES, DOOR, FRAME AND SCREEN TYPES
 - A800 INTERIOR ELEVATIONS, SECTIONS
- MECHANICAL
- M1 - PLUMBING AND SANITARY PLANS
 - M2 - HVAC LEGENDS, DETAILS, AND SCHEDULES
 - M3 - HVAC DEMOLITION AND NEW LAYOUTS
 - M4 - FIRE PROTECTION DEMOTION AND NEW LAYOUTS
 - M5 - MECHANICAL SPECIFICATIONS
- ELECTRICAL
- E1 - ELECTRICAL LEGEND, DETAILS AND SCHEDULES.
 - E2 - DEMOLITION PLAN
 - E3 - LIGHTING AND CONTROLS LAYOUT
 - E4 - POWER AND SYSTEMS LAYOUT
 - E5 - SPECIFICATIONS
- STRUCTURAL
- SK-01 - SECTION

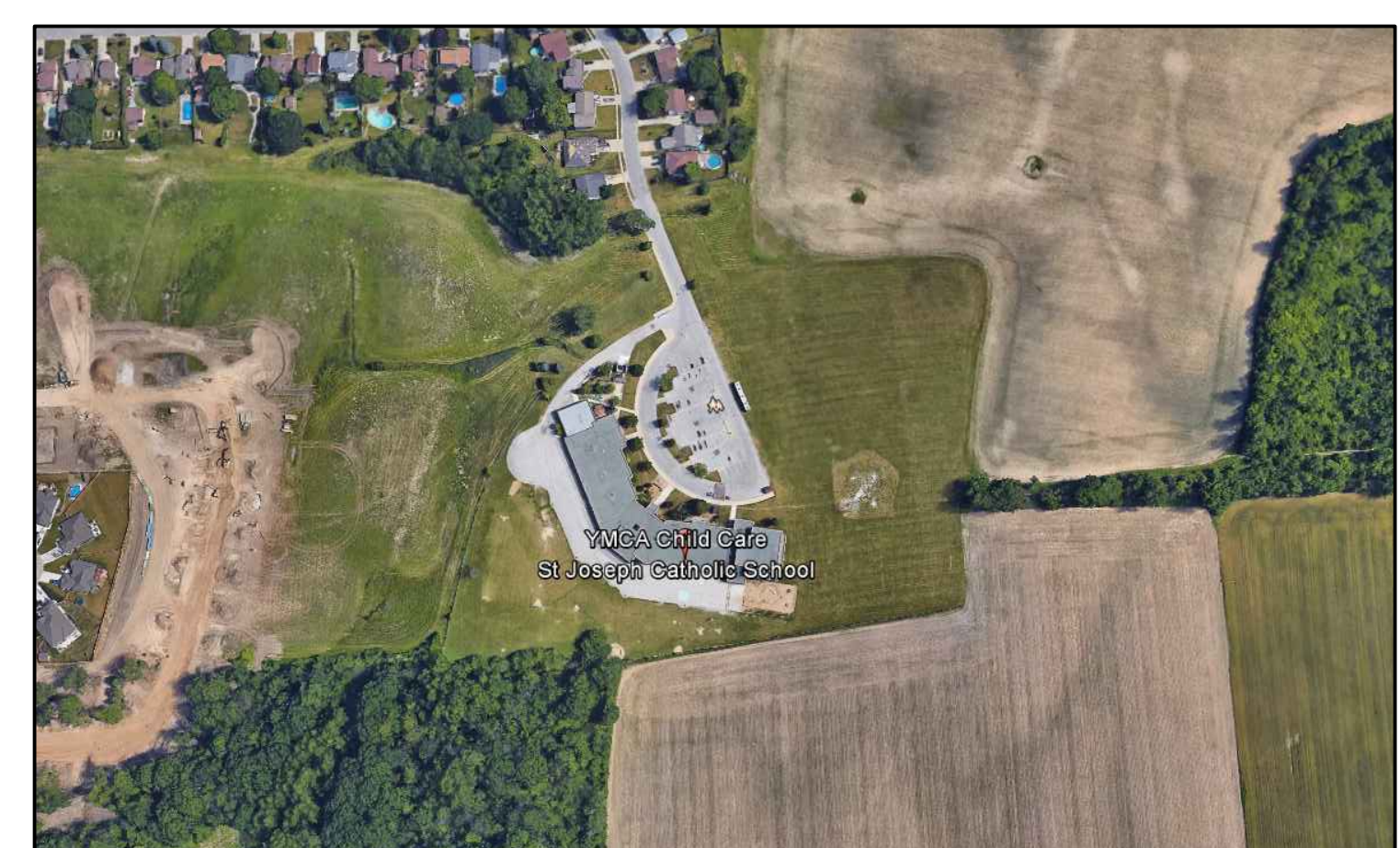
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3 PARTITION TYPES
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5 KEY PLAN
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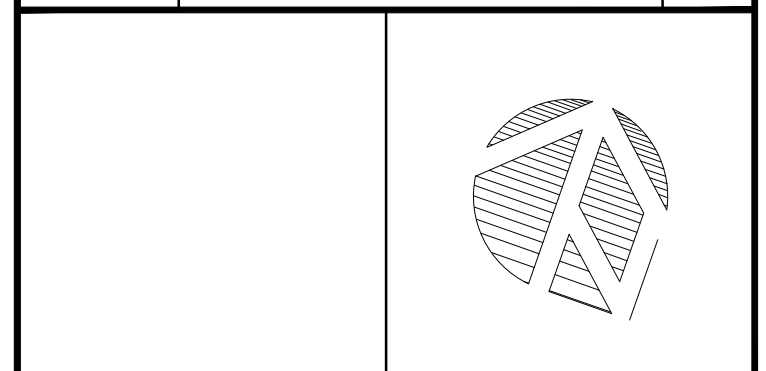
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KEY PLAN

NOTES

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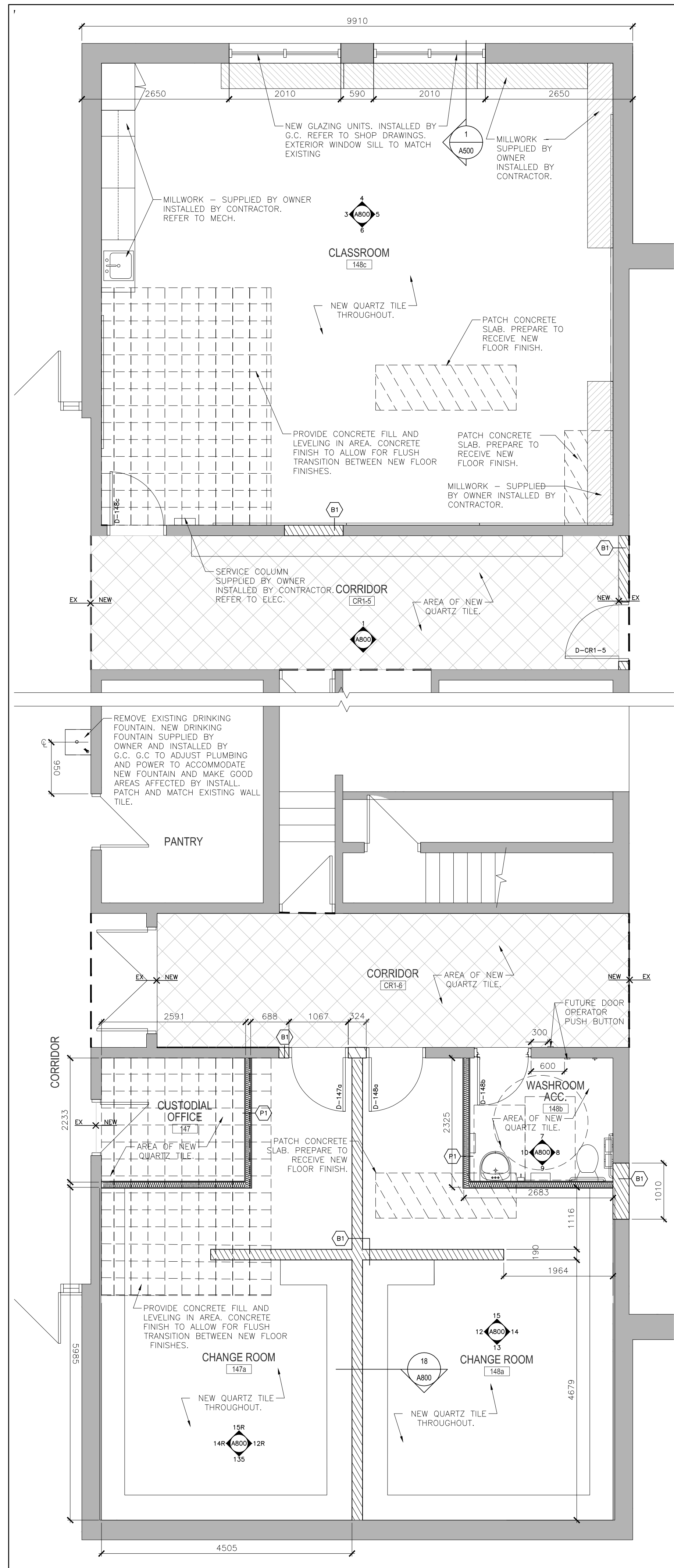
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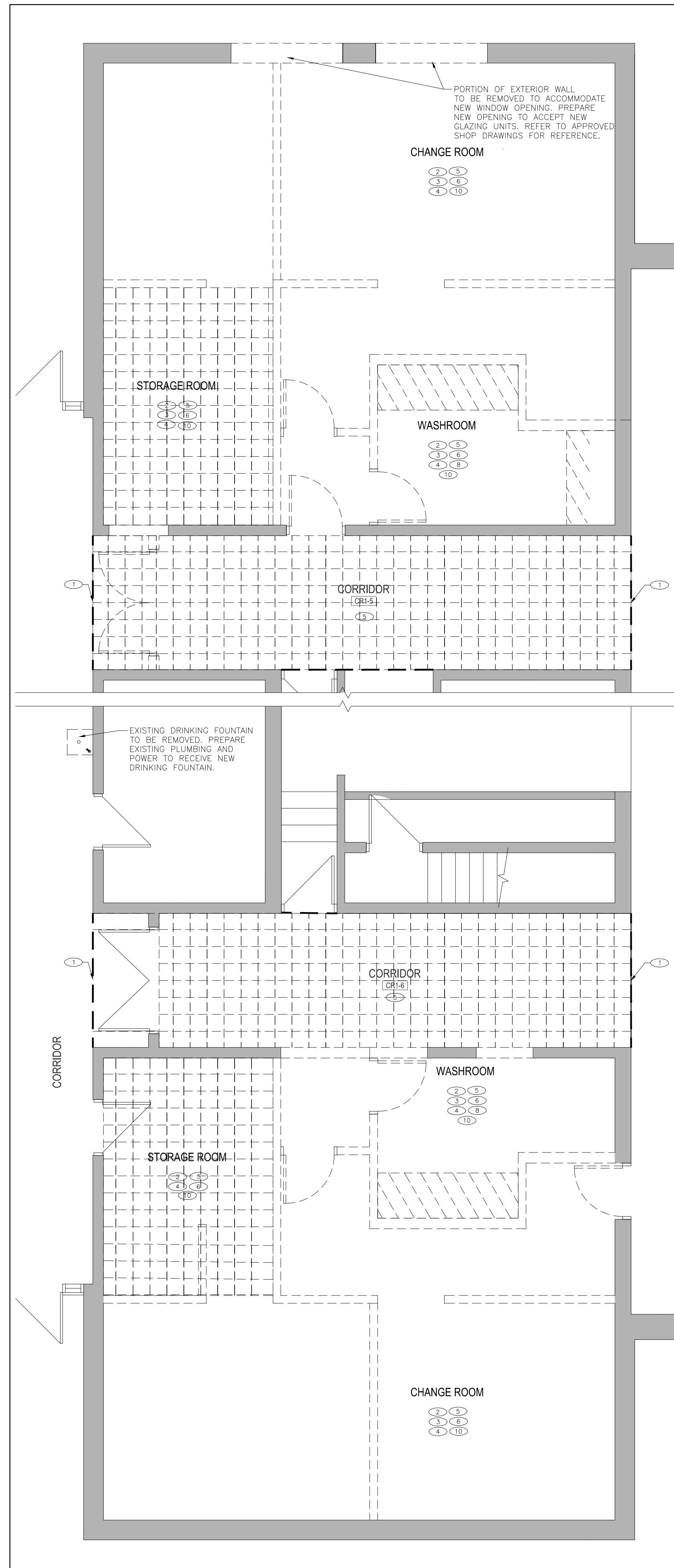
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PROJECT No. 1714		



5 PART CONSTRUCTION FLOOR PLAN
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4 PART DEMOLITION PLAN
SCALE = 1:50

- GENERAL NOTES:**
- REMOVE ALL WIRING FROM ELECTRICAL ITEMS 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 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 SHOWN.
 - 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 COVERINGS, THEIR FITTINGS, 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 DRAWINGS, OR PROVIDE ENGINEERING WHERE THERE ARE NO STRUCTURAL DRAWINGS / SCHEDULE.
 - G.C. 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.

1 GENERAL NOTES
SCALE = N.T.S.

- LEGEND:**
- ① DEMOLITION NOTE REFERENCE NUMBER
 - ① MILLWORK TO BE RELOCATED. REFER TO PLANS
 - LOCATION OF HOARDING
 - PORTION OF EXISTING MASONRY/DRYWALL PARTITION TO BE REMOVED.
 - APPROXIMATE EXTENT OF EXISTING WALLS AND STRUCTURE TO REMAIN.
 - APPROXIMATE EXTENT OF AREAS WHERE FLOOR TO BE REMOVED
 - EXISTING DOOR & FRAME TO REMAIN
 - EXISTING DOOR & FRAME TO BE REMOVED & RETURNED TO OWNER

2 LEGEND
SCALE = N.T.S.

- DEMOLITION NOTES:**
- INSTALL CONTINUOUS HOARDING, WHERE INDICATED, MADE OF 92 MTL. STUD FRAME & 6MIL POLY SHEET, CUT TO FIT AROUND EXISTING SERVICES, AND COVERED IN 1/2 PLYWOOD (ON THE OCCUPIED OR TRAFFIC SIDE). TAPE AND SEAL ALL EDGES TO CONTAIN DUST AND DEBRIS WITHIN THE CONSTRUCTION ZONE. MAINTAIN AND REPAIR AS REQUIRED FOR THE DURATION OF THE CONSTRUCTION PROJECT. CONTRACTOR TO ALLOW FOR THE RELOCATION OF THE HOARDING SYSTEM AS REQUIRED TO SUIT THE PHASING OF THE PROJECT.
 - REMOVE EXISTING WALLS AS INDICATED ON THE DRAWINGS. CONSTRUCTION TYPE MAY VARY FROM EXTERIOR MASONRY OR CONCRETE BLOCK BACKUP TO INTERIOR CONCRETE BLOCK AND/OR DRYWALL PARTITIONS. WALL REMOVAL TO INCLUDE DOORS AND FRAMES INDICATED ON DRAWINGS. REMOVE MECHANICAL AND ELECTRICAL COMPONENTS / DEVICES (BACK TO SOURCE) ANCHORED TO OR CONCRETE WITHIN WALLS. PROVIDE ALL SHORING AND TEMPORARY SUPPORT REQUIRED TO MAKE EXISTING STRUCTURE SAFE. REFER TO DRAWINGS FOR ADDITIONAL REQUIREMENTS.
 - EXISTING DOOR, AND FRAME IF INDICATED, TO BE REMOVED CAREFULLY. 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. REFER TO NEW CONSTRUCTION PLANS AND ELEVATIONS.
 - EXISTING MILLWORK TO BE REMOVED BY OWNER. REMOVE ALL EQUIPMENT, SINK, DRAINS, GAS AND WATER LINES AS REQUIRED. AS INDICATED. ONLY RETAIN MILLWORK FOR OWNERS' USE OR REUSE IN NEW CONSTRUCTION WHERE SPECIFICALLY NOTED.
 - 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 10MM OVER 300MM 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.
 - EXISTING CEILING TREATMENTS FIXTURES AND FINISHES TO BE REMOVED AND DISCARDED (OR SALVAGED AS REQUIRED, REFER TO NOTE 10), INCLUDING ALL TILES, GYPSUM BOARD, SUPPORT HANGERS, AND FRAMING.
 - EXISTING MECHANICAL/ELECTRICAL EQUIPMENT TO BE DISCONNECTED, REMOVED & DISCARDED. THIS IS TO INCLUDE ALL HANGERS, SUPPORTS, ETC. WITHIN WALLS AND CEILINGS.
 - REMOVE ALL PLUMBING FIXTURES, SUPPLY AND WASTE LINES AS NOTED. FLUSH CAP ALL SERVICES AT FLOOR, WALL AND ABOVE CEILING LEVEL. PATCH, REPAIR AND MAKE GOOD ALL EXPOSED SURFACES.
 - EXISTING LIGHT FIXTURES TO BE CAREFULLY REMOVED AND SALVAGED FOR REINSTALLATION. EXTRA MATERIAL MAY BE SALVAGED FROM AREAS REMOVED UNDER NOTE 7.
 - PATCH AND REPAIR ALL CRACKS, HOLES AND DEFECTS IN EXISTING WALLS TO PREPARE FOR FINAL FINISH.
 - CLEAN ALL LIGHT FIXTURES AND LENSES.
 - REMOVE WINDOW COVERINGS

3 DEMOLITION NOTES
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KEY PLAN

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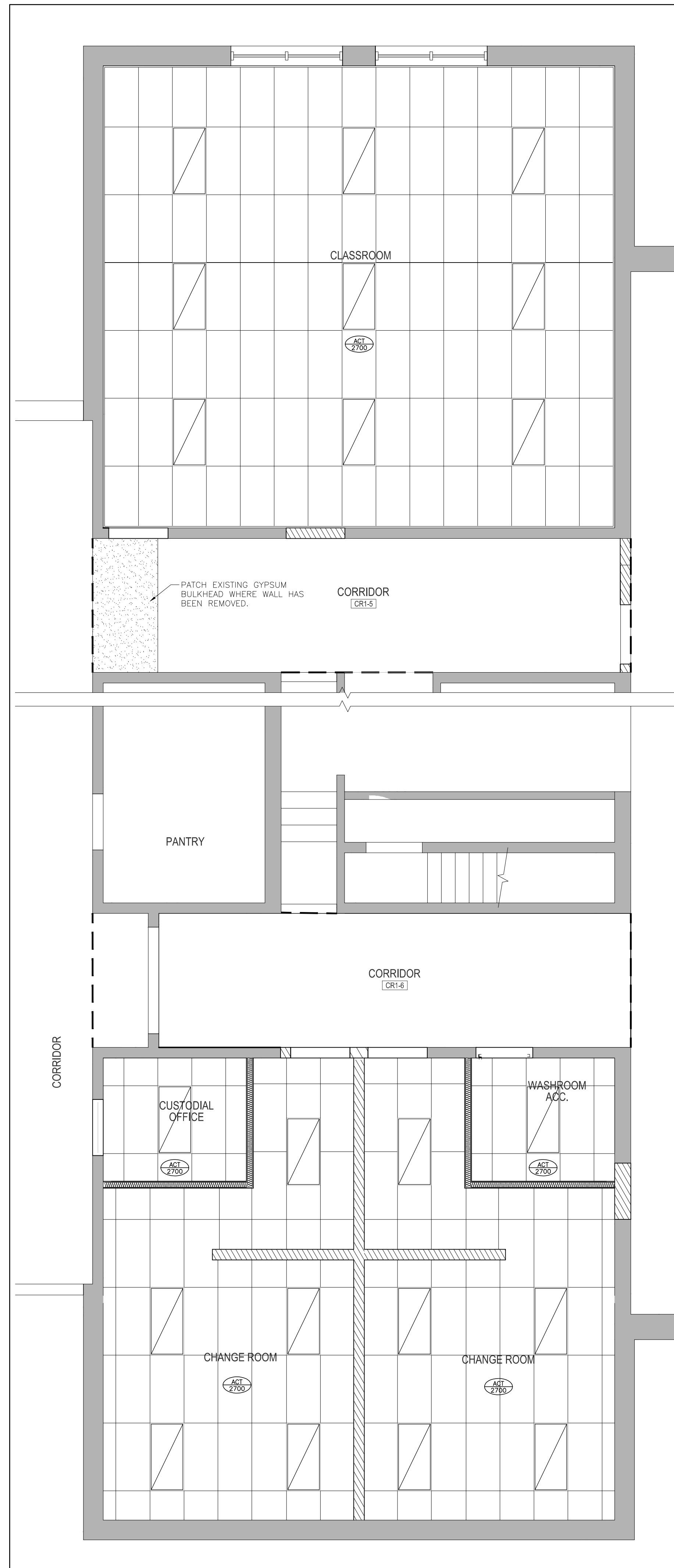
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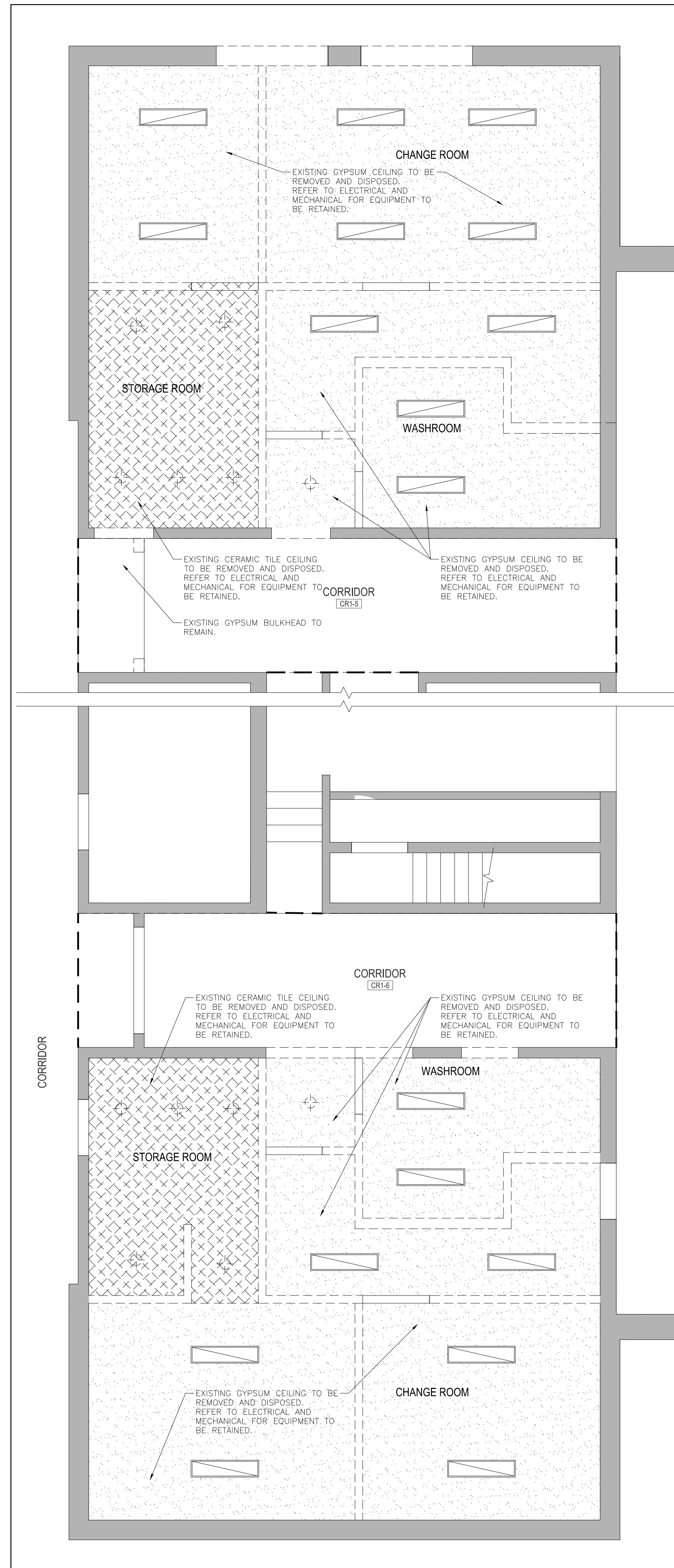
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PROJECT No.:		1714



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1 PART DEMOLITION REFLECTED CEILING PLAN
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KEY PLAN

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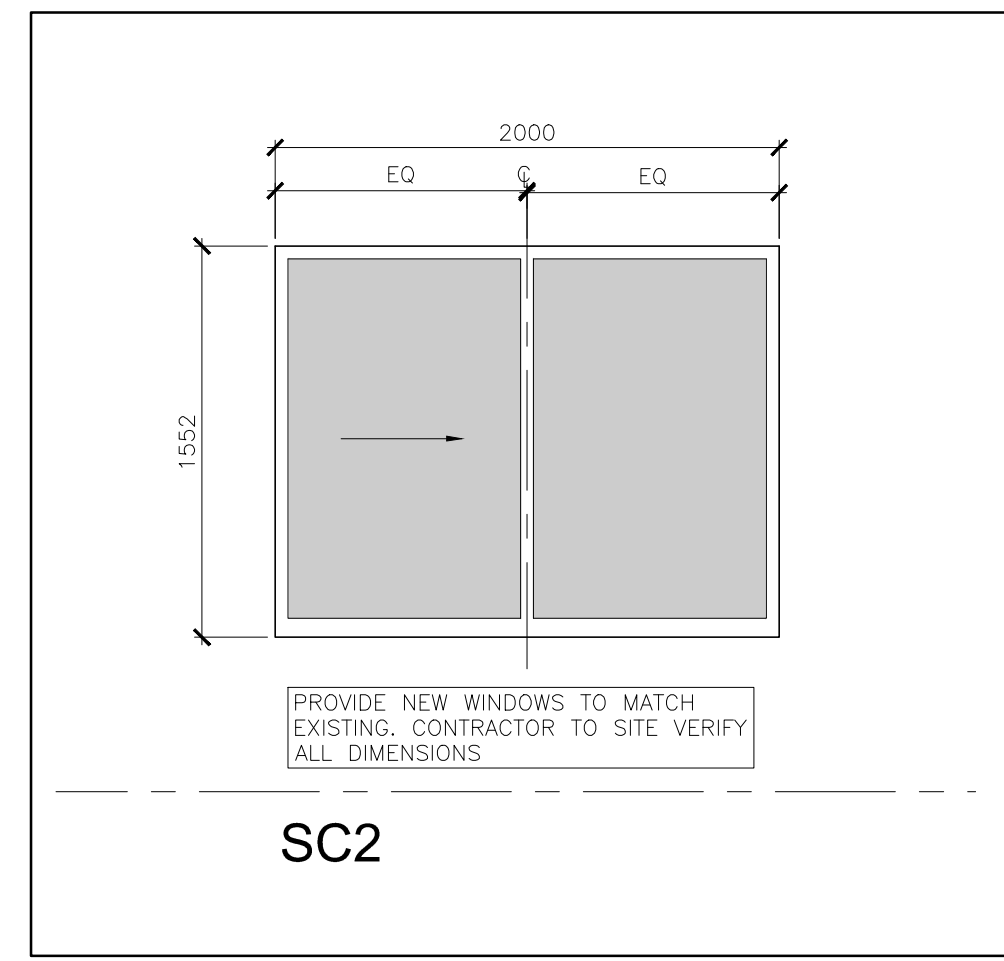
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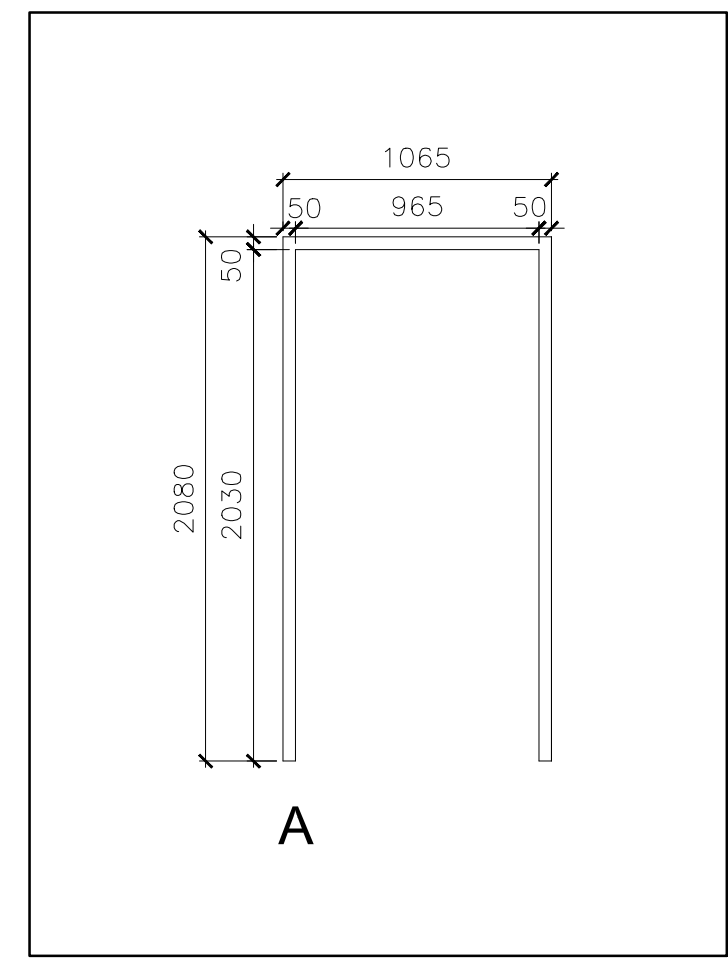
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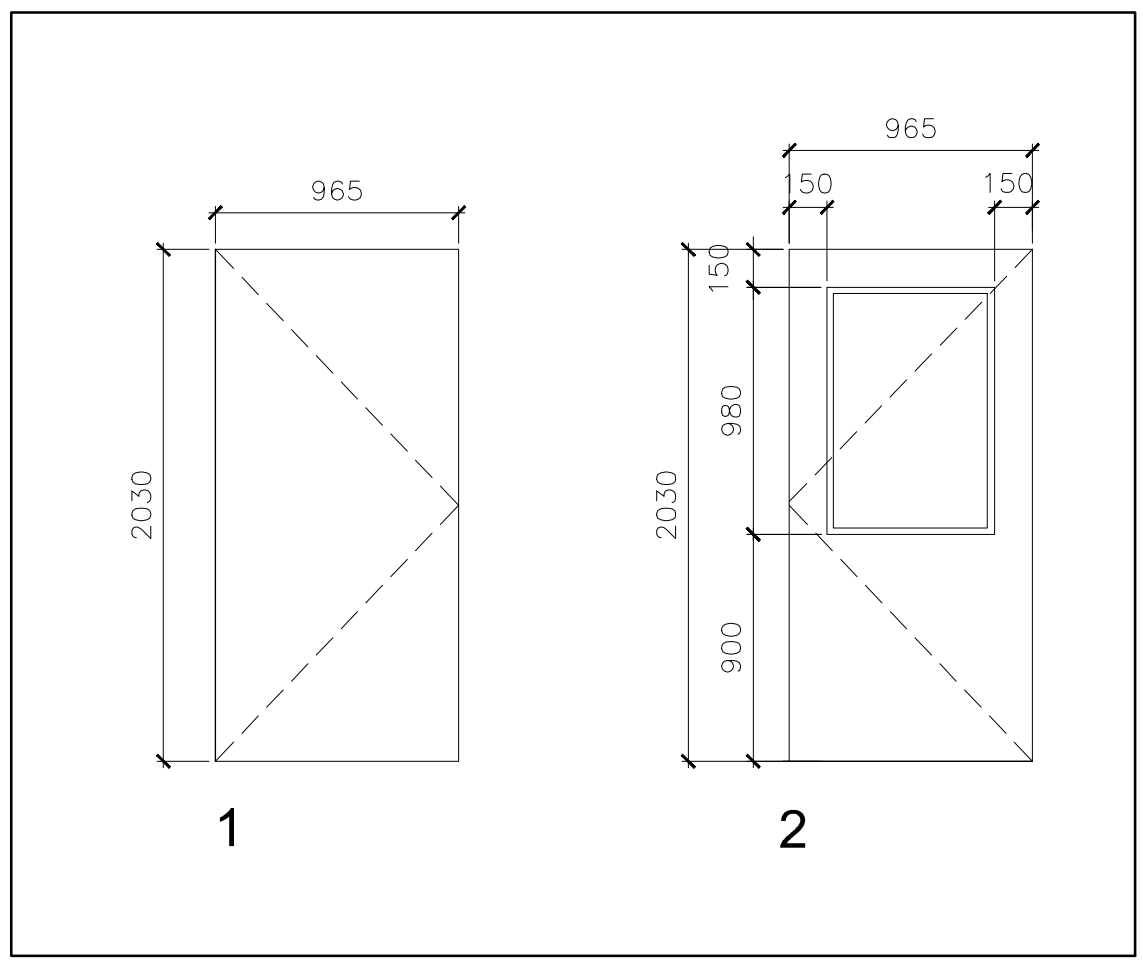
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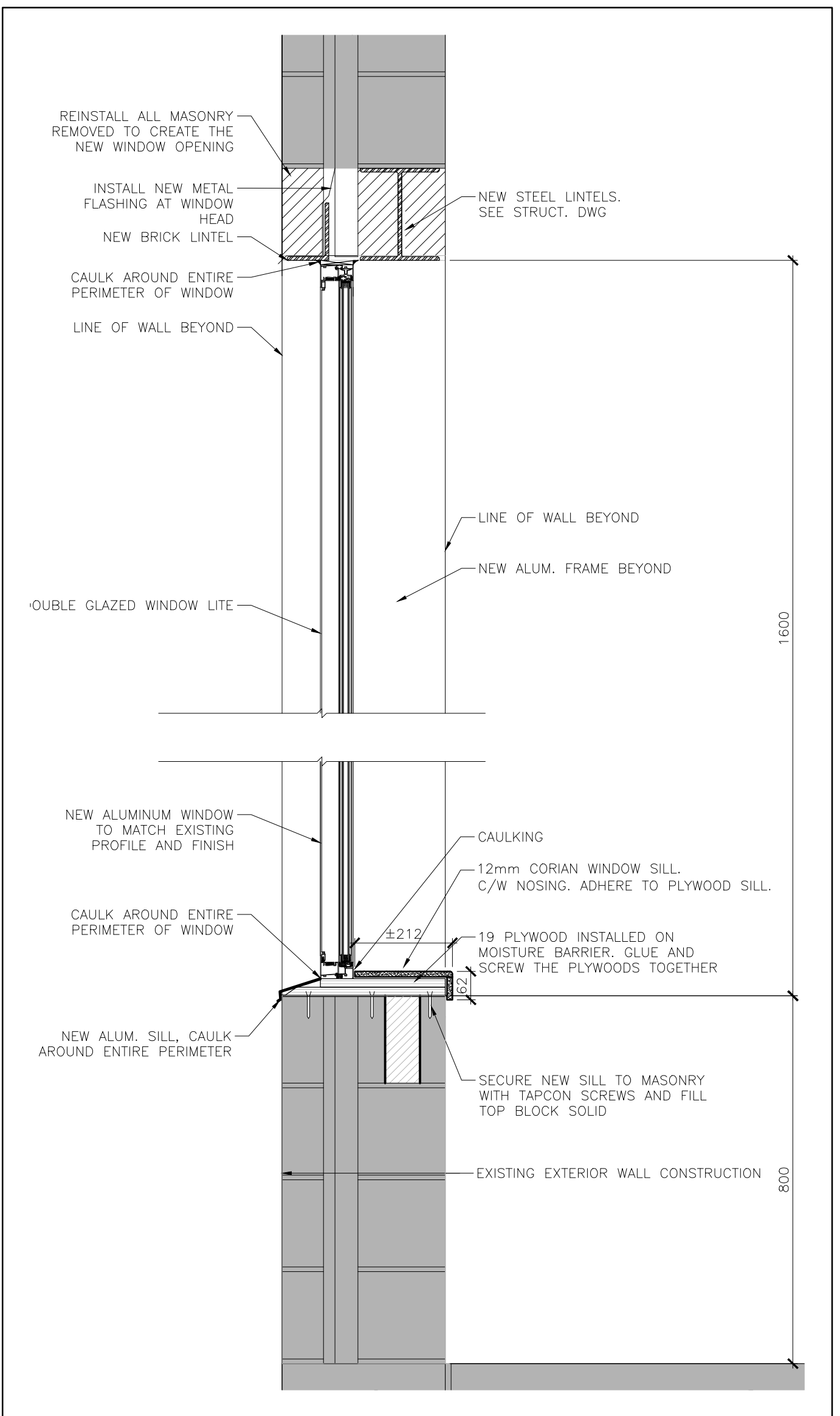
4 SCREEN TYPES
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3 FRAME TYPES
SCALE = 1:30



2 DOOR TYPES
SCALE = 1:30



1 NEW WINDOW OPENING IN EXTERIOR WALL
SCALE = 1:10

DOOR SCHEDULE RWAI - 1714

St. Joseph Corunna Catholic School
535 Birchbank Drive, Corunna, Ontario
Randy Wilson Architect Incorporated

Abbreviations

ALUM	Aluminum	GL	Glass	PT	Paint	STL	Steel	Refer to Floor Plans for Door Swings	
HM	Hollow Metal	TEMP	1/4" Tempered	STN	Stain	CRL	C.R. Laurence	Refer to Interior Elevations for Extent of Vinyl Film	
SS	Stainless Steel	PGW	Polished Georgian Wired	ANOD	Clear Anodized	BES	Besam		
WD	Wood	PHEN	Phenolic	NA	Not Applicable	WD	Wood		

Door No.	Room Number	Room Number	Rebate		Door					Frame					Remarks
			Width	Height	Type	Material	Finish	Glass	Film	Type	Material	Finish	Profile	Glass	
D-147a	CORRIDOR	147a	965	2030	1	HM	PT	-	-	A	HM	PT	-	-	SITE VERIFY HEIGHT OF EXISTING DOORS
D-148a	CORRIDOR	148a	965	2030	1	HM	PT	-	-	A	HM	PT	-	-	SITE VERIFY HEIGHT OF EXISTING DOORS
D-148b	CORRIDOR	148b	965	2030	1	HM	PT	-	-	A	HM	PT	-	-	SITE VERIFY HEIGHT OF EXISTING DOORS
D-CR1-5	CORRIDOR	GYM	965	2030	1	HM	PT	-	-	A	HM	PT	-	-	SITE VERIFY HEIGHT OF EXISTING DOORS
D-148c	CORRIDOR	148c	965	2030	2	HM	PT	GL	-	A	HM	PT	-	-	SITE VERIFY HEIGHT OF EXISTING DOORS

ROOM FINISH SCHEDULE RWAI - 1714

St. Joseph Catholic School
St. Clair Catholic District School Board
Randy Wilson Architect Incorporated

Abbreviations

ACT	Acoustic Ceiling Tile	EP.PT.	Epoxy Paint	GLZ	Glazing	OPEN	Open to adjacent room	SRTC	Service Room Traffic Coating
Anod	Anodized Aluminum Frames	EPF	Epoxy Flooring	GSW	Glass System Wall	PCT	Porcelain Tile	STO	Stone
CF	Clear Finish Strain	EPW	Epoxy Wall Coating	GYP	Gypsum Board	PT	Paint	TER	Terrazzo
CMU	Concrete Masonry Unit	EX	Existing	HW	Hardwood	RES	Resilient Sht. Flooring/Base	QT	Quartz Tile
CNC	Architectural Concrete	EXP	Exposed Structure	IP	Intumescent Paint	RUB	Rubber Flooring/Base	WB	Wood base finish to match floor
CPT	Carpet Tile	GB	Gypsum Board	LIN	Linoleum	SB	Stone Base	WC	Wallcovering (# indicates w/ wallcovering type)
CT	Ceramic Tile	GLB & S	Glass Block & Stained Glass	NA	Not Applicable	SEAL	Concrete Sealer	WD	Woodwork

CHANGES ARE HIGHLIGHTED, BOLD & ITALICIZED

Room No.	Room Name	Floor			North		East		South		West		Ceiling		Remarks
		Material	Finish	Base	Mat'l	Finish	Mat'l	Finish	Mat'l	Finish	Mat'l	Finish	Height		
147	CUSTODIAL OFFICE	EX	QT	RUB	EX	PT	GB	PT	GB	PT	EX	PT	ACT	-	2700
147a	CHANGE ROOM	EX	QT	RUB	GB/CMU	PT	CMU	PT	EX	PT	EX/GB	PT	ACT	-	2700
148a	CHANGE ROOM	EX	QT	RUB	GB/CMU	PT	EX/GB/CMU	PT	EX	PT	CMU	PT	ACT	-	2700
148b	WASHROOM	EX	QT	RUB	EX	PT	EX/CMU	PT	GB	PT	GB	PT	ACT	-	2700
148c	CLASSROOM	EX	QT	RUB	EX	PT	EX	PT	EX/CMU	PT	EX	PT	ACT	-	2700
CR1-5	CORRIDOR	EX	QT	RUB	CMU	PT	EX	-	EX	-	EX	-	-	-	-
CR1-6	CORRIDOR	EX	QT	RUB	EX	-	EX	-	CMU	PT	EX	-	-	-	-

RANDY WILSON ARCHITECT INCORPORATED
280 QUEENS AVENUE, SUITE 10
LONDON, ONTARIO N6B1X3
T. 519.439.0611
F. 519.438.5962
e. randy@rwaarchitect.ca
www.rwaarchitect.ca

ST. CLAIR CATHOLIC DISTRICT SCHOOL BOARD
Lighting the Way - Rejoicing in Our Journey

KEY PLAN

NOTES

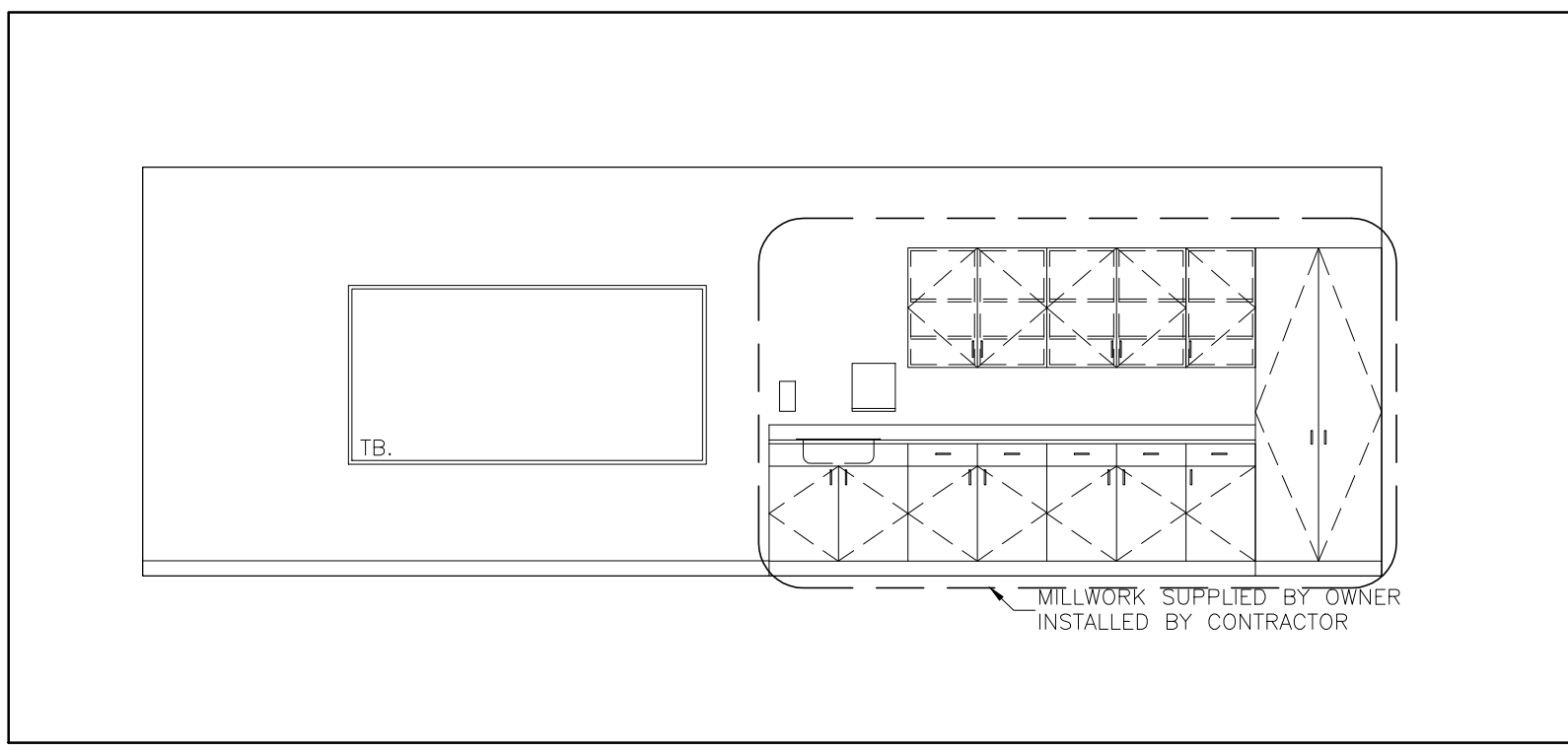
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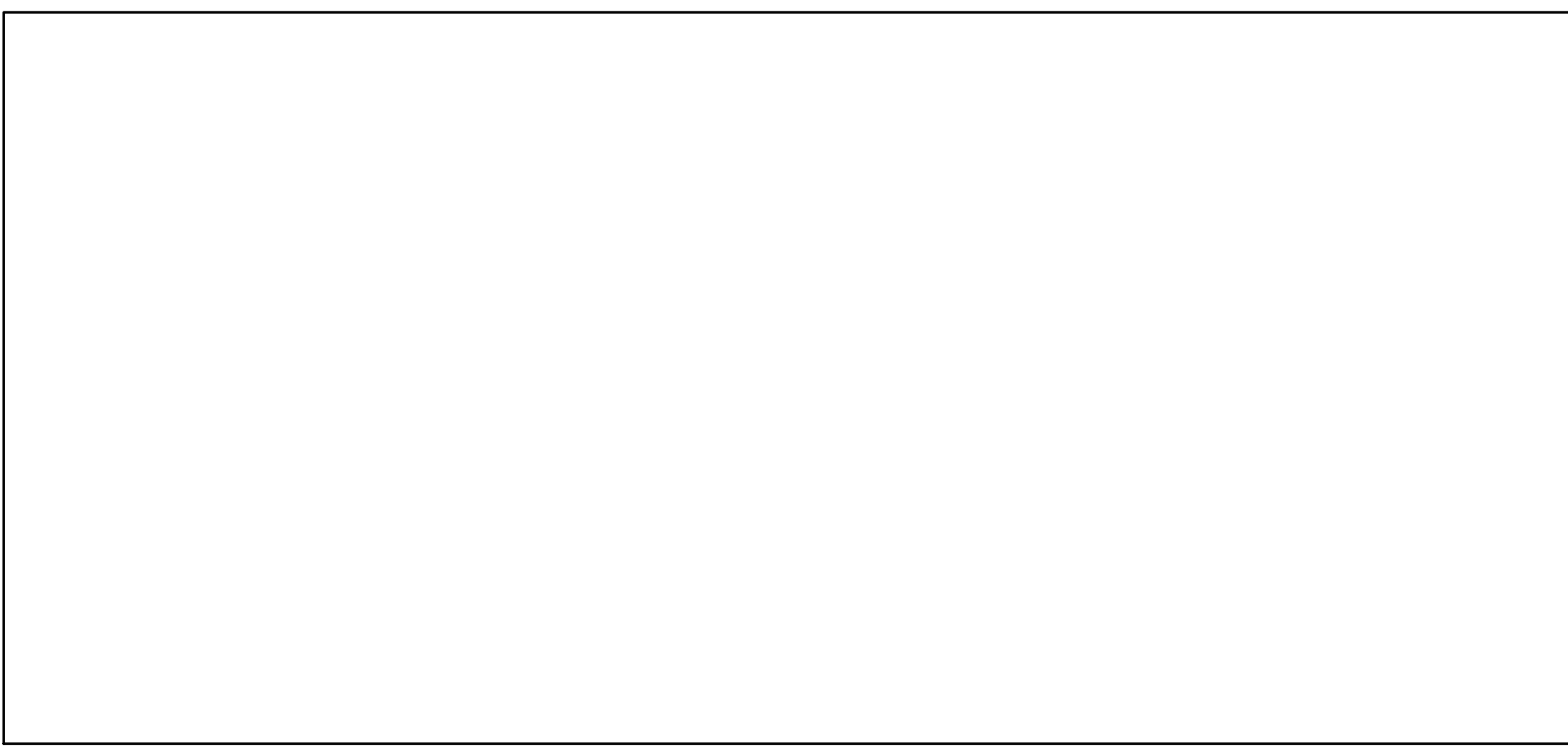
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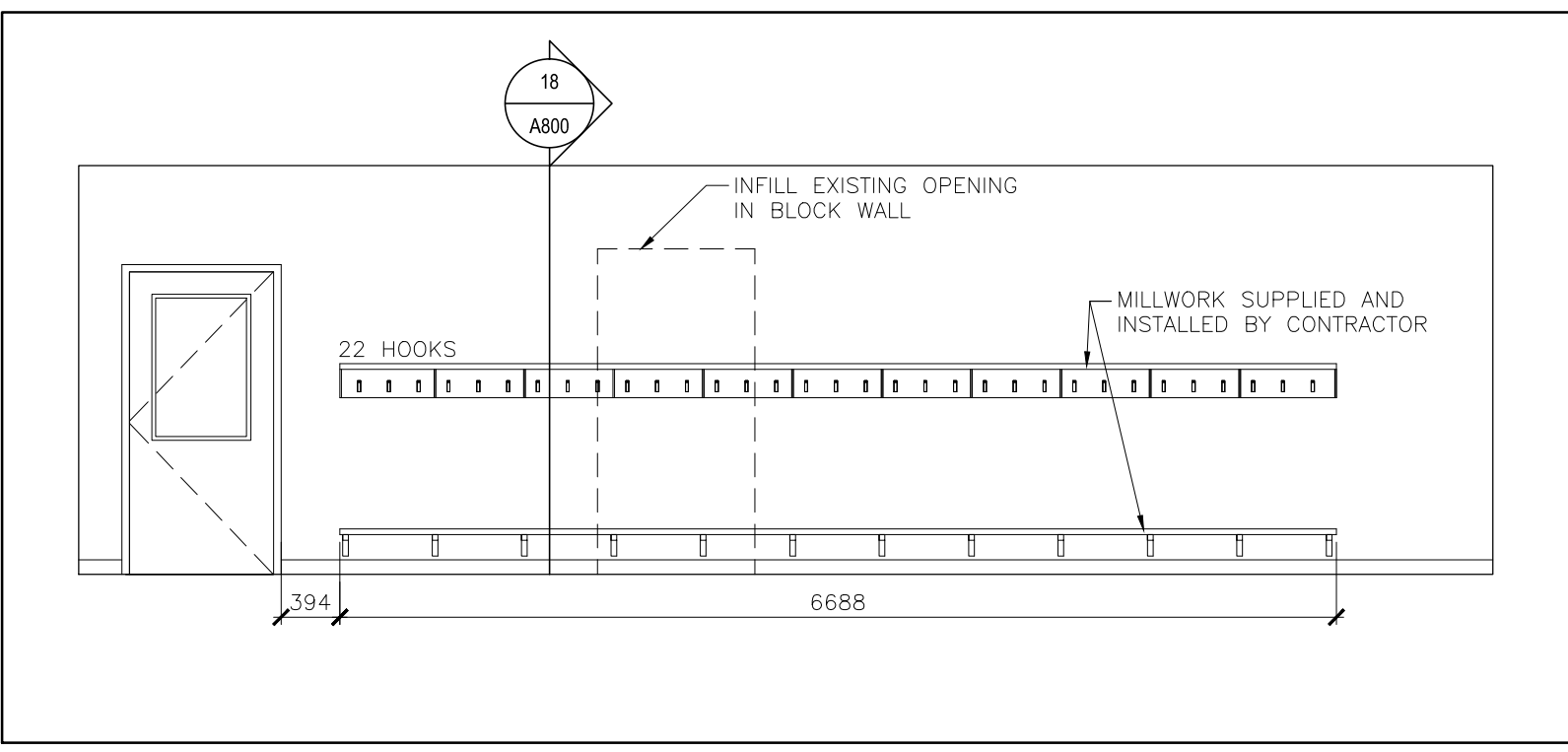
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PROJECT No.:		1714



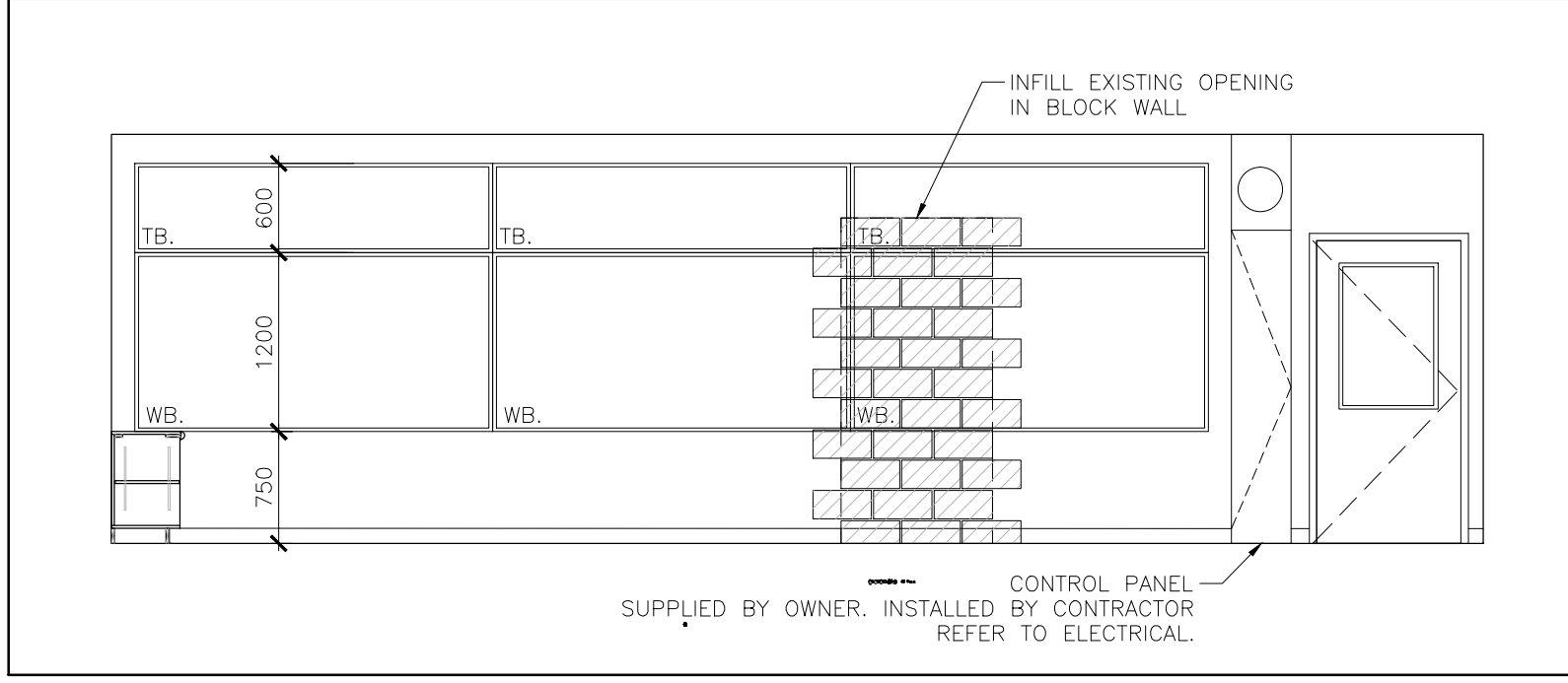
3 CLASSROOM ELEVATION
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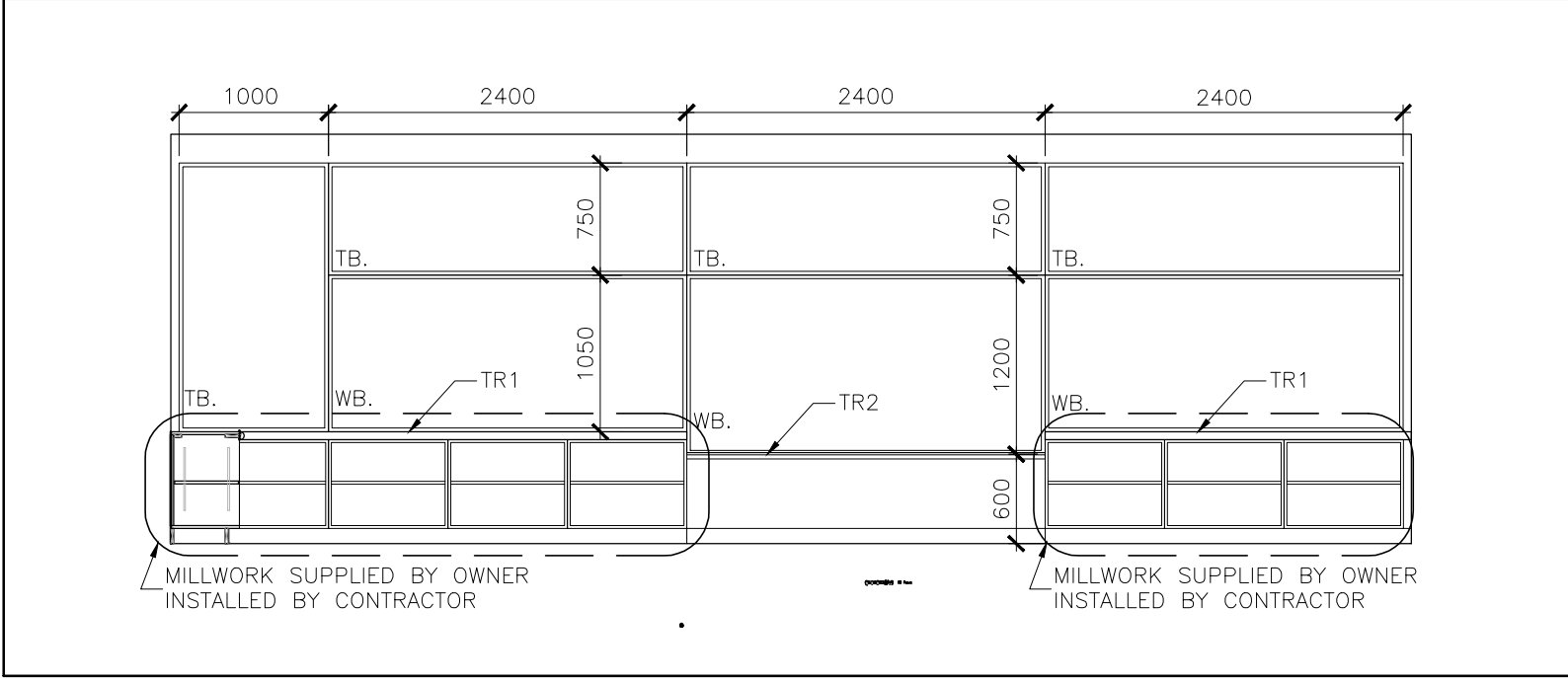
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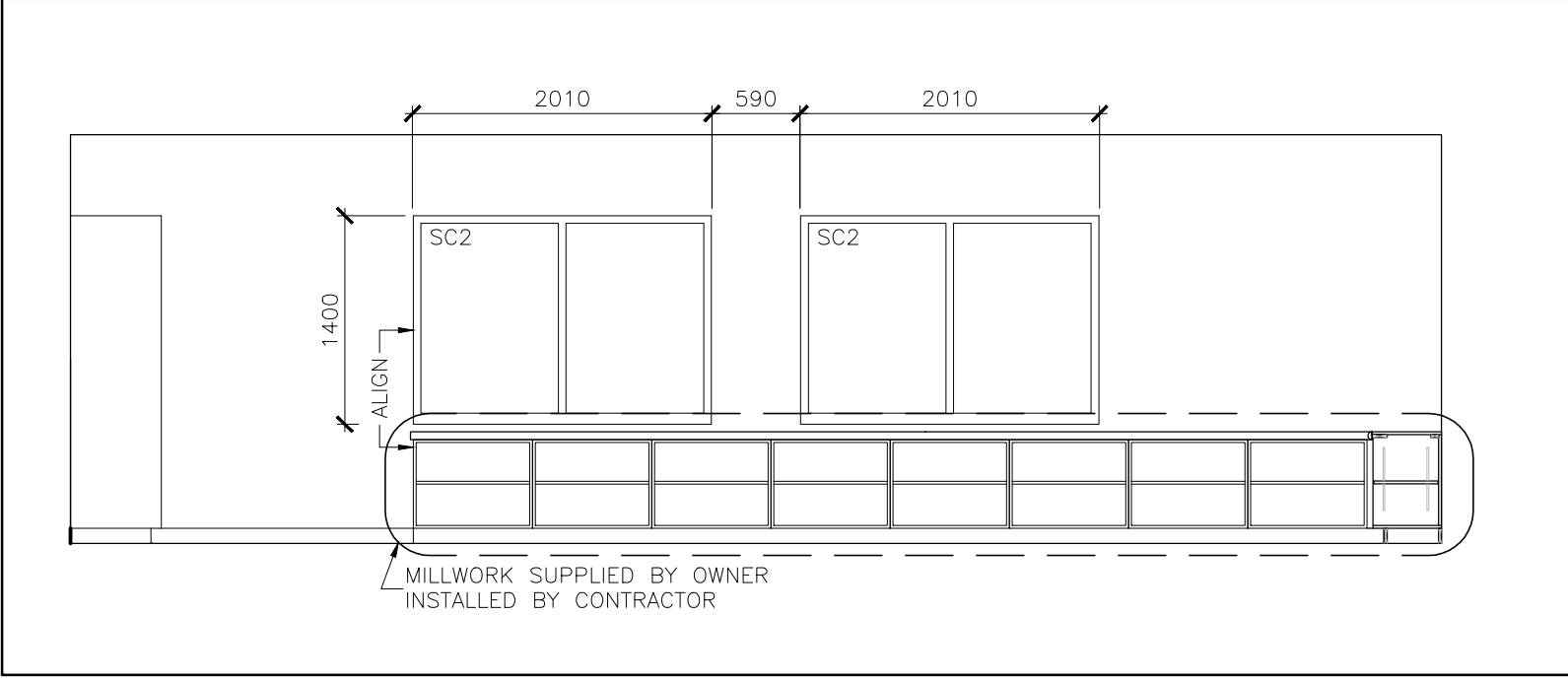
1 CUBBY ELEVATION
 SCALE = 1:50



6 CLASSROOM ELEVATION
 SCALE = 1:50



5 CLASSROOM ELEVATION
 SCALE = 1:50



4 CLASSROOM ELEVATION
 SCALE = 1:50

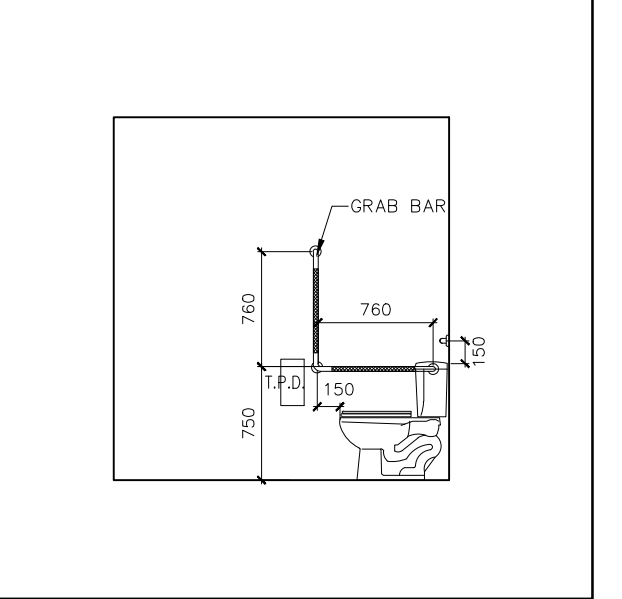
KEY PLAN

NOTES

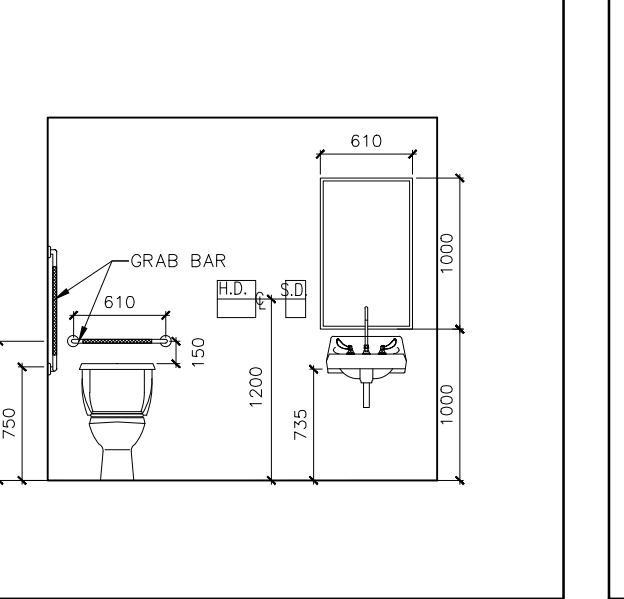
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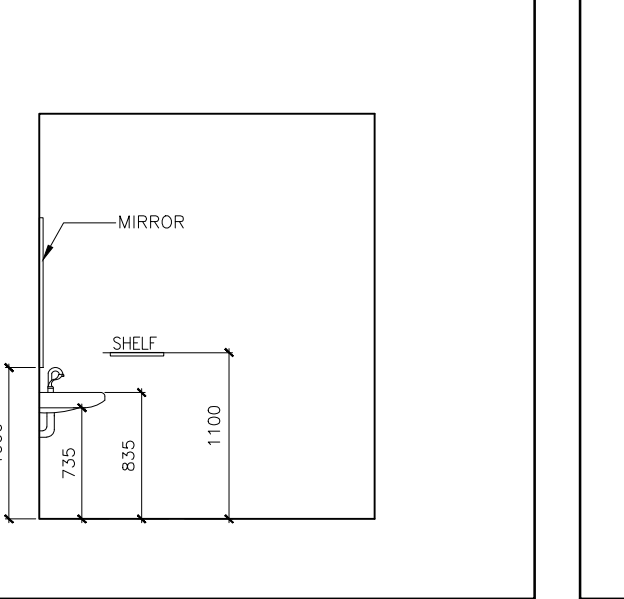
11 RESERVED
 SCALE



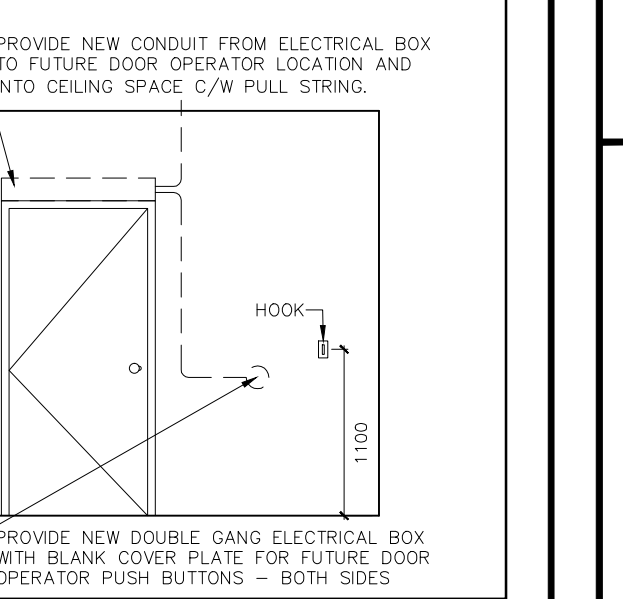
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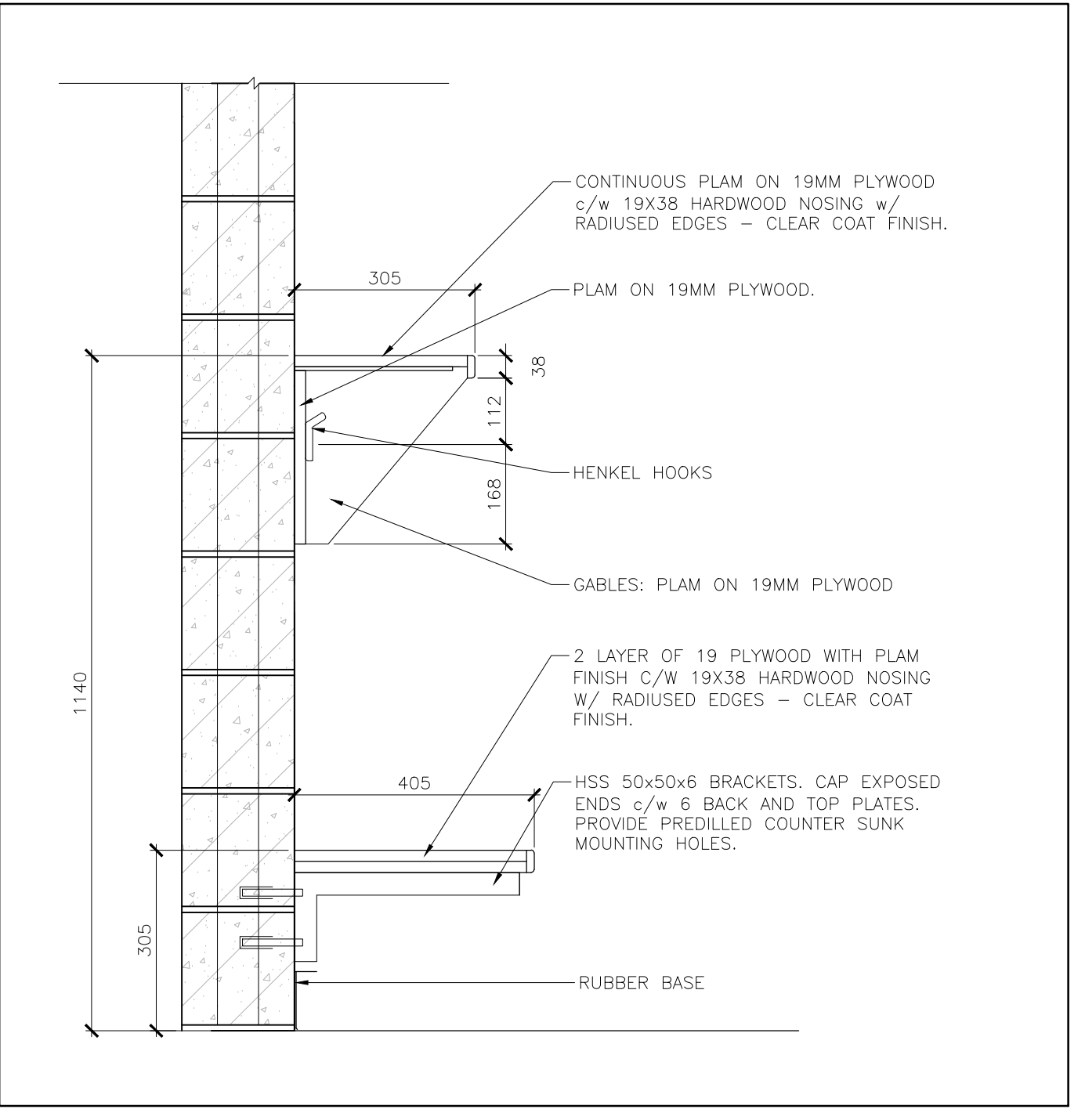
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 SCALE = 1:50



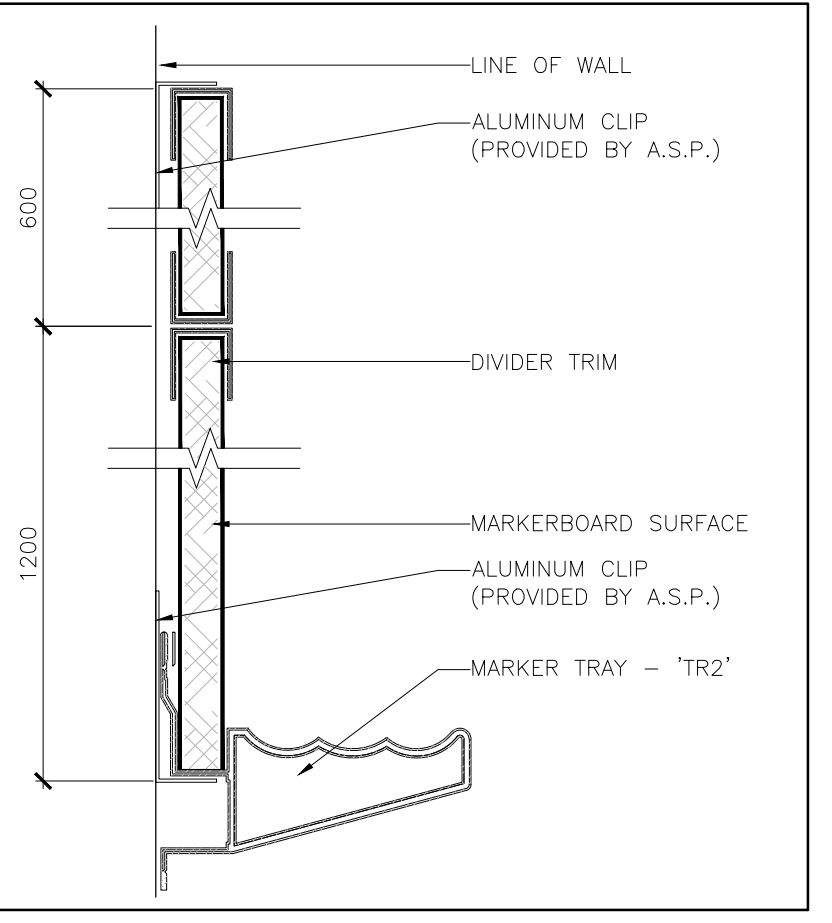
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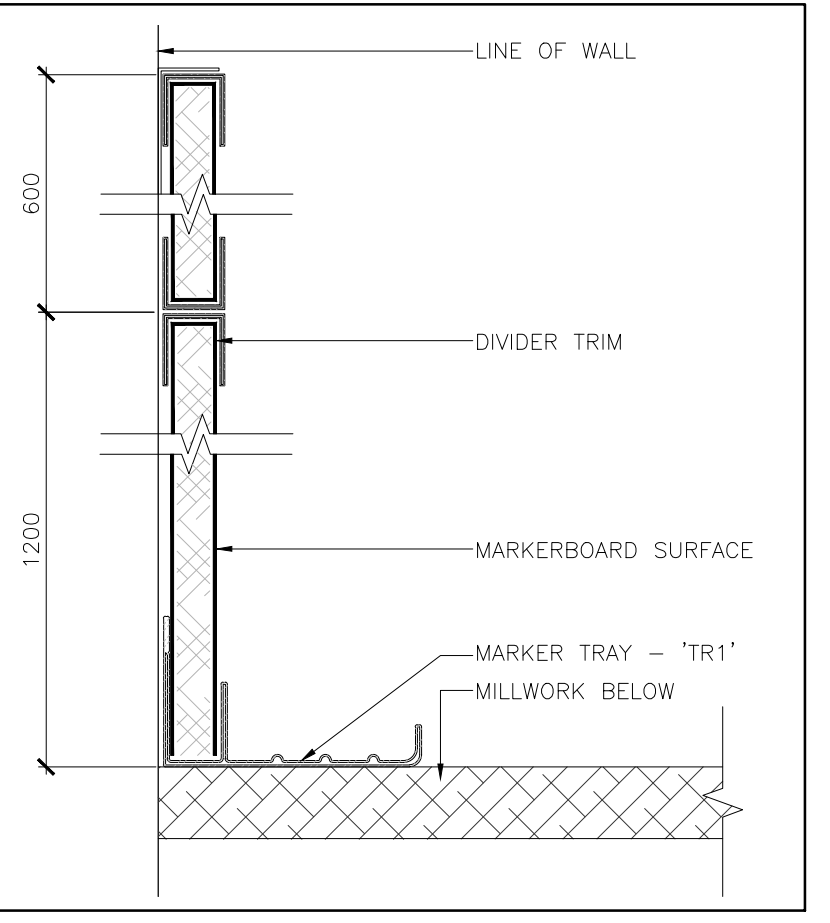
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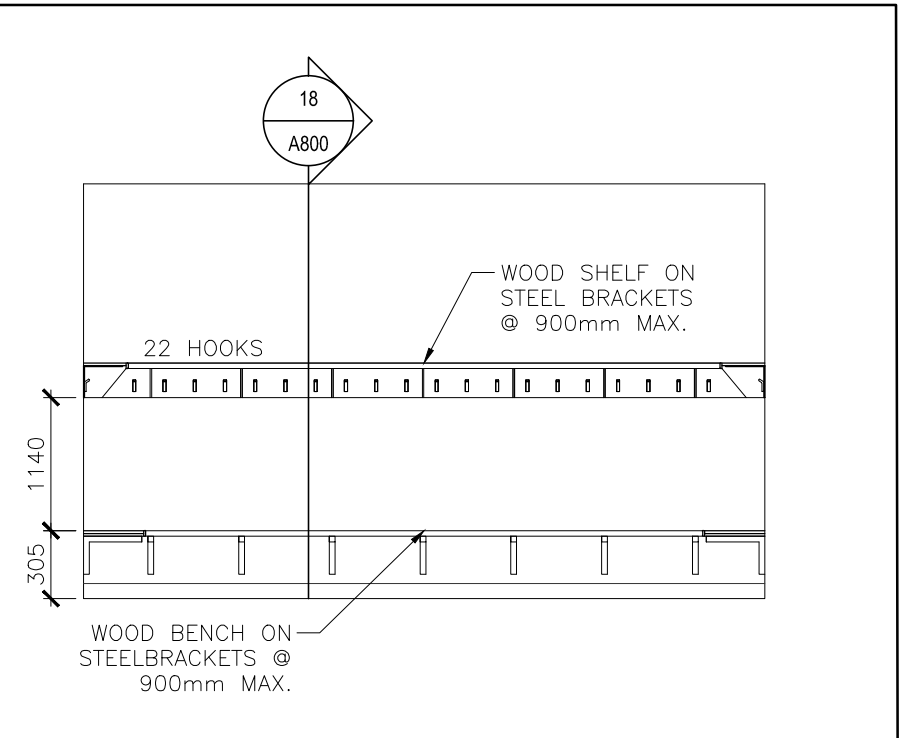
18 BENCH DETAIL
 SCALE = 1:10



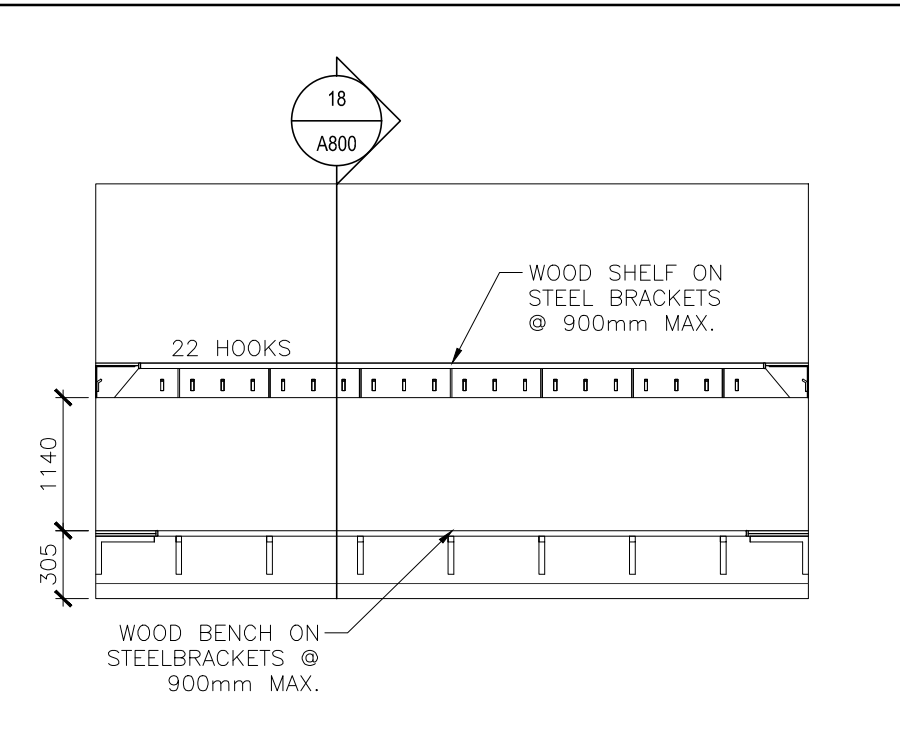
17 MARKER TRAY - TR2
 SCALE = 1:2



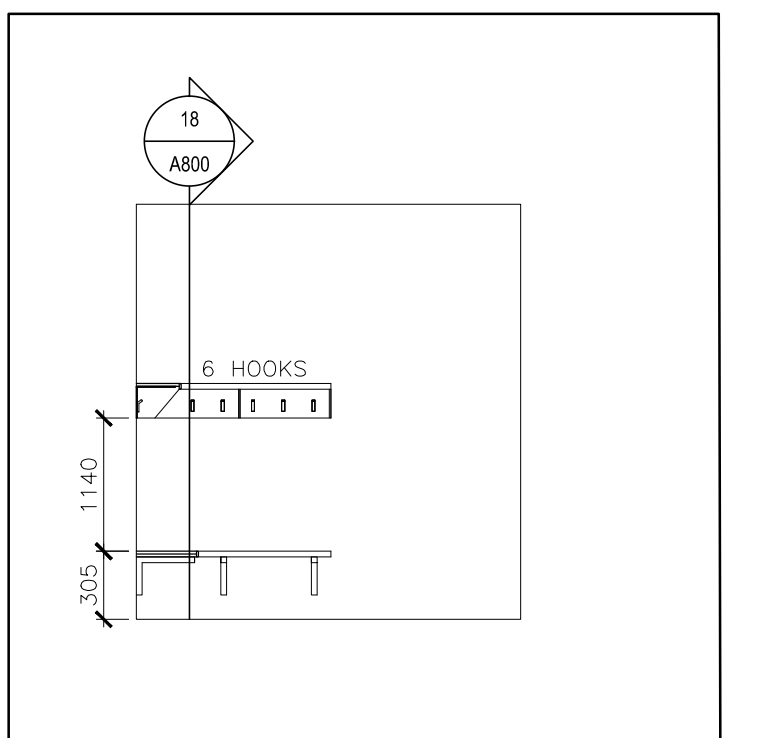
16 MARKER TRAY - TR1
 SCALE = 1:2



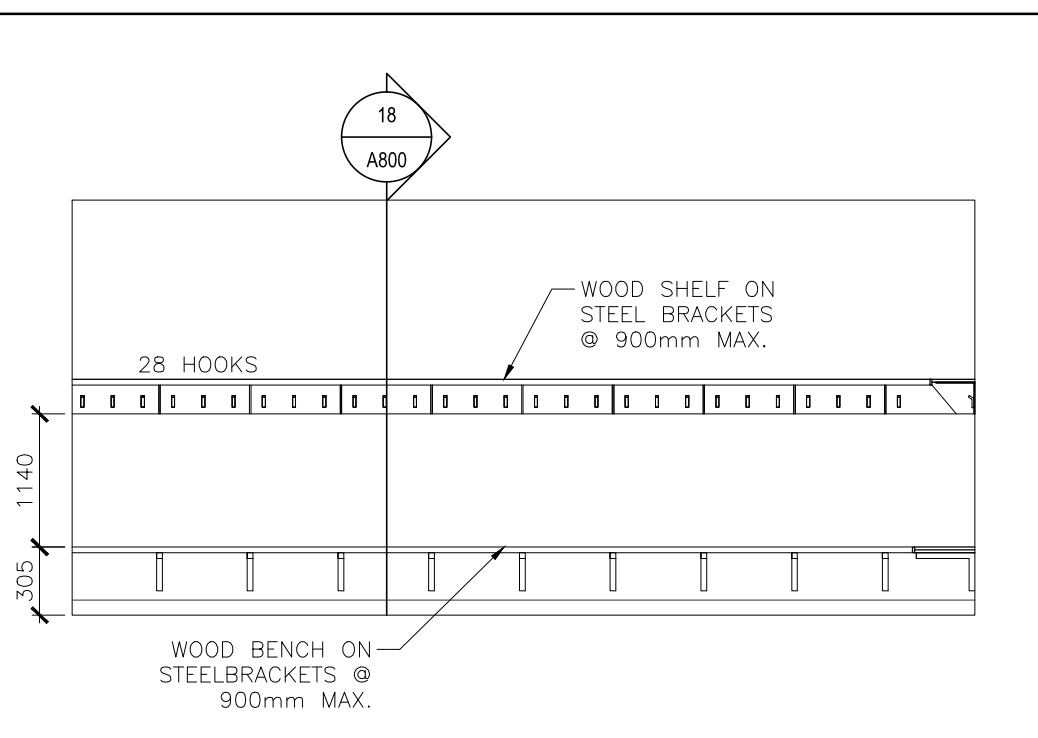
13 CHANGE ROOM ELEVATION
 SCALE = 1:50



12 CHANGE ROOM ELEVATION
 SCALE = 1:50



15 CHANGE ROOM ELEVATION
 SCALE = 1:50



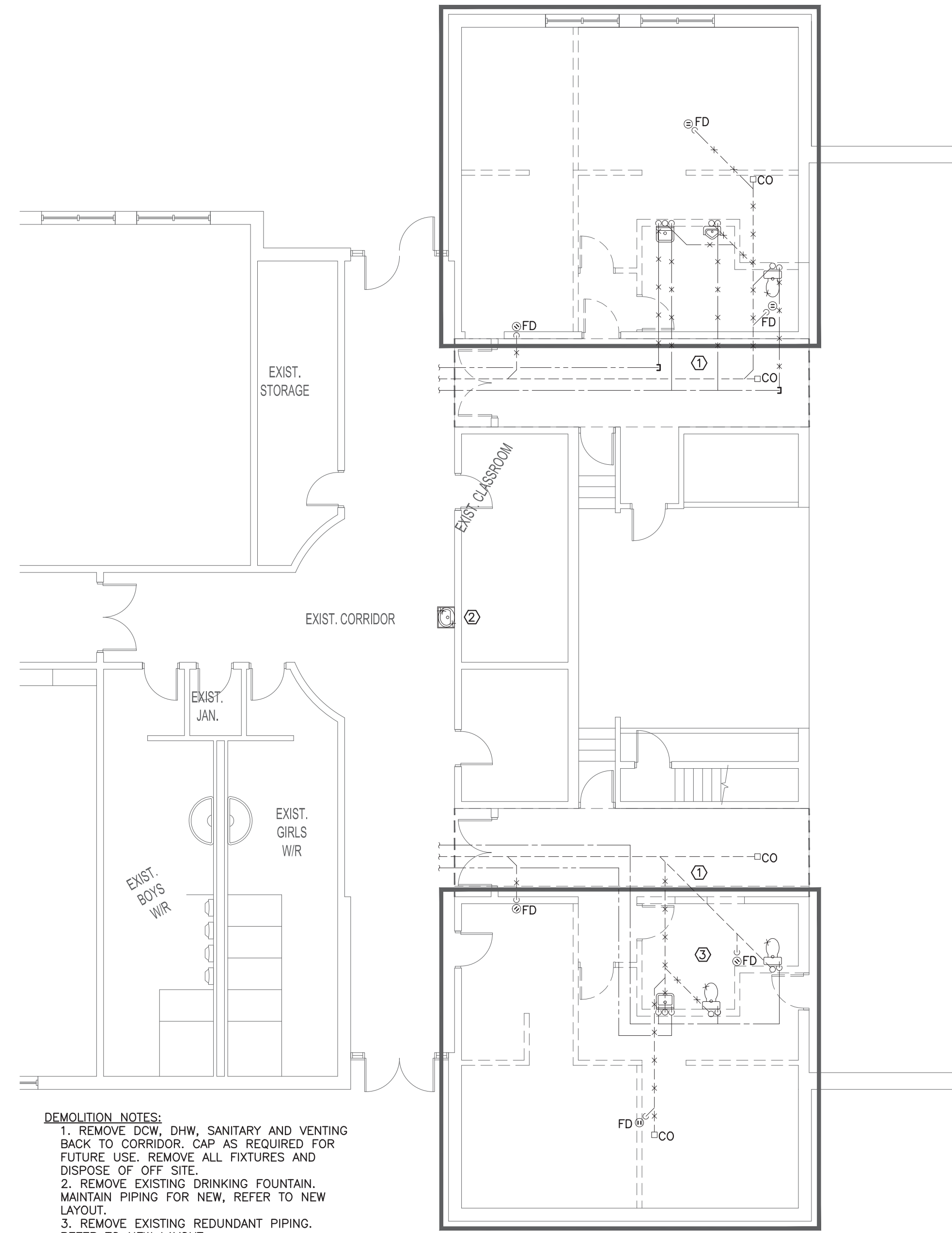
14 CHANGE ROOM ELEVATION
 SCALE = 1:50

DATE	DESCRIPTION	No.
31/05/2017	ISSUE FOR TENDER	2
19/05/2017	ISSUE FOR CLIENT REVIEW 80%	1

PROJECT TITLE:
ST. JOSEPH CATHOLIC SCHOOL CLASSROOM RENOVATION CORUNNA, ONTARIO

DRAWING TITLE:
INTERIOR ELEVATIONS SECTIONS

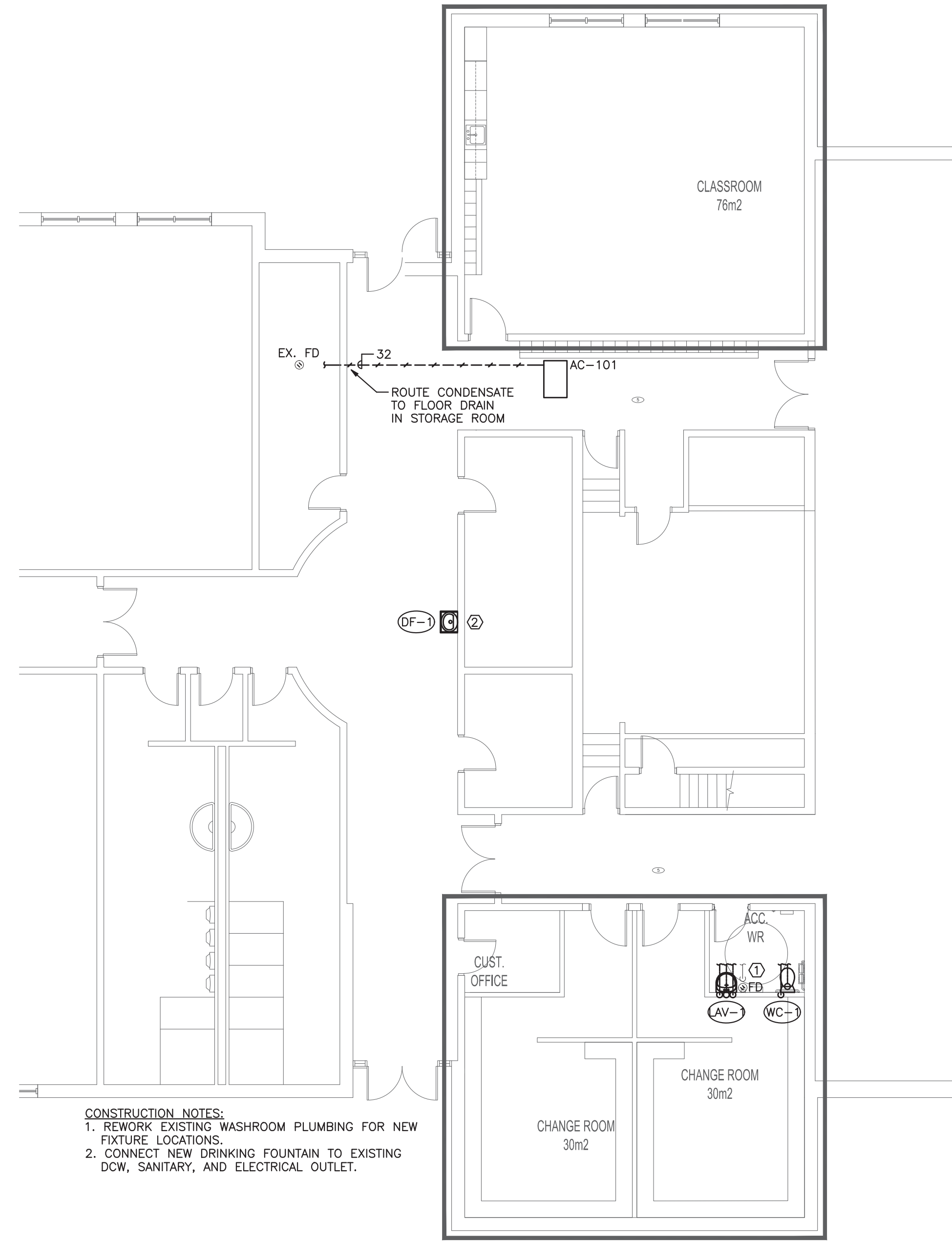
DATE PLOTTED: 05/31/2017 9:49 AM	DRAWN: MFPU	DRAWING No. A800
SCALE: AS NOTED	CHECKED: RW	
PROJECT No. 1714		



- DEMOLITION NOTES:**
1. REMOVE DCW, DHW, SANITARY AND VENTING BACK TO CORRIDOR. CAP AS REQUIRED FOR FUTURE USE. REMOVE ALL FIXTURES AND DISPOSE OF OFF SITE.
 2. REMOVE EXISTING DRINKING FOUNTAIN. MAINTAIN PIPING FOR NEW, REFER TO NEW LAYOUT.
 3. REMOVE EXISTING REDUNDANT PIPING. REFER TO NEW LAYOUT.

PLUMBING AND SANITARY DEMO LAYOUT

SCALE 1:100



- CONSTRUCTION NOTES:**
1. REWORK EXISTING WASHROOM PLUMBING FOR NEW FIXTURE LOCATIONS.
 2. CONNECT NEW DRINKING FOUNTAIN TO EXISTING DCW, SANITARY, AND ELECTRICAL OUTLET.

NEW PLUMBING AND SANITARY LAYOUT

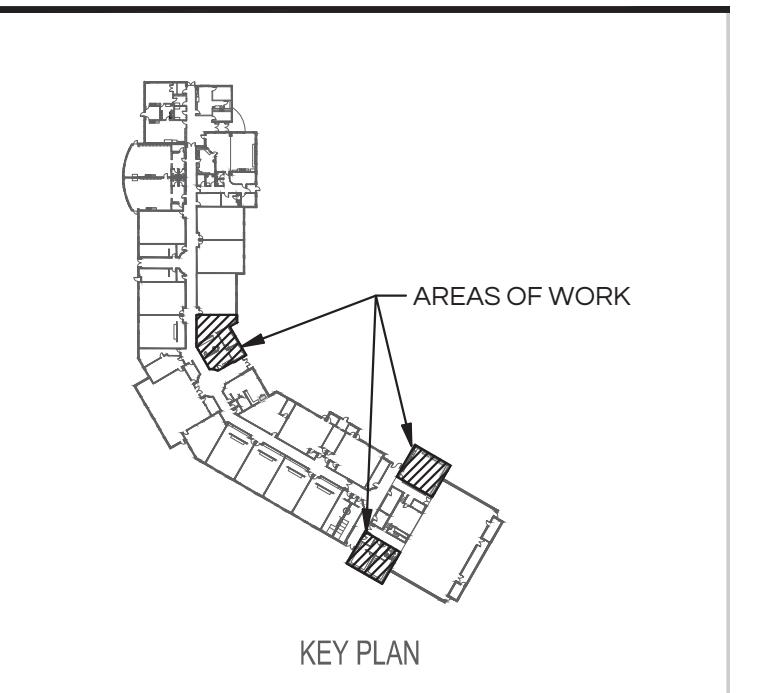
SCALE 1:100

PLUMBING DWG REF	FIXTURE SCHEDULE DESCRIPTION	HOT	COLD	DRAIN
WC-1	<p>BOWL: 6L FLUSH WALL-HUNG VITREOUS CHINA WATER CLOSET WITH ELONGATED SIPHON JET BOWL AND 40 MM (1 1/2") TOP SPUD INLET.</p> <p>VALVE: EXPOSED CHROME PLATED FLUSH VALVE, VACUUM BREAKER, 40 MM (1 1/2") CONNECTION, WALL AND SPUD FLANGES. ADJUST FOR 6L FLUSH, 25 MM (1") COPPER SWEAT ANGLE CHECK STOP WITH PROTECTING CAP, AND CENTER COVER BUMPER. BARRIER FREE COMPLIANT.</p> <p>SEAT: SOLID WHITE PLASTIC, OPEN FRONT WITH REMOVABLE BUMPERS, CONCEALED CHECK HINGE AND COVER.</p> <p>CARRIER: ENAMELED OR EPOXY COATED HEAVY DUTY CAST IRON CARRIERS WITH METAL COUPLINGS.</p>	---	1-1/4"	3"
LAV-2	<p>LAVATORY: VITREOUS CHINA WALL-HUNG BASIN, REAR OVERFLOW, FORMED FOR 100 MM (4") CENTRE FAUCET SET, AND VITREOUS CHINA KNEE CONTACT GUARD.</p> <p>FAUCET: HEAVY DUTY CHROME PLATED CAST BRASS FAUCET WITH VANDAL-RESISTANT NON-AERATING SPRAY SPOUT, 0.5 USGPM, AND 70 MM (3") LEVER HANDLES, 4" CENTRES. BARRIER FREE COMPLIANT.</p> <p>SUPPLIES: CHROME PLATED FLEXIBLE SUPPLIES WITH LOCKSHIELD STOPS AND WALL FLANGES. BARRIER FREE COMPLIANT.</p> <p>WASTE: 32MM (1 1/4") CHROME PLATED CAST BRASS DRAIN WITH OFFSET INLINE WASTE STRAINER AND 32MM (1 1/4") TUBULAR "P" TRAP, CLEANOUT, CHROME FINISH, CAST BRASS BODY AND WALL FLANGE. BARRIER FREE COMPLIANT.</p> <p>CARRIER: HEAVY DUTY CARRIERS FOR WALL-HUNG LAVATORIES WITH CONCEALED ARM SUPPORT AND PIPE UPRIGHTS WELDED TO STEEL BASE PLATES.</p>	1/2"	1/2"	1-1/4"
DF-1	<p>DUAL LEVEL, REFRIGERATED WALL-MOUNTED WHEELCHAIR WATER COOLER. RATED FLOW, AT 32.2 C (90 F) OF 0.0084 L/S (8.0 USGPH) OF 10 C (50 F) WATER. FABRICATE WITH STAINLESS STEEL. BUBBLER VALVE TO BE ELECTRO-MECHANICAL SOLENOID WITH TOUCH PAD ACTIVATION AND BUILT-IN PRESSURE REGULATOR. PROVIDE 10 MM (3/8") SUPPLY WITH FIXTURE STOP VALVE AND 32 MM (1 1/4") "P" TRAP.</p>	---	1/2"	1-1/4"

RANDY WILSON ARCHITECT INCORPORATED
 280 QUEENS AVENUE, SUITE 10
 LONDON, ONTARIO N6B1X3
 T: 519.439.0611
 F: 519.438.5962
 E: randy@rwaarchitect.ca
 www.rwaarchitect.ca

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Callidus Engineering
 A Division of 1640286 Ontario Inc.
 1385 North Rutledge Park, Unit 9 - London, ON N6H 5N5
 P: 519-472-7640 F: 519-471-9239 E: info@callidus.ca



NOTES

LEGEND

05/24/2017	ISSUED FOR TENDER	1
DATE	DESCRIPTION	No.



PROJECT TITLE:
ST. JOSEPH CORUNNA CATHOLIC SCHOOL OFFICE, CLASSROOM & LIBRARY RENOVATION

DRAWING TITLE:
PLUMBING AND SANITARY PLAN

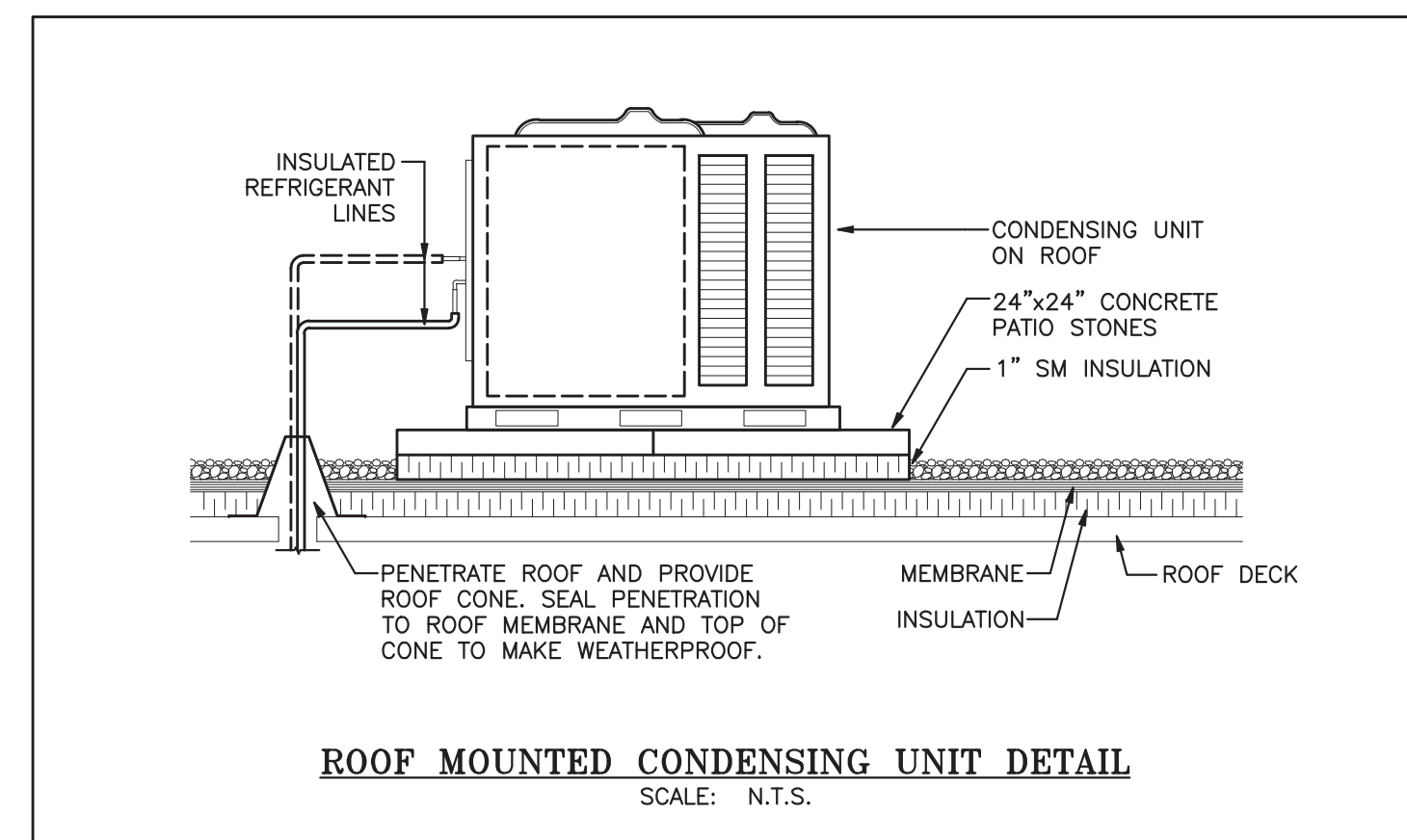
DATE: 05/24/2017	DRAWN: PDB	DRAWING No. M1 OF 5
SCALE: AS NOTED	CHECKED: JMS	
PROJECT No. CE-3660		

DUCTLESS SPLIT AC – INDOOR UNIT SCHEDULE									
DWG REF	MANUF.	MODEL	SERVICE	COOLING CAPACITY [MBH] (KW)	HEATING CAPACITY [MBH] (KW)	ELECTRICAL			REMARKS
						VOLTAGE	MCA [A]	MOCP [A]	
AC-101	DAIKIN	FBQ24PVJU	CU-101	24000 (7034.00)	27000 (7913.25)	208/1/60	1.80	20	-CAPABLE OF MODULATING CAPACITY -PROVIDE C/W REMOTE THERMOSTAT, AND BAC-NET INTERFACE CARD
DUCTLESS SPLIT AC – OUTDOOR UNIT SCHEDULE									
DWG REF	MANUF.	MODEL	SERVICE	COOLING CAPACITY [MBH] (KW)	HEATING CAPACITY [MBH] (KW)	ELECTRICAL			REMARKS
						VOLTAGE	MCA [A]	MOCP [A]	
CU-101	DAIKIN	REQ24PVU9	AC-101	24000 (7034.00)	27000 (7913.25)	208/1/60	16.5	20	-CAPABLE OF MODULATING CAPACITY

APPROVED MANUFACTURER: DAIKIN, MITSUBISHI, LG
 NOTES: COOLING CAPACITY BASED ON 95F AMBIENT, HEATING CAPACITY BASED ON 47F AMBIENT

DIFFUSER SCHEDULE				
DWG REF	MANUF.	MODEL	FINISH	REMARKS
D1	E.H.PRICE	SCD	B12	SQUARE CONE DIFFUSER, STEEL CONSTRUCTION, 3 CONES REMOVABLE FROM THE DIFFUSER FACE, C/W EQUALIZING GRID.
R1	E.H.PRICE	80	B12	EGG CRATE GRILL, EXTRUDED ALUMINUM CONSTRUCTION.

GENERAL NOTE: MOUNTING FRAME TO SUIT CEILING TYPES. SEE ARCHITECTURAL REFLECTED CEILING PLAN DRAWINGS FOR CEILING TYPES. PROVIDE INTEGRAL FIRE STOP FLAPS WHERE FIRE DAMPERS ARE INDICATED ON DRAWINGS.
 APPROVED MANUFACTURERS: E.H.PRICE, NAILOR, TITUS, KRUEGER



VENTILATION SUMMARY CLASSROOM			
OCCUPANCY CLASSIFICATION:	CLASSROOM AGE 9+		
ASHRAE 62-2010			
OCCUPANTS	25 @ 5 L/S/PERSON	125 L/S	
SQUARE FOOTAGE	76.5 S.M. @ 0.6 L/S/M	45.9 L/S	
UN-CORRECTED VENTILATION AIR		171 L/S	
SPACE VENTILATION EFFICIENCY		80%	
TOTAL REQ'D VENTILATION AIR		214 L/S	
TOTAL VENTILATION AIR PROVIDED		215 L/S	

CONTROL NOTES
 AC-101
 DEVICES:
 INSTALL CONTROL DEVICES SUPPLIED WITH THE UNIT.
 SEQUENCE OF OPERATIONS
 1. RUN FAN CONTINUOUS DURING OCCUPIED HOURS
 2. MODULATE REFRIGERANT FLOW AND CYCLE REVERSING VALVE TO MAINTAIN SPACE SETPOINT.

DUCTWORK LEGEND	
SYMBOL	DESCRIPTION
---	NEW ITEM
---	EXISTING ITEM TO REMAIN
---	EXISTING ITEM TO BE REMOVED
RE	EXISTING ITEM TO BE RELOCATED
RD	EXISTING ITEM IN RELOCATED POSITION
EX	EXISTING ITEM TO REMAIN
OED	OPEN ENDED DUCT
---	DUCTWORK SHOWN DOUBLE LINE
FD	DYNAMIC FIRE DAMPER
MD	MOTORIZED DAMPER
BD	BALANCING DAMPER
BDD	BACKDRAFT DAMPER
OC	OCCUPANCY SENSOR
OC2	CO ₂ SENSOR (-D DENOTES DUCT MOUNTED)
RT	REVERSE ACTING THERMOSTAT
T	THERMOSTAT/TEMPERATURE SENSOR
+	NEW CONNECTION TO EXISTING
TC	TIMECLOCK
---	FLEXIBLE DUCT CONNECTION
⊗	SUPPLY AIR GRILLE
⊗	RETURN AIR GRILLE
---	SIDEWALL GRILLE C/W BALANCE DAMPER TYPICAL AT ALL SIDEWALL GRILLES
---	INTERNALLY INSULATED DUCT
---	EXTERNALLY INSULATED DUCT
?	DIFFUSER TAG DIFFUSER/GRILLE SIZE (AND NECK SIZE WHERE APPLICABLE) AIR VOLUME (CFM OR L/S AS INDICATED) DIFFUSER/GRILLE DESIGNATION (REFER TO SCHEDULE FOR TYPE)
???	EQUIPMENT TAG EQUIPMENT TYPE EQUIPMENT NUMBER (REFER TO SCHEDULES FOR INFO)
---	NEW DIFFUSER NOTES SQUARE CONE DIFFUSER (ROUND IF SHOWN) DUCT COLLAR CONNECTION SIZE AS PER GRILLE AND DIFFUSER SCHEDULE FLEXIBLE DUCT - MAX. 5'-0" (1.5M) DIFFUSER SUPPLY DUCT - TO BE THE SAME SIZE AS DIFFUSER COLLAR BALANCE DAMPER - TYPICAL AT ALL DIFFUSER SUPPLIES SUPPLY DUCT

THIS IS A STANDARD LEGEND. ALL SYMBOLS MAY NOT NECESSARILY BE USED ON DRAWINGS.

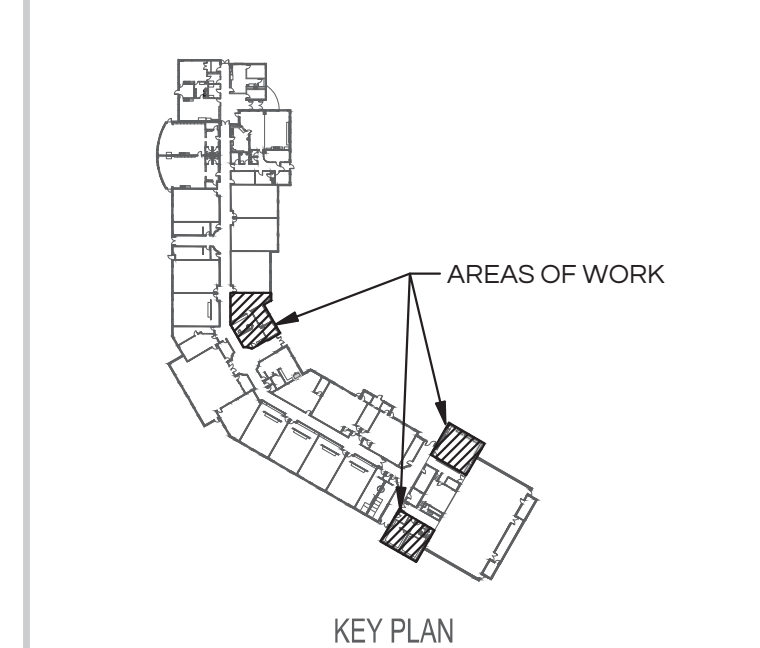
PLUMBING LEGEND	
ITEM	DESCRIPTION
---	NEW PIPING
---	EXISTING PIPING
---	DEMOLITION
---	DOMESTIC COLD WATER (DCW)
---	DOMESTIC HOT WATER (DHW)
---	STORM DRAIN
---	SANITARY DRAIN
---	GAS PIPING
---	STEAM PIPING
---	BALL VALVE
---	GLOBE VALVE
---	BALANCING VALVE
---	OPEN CLEAN OUT
---	CAP
---	ELBOW TURNED UP
---	ELBOW TURNED DOWN
---	PIPE SINGLE LINE CUTOFF
FD@C	FLOOR DRAIN; FFD: FUNNEL FLOOR DRAIN; HD: HUB DRAIN
---	GATE VALVE
---	GAS VALVE
RD	ROOF DRAIN
---	BACKFLOW PREVENTER
HB	HOSE BIB
FPWH	FROST PROOF WALL HYDRANT
---	CHECK VALVE
---	PRESSURE REDUCING VALVE
PCVA	DOUBLE CHECK VALVE BACKFLOW PREVENTER
+	CONNECTION - NEW TO EXISTING SYSTEM

ALL SYMBOLS SHOWN MAY NOT BE USED IN DRAWING.

RANDY WILSON ARCHITECT INCORPORATED
 280 QUEENS AVENUE, SUITE 10
 LONDON, ONTARIO N6B1X3
 T: 519.439.0611
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 E: randy@rwarchitect.ca
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 P: 519-472-7640 F: 519-471-9239 E: info@callidus.ca



NOTES	

LEGEND	

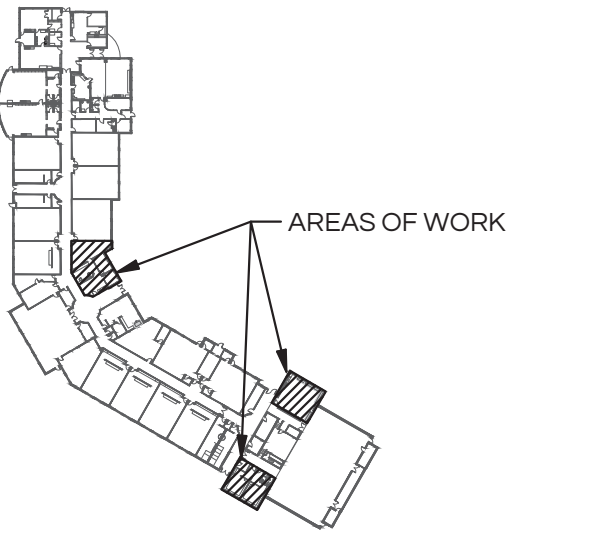
05/24/2017	ISSUED FOR TENDER	1
DATE MM/DD/YYYY	DESCRIPTION	No.

LICENSED PROFESSIONAL ENGINEER
 J. STANLEY
 100116619
 11/05/24
 PROVINCE OF ONTARIO

PROJECT TITLE:
 ST. JOSEPH CORUNNA CATHOLIC SCHOOL OFFICE, CLASSROOM & LIBRARY RENOVATION

DRAWING TITLE:
 HVAC LEGENDS, DETAILS, AND SCHEDULES

DATE: 05/24/2017	DRAWN: PDB	DRAWING No. M2 OF 5
SCALE: AS NOTED	CHECKED: JMS	
PROJECT No. CE-3660		

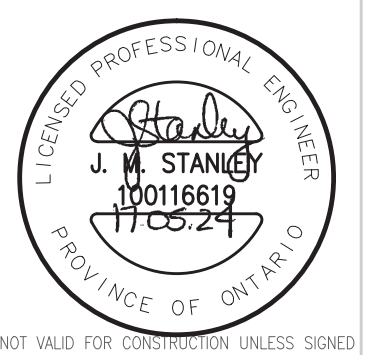


KEY PLAN

NOTES

LEGEND

DATE	DESCRIPTION	No.
05/24/2017	ISSUED FOR TENDER	1

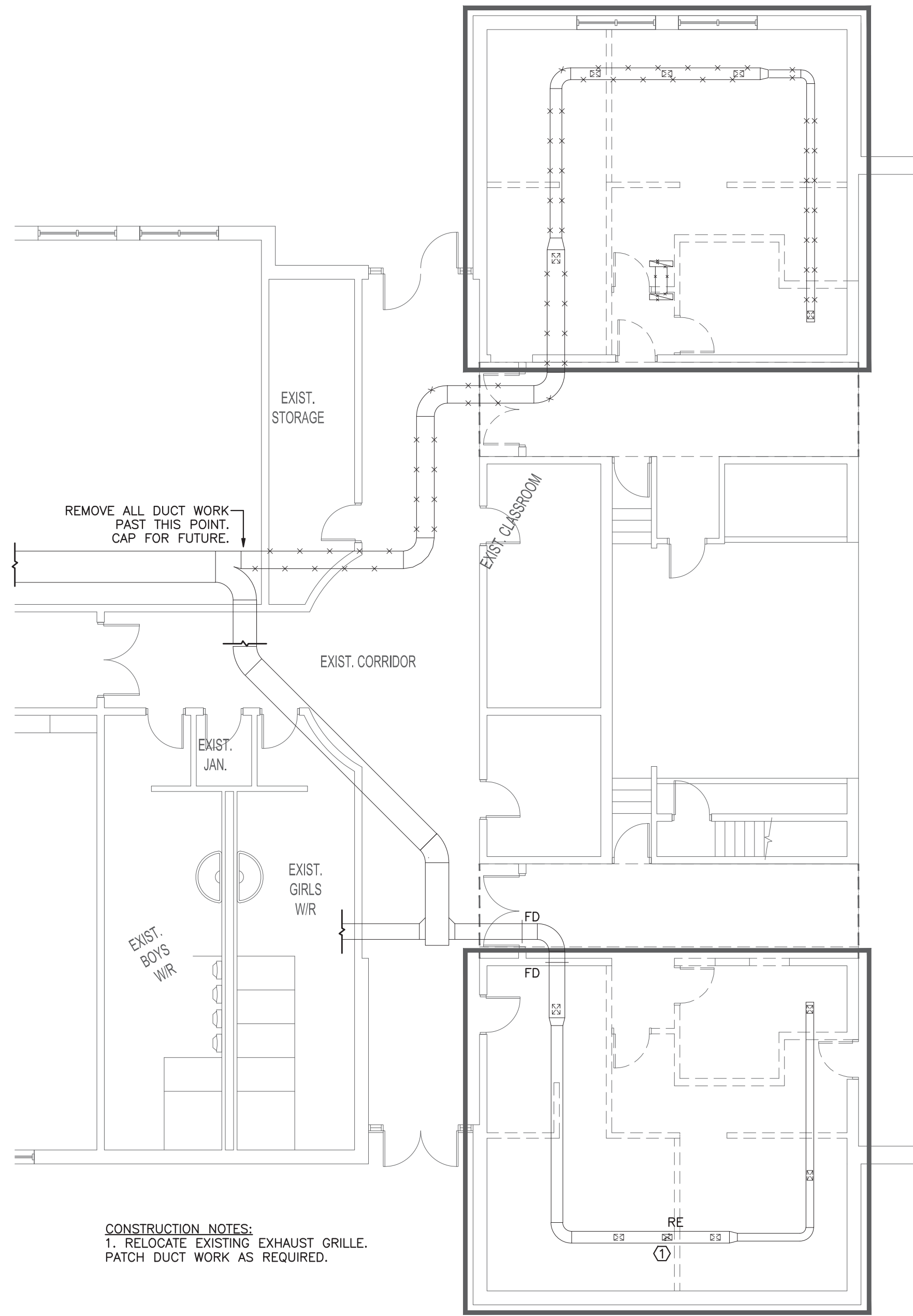


NOT VALID FOR CONSTRUCTION UNLESS SIGNED

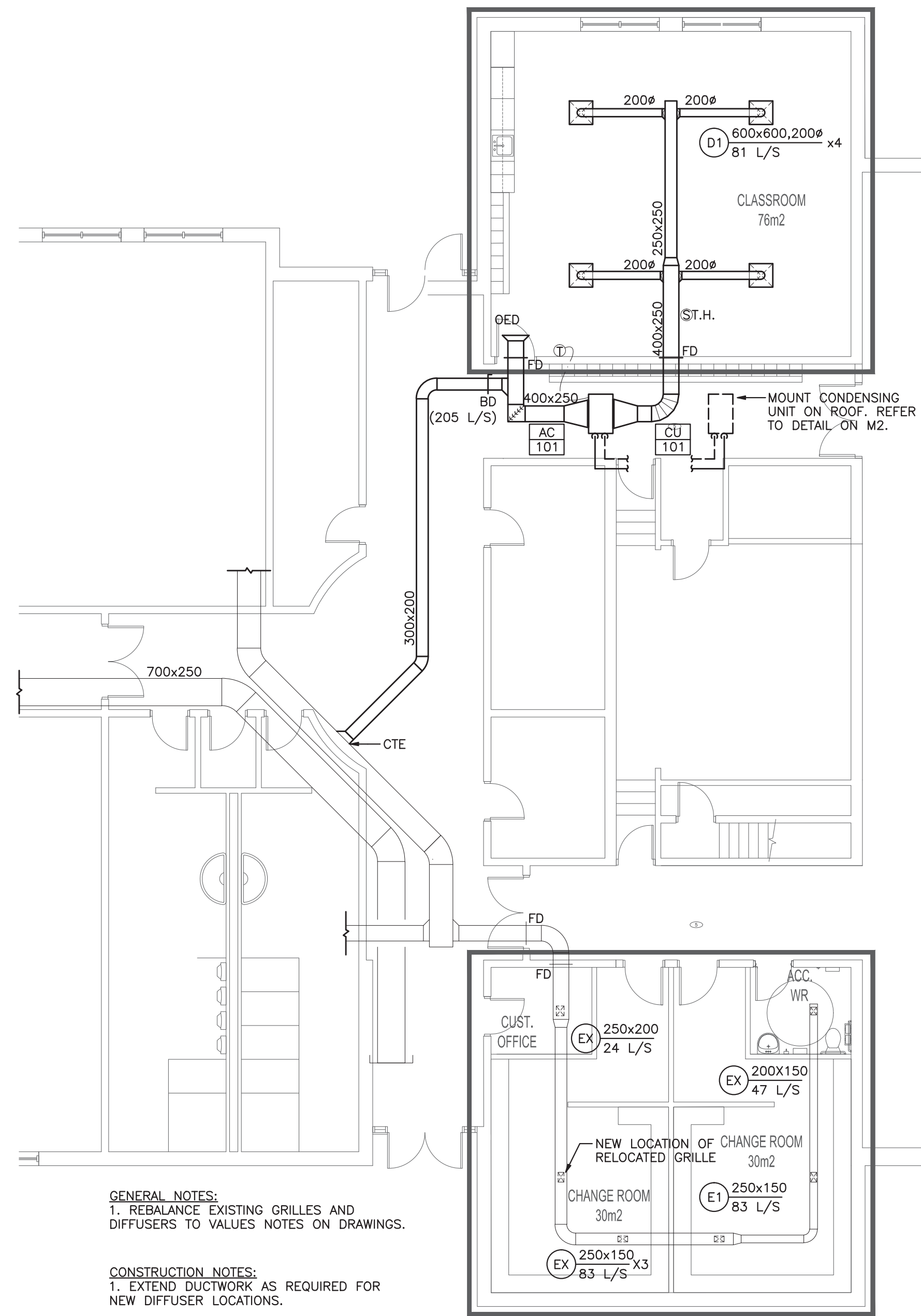
PROJECT TITLE:
ST. JOSEPH CORUNNA CATHOLIC SCHOOL OFFICE, CLASSROOM & LIBRARY RENOVATION

DRAWING TITLE:
HVAC DEMOLITION AND NEW LAYOUTS

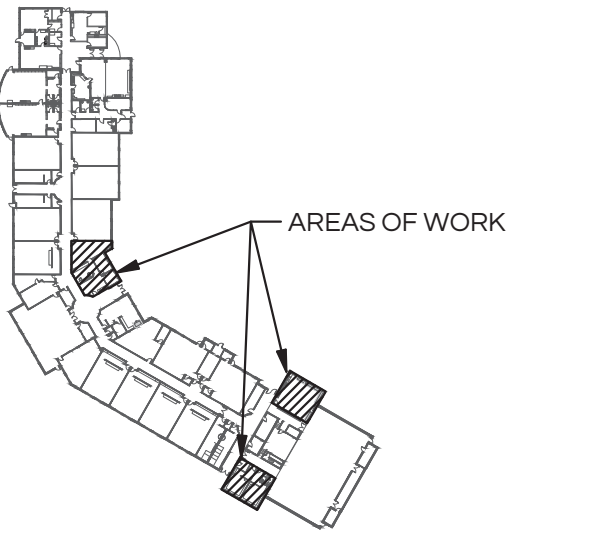
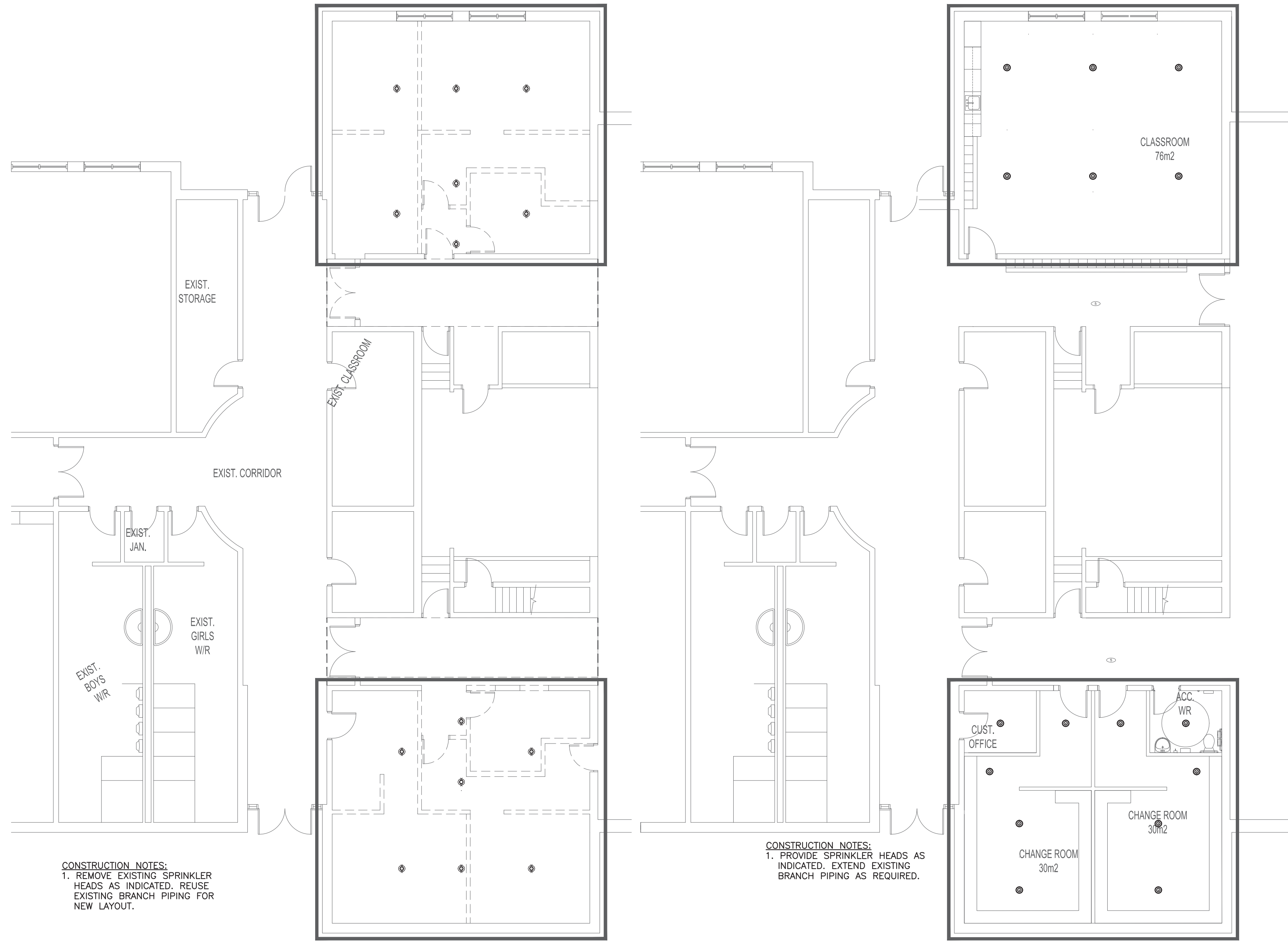
DATE: 05/24/2017	DRAWN: PDB	DRAWING No. M3 OF 5
SCALE: AS NOTED	CHECKED: JMS	
PROJECT No. CE-3660		



CLASSROOM DEMOLITION HVAC LAYOUT
 SCALE 1:100



CLASSROOM NEW HVAC LAYOUT
 SCALE 1:100

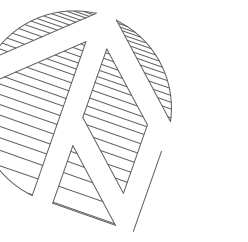
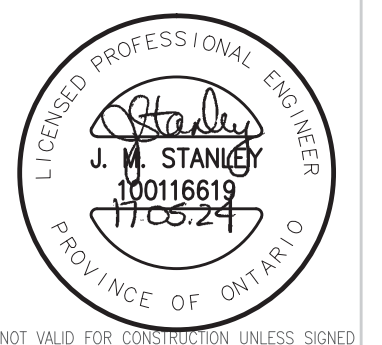


KEY PLAN

NOTES

LEGEND

DATE	DESCRIPTION	No.
05/24/2017	ISSUED FOR TENDER	1



PROJECT TITLE:
ST. JOSEPH CORUNNA CATHOLIC SCHOOL OFFICE, CLASSROOM & LIBRARY RENOVATION

DRAWING TITLE:
FIRE PROTECTION DEMOLITION AND NEW LAYOUTS

DATE: 05/24/2017	DRAWN: PDB	DRAWING No. M4 OF 5
SCALE: AS NOTED	CHECKED: JMS	
PROJECT No. CE-3660		

MECHANICAL GENERAL REQUIREMENTS
SECTION 15010

1. GENERAL

MAKE SITE VISIT(S) AS NECESSARY BEFORE TENDER TO ESTABLISH AND VERIFY ALL EXISTING CONDITIONS. MAKE ALLOWANCE FOR ANY NEW OR EXISTING SERVICES AND EQUIPMENT RELOCATIONS NECESSARY TO COMPLETE THE WORK AND INCLUDE IN THE TENDER PRICE. EXTRAS WILL NOT BE ALLOWED FOR FAILURE TO PROPERLY EVALUATE EXISTING CONDITIONS.

THE DRAWINGS SHOW THE GENERAL INTENT OF THE WORK, NOT THE DETAILS OF INSTALLATION. CO-ORDINATE THE ROUTING AND INSTALLATION OF ALL MECHANICAL SERVICES WITH ALL EXISTING CONDITIONS, STRUCTURE AND THE WORK OF ALL OTHER TRADES. PROVIDE INSTALLATION DRAWINGS AS REQUIRED.

DO NOT SCALE MECHANICAL DRAWINGS. TAKE FIELD DIMENSIONS PRIOR TO ANY INSTALLATION

DESCRIPTION
PROVIDE WORK IN ACCORDANCE WITH FULL INTENT AND MEANING OF DRAWINGS AND SPECIFICATIONS, THE WORD "PROVIDE" WHERE USED IN THE CONTRACT DOCUMENTS, IS TO BE INTERPRETTED AS "SUPPLY AND INSTALL."

REGULATORY REQUIREMENTS
CONFORM TO GOVERNING MUNICIPAL AND PROVINCIAL CODES, RULES AND REGULATIONS AND/OR AUTHORITIES HAVING JURISDICTION.

PERMITS AND FEES
OBTAIN ALL PERMITS REQUIRED FOR INSTALLATION OF MECHANICAL TRADES WORK, ARRANGE FOR INSPECTIONS TESTS THERewith AND PAY ALL COSTS FOR PERMITS, INSPECTIONS, AND ASSOCIATED FEES. OBTAIN PERMITS IMMEDIATELY AFTER NOTIFICATION OF AWARD OF CONTRACT.

TAXES
ENSURE THAT PROVINCIAL TAXES ARE INCLUDED WHERE REQUIRED,

WARRANTY
PROVIDE A WRITTEN WARRANTY FOR ALL MATERIALS, EQUIPMENT AND LABOUR FOR ONE-YEAR PERIOD TO BEGIN AT THE TIME WHEN THE WORK IS DESIGNATED ACCEPTABLE BY THE CONSULTANT.

CERTIFICATION
PROVIDE MANUFACTURER'S WRITTEN CERTIFICATION OF THE INSTALLATION AND OPERATION OF ALL SYSTEMS AND MAJOR EQUIPMENT.

EXISTING SERVICE
DO NOT SHUT DOWN OR MAKE CONNECTIONS TO ANY EXISTING SERVICE WITHOUT WRITTEN PERMISSION OF THE CONSULTANT.
BE RESPONSIBLE FOR DEMOLITION AND REMOVAL OF MECHANICAL EQUIPMENT AND SERVICES DESIGNATED FOR REMOVAL ON DRAWINGS.

PROTECTION
PROTECT ALL WORK AND MATERIALS, BEFORE AND AFTER ERECTION, FROM WEATHER AND OTHER HAZARDS, AND KEEP IN A CLEAN AND ORDERLY MANNER.

ADJUSTMENT AND OPERATION OF SYSTEMS
WHEN WORK IS COMPLETE, ADJUST ALL EQUIPMENT ITEMS, OF VARIOUS SYSTEMS, FOR PROPER OPERATION WITHIN FRAMEWORK OF DESIGN INTENT, AND OPERATING CHARACTERISTICS AS PUBLISHED BY EQUIPMENT MANUFACTURER

MISCELLANEOUS STEEL
SUPPLY AND INSTALL MISCELLANEOUS STRUCTURAL SUPPORTS, PLATFORMS, AND BRACES, AS REQUIRED TO HANG OR SUPPORT ALL EQUIPMENT, PIPING, DUCTWORK AND SIMILAR ITEMS.

EQUIPMENT INSTALLATION
INSTALL AND START UP ALL ITEMS OF EQUIPMENT, DEVICES AND SYSTEMS IN ACCORDANCE WITH MOST RECENT MANUFACTURER'S PUBLISHED GUIDELINES AND RECOMMENDATIONS. CONTRACTOR IS RESPONSIBLE FOR ASCERTAINING MANUFACTURERS INSTALLATION GUIDELINES AND RECOMMENDATIONS.

CUTTING AND PATCHING
WHERE PIPES AND DUCTS ARE SHOWN PASSING THROUGH EXISTING WALLS, FLOORS, AND ROOF CUT AND PATCH THE NECESSARY OPENINGS. SHOULD CUTTING, REPAIRING, AND PATCHING OF PREVIOUSLY FINISHED WORK, OF OTHER TRADES, BE REQUIRED TO ALLOW INSTALLATION OF MECHANICAL WORK, PAY ALL COSTS FOR TRADE SECTION CONCERNED TO PERFORM WORK.

CHANGES IN THE WORK
CHANGES TO THE CONTRACT REQUIRING ADDITIONS TO OR DELETIONS FROM THE WORK IN THIS DIVISION SHALL BE CARRIED OUT UPON WRITTEN REQUEST OF THE CONSULTANT. EXTRAS TO THE CONTRACT OR CREDITS SHALL BE SUBMITTED WITH A COMPLETE COST BREAKDOWN AS FOLLOWS:
MATERIALS, QUANTITIES AND UNIT PRICES FOR ALL EQUIPMENT REQUIRED OR DELETED.
UNIT MAN HOURS
TOTAL MATERIAL COST.
TOTAL MAN HOURS.
HOURLY RATE. (REFER TO SUPPLEMENTARY CONDITIONS AND GENERAL CONTRACT).
TOTAL OVERHEAD AND PROFIT. (REFER TO SUPPLEMENTARY CONDITIONS AND GENERAL CONTRACT).

2. SUBMITTALS

SHOP DRAWINGS
SUBMIT SHOP DRAWINGS FOR ALL EQUIPMENT SUPPLIED BY DIVISION 15. SUBMIT ELECTRONIC COPIES OF SUCH DRAWINGS TO CONSULTANT FOR REVIEW.
EACH SHOP DRAWING AND/OR BROCHURE MUST BEAR STAMP AND SIGNATURE OF RESPONSIBLE OFFICIAL IN CONTRACTOR'S AND SUBCONTRACTOR'S ORGANIZATION, FOR EACH SUBMISSION, AS EVIDENCE THAT DRAWING HAS BEEN CHECKED AGAINST REQUIREMENTS AS CALLED FOR IN SPECIFICATIONS AND DRAWINGS.

OPERATION AND MAINTENANCE INSTRUCTION MANUALS
PROVIDE PDF COPIES OF COMPLETE OPERATION AND MAINTENANCE INSTRUCTIONS FOR EQUIPMENT FURNISHED UNDER THIS CONTRACT.
MANUALS SHALL INCLUDE THE FOLLOWING INFORMATION:
CONTROL SHOP DRAWINGS AND OPERATING SEQUENCE, INCLUDING WIRING OF COMPONENTS.
WIRING DIAGRAM OF CONTROL PANELS.
OPERATING INSTRUCTIONS, INCLUDING START-UP AND SHUT-DOWN PROCEDURE.
MAINTENANCE INSTRUCTIONS, INCLUDING PREVENTIVE MAINTENANCE INSTRUCTIONS FOR COMPONENTS OF EQUIPMENT.
COMPLETE PARTS LIST OF ASSEMBLIES AND THEIR COMPONENT PARTS, SHOWING MANUFACTURER'S NAME, CATALOGUE NUMBER, AND NEAREST REPLACEMENT SOURCE.
LIST OF RECOMMENDED SPARE PARTS AND QUANTITY OF EACH ITEM TO BE STOCKED.
MANUFACTURERS' WARRANTIES AND GUARANTEES.

RECORD DRAWINGS
FOR ALL INSULATED PIPING UP TO NPS 4, CARRYING LIQUIDS AT TEMPERATURES 10.5°C (51°F) AND HIGHER, USE STANDARD WEIGHT CLEVIS HANGERS.
FOR INSULATED PIPING CARRYING LIQUIDS AT A TEMPERATURE OF 10°C (50°F) OR LESS, USE ELONGATED CLEVIS TYPE HANGERS
PROVIDE INSULATION PROTECTION BEARING PLATES AT ALL HANGERS AND SUPPORTS FOR ALL INSULATED.
FOR NON-INSULATED PIPING USE CLEVIS TYPE OF WROUGHT STEEL CONSTRUCTION.
FOR COPPER TUBING PROVIDE COPPER COATED HANGERS.
ATTACH HANGER RODS, TO BUILDING STRUCTURE, BY MEANS OF MALLEABLE IRON BEAM CLAMPS OR CONCRETE INSERTS

EQUIPMENT NAMEPLATES
PROVIDE LAMINATED WHITE PHENOLIC PLASTIC NAMEPLATES WITH 10MM HIGH BLACK LETTERS FOR EQUIPMENT INSTALLED UNDER THIS DIVISION. INCLUDE EQUIPMENT NUMBER AND EQUIPMENT NAME GENERALLY AS LISTED ON DRAWING SCHEDULES. SUBMIT LIST OF NAMEPLATES TO CONSULTANT FOR REVIEW PRIOR TO FABRICATION.

FIRESTOPPING AND SMOKE SEAL
PROVIDE A ULC LISTED FIRESTOP SYSTEM TO SEAL AROUND ALL MECHANICAL SERVICES WHICH PENETRATE PART OF A BUILDING ASSEMBLY REQUIRED TO HAVE A FIRE RESISTANCE RATING.
DETAILED SHOP DRAWINGS TO THE CONSULTANT FOR REVIEW. INCLUDE THE FOLLOWING:
MANUFACTURER'S TECHNICAL PRODUCT DATA AND INSTALLATION INSTRUCTIONS FOR EACH SPECIFIC TYPE AND LOCATION OF PENETRATION.
CERTIFICATION THAT PROPOSED FIRESTOPPING MATERIALS AND ASSEMBLIES COMPLY WITH CAN4-S115-M.
ULC LISTINGS WITH COPIES OF ULC DATA SHEETS FOR EACH SPECIFIC TYPE AND LOCATION OF PENETRATION.

3. MATERIALS AND EQUIPMENT

EQUALS AND ALTERNATES
USE MATERIALS AND EQUIPMENT AS SPECIFIED HEREIN, OR SPECIFIED EQUIVALENT. DESIGN OF MECHANICAL SYSTEMS HAS BEEN BASED ON FIRST LISTED SUPPLIER AND MODEL NUMBER/SIZE STATED IN EQUIPMENT SCHEDULES. SOME ITEMS OF EQUIPMENT, ONE OR MORE ADDITIONAL NAMES OF ACCEPTABLE EQUAL MANUFACTURERS MAY BE LISTED. THE DESIGN, LAYOUT, SPACE ALLOCATION, CONNECTION DETAILS, ETC., ARE BASED ON THE PRODUCTS NAMED FIRST IN THE DESCRIPTION AND/OR SCHEDULES. THE GENERAL APPROVAL INDICATED BY LISTING THE NAMES OF OTHER EQUAL MANUFACTURERS IS TO ESTABLISH THE QUALITY OF MANUFACTURE ONLY AND IS SUBJECT TO FINAL REVIEW OF SHOP DRAWINGS, PERFORMANCE DATA, TEST REPORTS, PRODUCTION SAMPLES (IF REQUIRED) BY CONSULTANT

SUPPLIERS WISHING TO SUBMIT OTHER ITEMS OF EQUIPMENT FOR APPROVAL AS AN EQUAL TO THOSE SPECIFIED MUST APPLY TO THE CONSULTANT AT LEAST 7 DAYS BEFORE TENDER CLOSING DATE. REQUESTS MUST BE ACCOMPANIED BY COMPLETE DESCRIPTION AND TECHNICAL DATA ON THE ITEMS PROPOSED. DEVIATIONS FROM THE SPECIFICATIONS MUST BE STATED IN WRITING AT TIME OF APPLICATION FOR APPROVAL.
ITEMS OF EQUIPMENT BY MANUFACTURERS, NOT NAMED IN THE SPECIFICATIONS, MAY BE OFFERED AS ALTERNATES. PROPOSALS MUST BE ACCOMPANIED BY FULL DESCRIPTIVE AND TECHNICAL DATA, TOGETHER WITH THE STATEMENT OF AMOUNT OF ADDITION OR DEDUCTION FROM THE BASE BID.
AFTER EXECUTION OF THE CONTRACT, SUBSTITUTION OF EQUIPMENT WILL NOT BE CONSIDERED.
WHERE EQUIPMENT OTHER THAN THE EQUIPMENT USED AS A BASIS FOR DESIGN, LAYOUT AND SPACE ALLOCATION IS USED, PRODUCE AND SUBMIT REVISED LAYOUTS OF EQUIPMENT, PIPES, DUCTS, ETC., IN ALL AREAS AFFECTED. SUBMIT THESE DRAWINGS WITH THE SHOP DRAWINGS. FAILURE TO PRODUCE THESE DRAWINGS IS AN INDICATION BY THE CONTRACTOR THAT THEY ARE NOT REQUIRED AND THE ORIGINAL SPACE ALLOCATIONS ARE ADEQUATE FOR THE SUBSTITUTED EQUIPMENT.

ACCESS DOORS
PROVIDE ACCESS DOOR OF AT LEAST 200MMx200MM (8"x8") IN SIZE AS REQUIRED IN WALLS AND CEILINGS TO ENSURE THAT ACCESS IS PROVIDED FOR ALL EQUIPMENT, VALVES OR APPURTENANCES, BOTH NEW AND EXISTING. PROVIDE ACCESS DOORS COMPATIBLE WITH ADJACENT FINISHES AND WHERE APPLICABLE, WITH A FIRE RATING EQUAL TO THE SURFACES IN WHICH INSTALLED.

4. PIPING CONSTRUCTION METHODS

LINES, GRADES AND SLOPES:
INSTALL LIQUID AND GAS LINES FREE OF POCKETS AND PITCH TO DRAIN, AT LOW POINTS IN LINE, WITH VALVES OR TRAPS INSTALLED AS REQUIRED FOR DRAINAGE OF THE LINES.
INSTALL PIPING TO FOLLOWING SLOPES:
DRAINAGE PIPING: 1:50 ON DRAINS OF NPS 3 SIZE AND LESS AND 1:100 ON DRAINS OF NPS 4 AND LARGER.
DOMESTIC WATER LINES: PITCH TO LOW POINTS SO THAT ALL LINES MAY BE COMPLETELY DRAINED.
HOT WATER HEATING, CHILLED WATER AND CONDENSER WATER LINES: SLOPE UP 1:500 IN DIRECTION OF FLOW.

UNIONS AND FLANGES:
PROVIDE UNIONS OR FLANGES IN FOLLOWING LOCATIONS:
FOR BY-PASSES AROUND EQUIPMENT, CONTROL VALVES, DEVICES IN PIPING SYSTEMS, AND ELSEWHERE INDICATED ON DRAWINGS.
AT CONNECTIONS TO EQUIPMENT (LOCATE BETWEEN SHUT-OFF VALVE AND EQUIPMENT).
IN SCREWED, OR SOLDER JOINT, DRAINAGE TUBING AT INLET SIDE OF TRAP.
PROVIDE DIELECTRIC UNIONS, OR ISOLATING TUBE COMPANION FLANGES, AT ALL CONNECTIONS BETWEEN COPPER TUBING AND FERROUS PIPING.

PIPING CONNECTIONS TO MAINS:
MAKE DOWN FEED PIPING CONNECTIONS, TO HORIZONTAL SUPPLY AND RETURN WATER MAINS, ON BOTTOM QUADRANT OF MAINS.

SLEEVES
INSTALL SLEEVES WHERE PIPING PASSES THROUGH FOUNDATIONS, ABOVE GRADE FLOORS, AND WALLS. FABRICATE SLEEVES OF SCHEDULE 40 BLACK STEEL PIPE OR TYPE "K" COPPER TUBING AND CONCEALED HORIZONTAL STORM DRAINS.
SLEEVES FOR PIPING PASSING THROUGH ROOFS WILL BE SUPPLIED AND INSTALLED UNDER THIS DIVISION.
MAKE SLEEVES LARGE ENOUGH TO PASS FULL THICKNESS OF PIPE COVERING WEDGE SAME IS USED AND WITH SUFFICIENT CLEARANCE BETWEEN PIPE AND SLEEVE TO ALLOW FOR ANY LATERAL MOVEMENT OF PIPING DUE TO EXPANSION AND CONTRACTION.
FILL SLEEVES FOR FUTURE USE WITH LIME MORTAR.

ESCUTCHION PLATES
PROVIDE ESCUTCHION PLATES ON BARE PIPING PASSING THROUGH FINISHED WALLS OR FLOORS.

VALVES
PROVIDE DRAIN VALVES WITH HOSE THREAD OUTLET CONNECTION, OR VALVE WITH LONG NIPPLE ON OUTLET, AT ALL LOW POINTS OF EACH WATER SYSTEM, AND ABOVE ALL RISER OR BRANCH STOP VALVES, FOR PROPER DRAINAGE OF LINES.

STERILIZATION OF POTABLE WATER SYSTEMS
FLUSH EACH SYSTEM, AFTER COMPLETION, BY ALLOWING FULL FLOW OF WATER THROUGH SYSTEM FOR A PERIOD OF FIFTEEN MINUTES, OR LONGER WHEN DIRECTED BY CONSULTANT.
AFTER FLUSHING OF THE SYSTEM IS COMPLETED, PROVIDE A 24 HOUR CONTACT STERILIZATION TREATMENT BY TREATING THE WATER WITH 50 PPM OF CHLORINE AS RECOMMENDED IN AWWA SPECIFICATION C-651. AFTER STERILIZATION PERIOD HAS ELAPSED, FLUSH SYSTEM TO REDUCE CHLORINE CONTENT TO AN ACCEPTABLE LEVEL.

VALVE TAGS AND INDEXES
UPON COMPLETION OF WORK, FURNISH AND INSTALL 25 MM (1") DIA. BRASS TAG AT EACH VALVE BEARING AN INDEX NUMBER DESIGNATING VALVE. PROVIDE A NEW, TYPEWRITTEN DIRECTIONAL RECORD OF ALL VALVES INSTALLED FOR EACH SYSTEM, GIVING THE VALVE INDEX NUMBER, SIZE, MAKE AND CATALOGUE NO. AND "SERVICE" OF EACH VALVE AND LOCATION OF VALVE.

PIPE IDENTIFICATION
LABEL PIPING INSTALLED UNDER THIS DIVISION TO INDICATE CONTENT AND DIRECTION OF FLOW. INCLUDE OPERATING PRESSURE OR VACUUM, AS APPLICABLE.
LOCATE LABELS AS FOLLOWS: AT EVERY END OF EVERY PIPE RUN, ADJACENT TO VALVE OR ITEM OF EQUIPMENT SERVICES. ON EACH EXPOSED PIPE PASSING THROUGH WALL, PARTITION OR FLOOR AT INTERVALS OF 15M (50'-0") ALONG EVERY EXPOSED PIPE RUN EXCEEDING 15M (50'-0") IN LENGTH. AT EVERY ACCESS POINT ON CONCEALED PIPING.
PROVIDE LABELS OF PLASTIC COATED TAPE, WITH SELF-ADHESIVE BACKING SURFACE. FOR INSTALLATION ON INSULATED PIPE, PROVIDE ADHESIVE SUITABLE FOR THIS APPLICATION. CONFORM WITH CAN/CGSB-24.3-92 FOR PRIMARY LABEL COLOUR, AND WITH LEGEND AND DIRECTION ARROWS IN BLACK. PRINT LEGEND IN FULL WHEREVER FEASIBLE, OR A RECOGNIZED ABBREVIATION OF SERVICE INVOLVED.

S. PIPE HANGERS AND SUPPORTS
GENERAL:
SUPPORT OR SUSPEND ALL PIPING WITH NECESSARY HANGERS, STRUCTURAL SUPPORTS AND/OR BRACKETS AS REQUIRED, TO PREVENT SAGGING, WARPING AND VIBRATION.
DO NOT ALLOW LOADS, OF ANY NATURE, TO BE TRANSMITTED THROUGH PIPING CONNECTIONS TO EQUIPMENT.
PROVIDE SUITABLY DAMPENED SPRING HANGERS FOR FIRST THREE SUPPORTS FROM EQUIPMENT CONNECTION ON PIPING SUBJECT TO EXCESSIVE MOVEMENT.
DO NOT HANG ANY PIPE, FROM ANOTHER PIPE, UNLESS SPECIFICALLY INDICATED ON DRAWINGS.

HANGERS
FOR ALL INSULATED PIPING UP TO NPS 4, CARRYING LIQUIDS AT TEMPERATURES 10.5°C (51°F) AND HIGHER, USE STANDARD WEIGHT CLEVIS HANGERS.
FOR INSULATED PIPING CARRYING LIQUIDS AT A TEMPERATURE OF 10°C (50°F) OR LESS, USE ELONGATED CLEVIS TYPE HANGERS
PROVIDE INSULATION PROTECTION BEARING PLATES AT ALL HANGERS AND SUPPORTS FOR ALL INSULATED.
FOR NON-INSULATED PIPING USE CLEVIS TYPE OF WROUGHT STEEL CONSTRUCTION.
FOR COPPER TUBING PROVIDE COPPER COATED HANGERS.
ATTACH HANGER RODS, TO BUILDING STRUCTURE, BY MEANS OF MALLEABLE IRON BEAM CLAMPS OR CONCRETE INSERTS

HANGER SPACING:
FOR HORIZONTAL RUNS OF PLUMBING AND DRAINAGE PIPING COMPLY WITH HANGER SPACING REQUIREMENTS OF OBC PART 7 (PLUMBING).
FOR HORIZONTAL RUNS OF BLACK OR GALVANIZED STEEL PIPE, OTHER THAN FIRE PLUMBING SERVICES DO NOT EXCEED MAXIMUM DISTANCES BETWEEN SUPPORTS AND WITH MINIMUM DIAMETER RODS AS FOLLOWS:
9mm (1/2") THROUGH 75mm (3") : 3.6m (12) SPACING, 12mm (1/2") ROD DIA.
100mm (4") THROUGH 200mm (8") : 5.8m (19) SPACING, 22mm (7/8") ROD DIA.
FOR HORIZONTAL RUNS OF COPPER TUBING FOR SERVICES OTHER THAN PLUMBING, DO NOT EXCEED 1.8 m (6 FT.) BETWEEN HANGERS.
FOR HORIZONTAL RUNS OF PIPING FABRICATED OF PVC FOR SERVICES OTHER THAN PLUMBING, DO NOT EXCEED 1.22 m (48 IN)

6. TESTING AND BALANCING

PRESSURE TESTS
PROVIDE PRESSURE TESTS ON ALL PIPING INCLUDED IN THIS CONTRACT. FURNISH ALL PUMPS, COMPRESSORS, GAUGES AND CONNECTORS NECESSARY FOR TESTS.
CONDUCT HYDROSTATIC TESTS FOR A MINIMUM PERIOD OF 2 HOURS. DURING THIS TIME THE PRESSURE SHALL REMAIN CONSTANT.
FOR PNEUMATIC TESTS, FIRST PRESSURIZE SYSTEM WITH AIR TO APPROXIMATELY ONE-HALF SPECIFIED PRESSURE, BUT NOT TO EXCEED 348 KPA (50 PSIG), AND EXAMINE ALL JOINTS FOR LEAKS WITH A SOAPSDUDS SOLUTION. REPAIR ANY LEAKS.
CONDUCT FINAL TESTS ON NATURAL OR PROPANE GAS PIPING IN ACCORDANCE WITH REQUIREMENTS OF LOCAL UTILITY OR GOVERNING AUTHORITY FORWARD COPIES OF ALL FINAL TESTS ON ALL PRESSURE AND DRAINAGE PIPING TO CONSULTANT.

AIR AND WATER BALANCING
ASSUME RESPONSIBILITY FOR TESTING, BALANCING, AND PLACING ALL AIR HANDLING AND LIQUID SYSTEMS IN OPERATION.
RETAIN INDEPENDENT BALANCING FIRM TO BALANCE AIR AND WATER HANDLING SYSTEMS.
PROVIDE SHEAVES AND PULLEYS AND BELTS AS REQUIRED TO ACHIEVE AIR FLOWS INDICATED, CO-ORDINATE SUPPLY WITH NEW EQUIPMENT MANUFACTURER.

ON COMPLETION OF TESTING AND BALANCING OF ALL SYSTEMS, SUBMIT TO CONSULTANT A TYPEWRITTEN REPORT (3 COPIES) OF FINDINGS, INCLUDING COMPLETE DATA OF PUMP AND FAN PERFORMANCE, STATIC PRESSURES, AIR AND WATER FLOW RATES, FINAL READINGS AT ALL OUTLETS, AND AMPERE READINGS OF ALL MOTORS, TAKEN AT MOTOR TERMINALS WHEN EQUIPMENT IS OPERATING UNDER FULL LOAD CONDITIONS.
SUBMIT WITH EACH COPY OF REPORT, COMPLETE SETS OF DUCT LAYOUT PRINTS NEATLY MARKED IN RED INK, SHOWING ALL LOCATIONS AT WHICH TEST READINGS WERE TAKEN, AIR VOLUME, VELOCITY AND STATIC PRESSURE IN EACH SUPPLY AND RETURN DUCT, AND FINAL READING AT ALL OUTLETS. OBTAIN DUCT LAYOUT PRINTS FOR MARK-UP PURPOSES FROM CONSULTANT.
SUBMIT WITH EACH COPY OF REPORT, COMPLETE SETS OF PIPING LAYOUT PRINTS NEATLY MARKED IN RED, SHOWING ALL LOCATIONS AT WHICH TEST READINGS WERE TAKEN, AND FLOW MEASUREMENT. SHOW DIFFERENTIAL PRESSURE ACROSS PUMPS. OBTAIN PIPING LAYOUT PRINTS FROM CONSULTANT.

INSULATION
INSULATION
SECTION 15250

1. PIPING

DOMESTIC COLD WATER
FIBROUS GLASS SPLIT SECTIONAL PIPE INSULATION CONFORMING TO CAN/CGSB-51.9-92 25 MM (1") THICKNESS WITH FACTORY APPLIED VAPOUR BARRIER JACKET AND SELF-SEAL LAP JOINT.
HOT WATER HEATING, CHILLED WATER AND CONDENSER WATER LINES: SLOPE UP 1:500 IN DIRECTION OF FLOW.
DOMESTIC COLD WATER RUNOUTS TO PLUMBING FIXTURES, NOT EXCEEDING 1.5 m (5') IN LENGTH.

DOMESTIC HOT WATER PIPING
FIBROUS GLASS SPLIT SECTIONAL PIPE INSULATION OF THE THICKNESS HEREINAFTER SPECIFIED WITH FACTORY APPLIED VAPOUR BARRIER JACKET AND SELF-SEAL LAP JOINT.
13mm (1/2") THROUGH 32mm (1-1/4") PIPE SIZE = 25mm (1") THICKNESS.
38mm (1-1/2") AND LARGER PIPE SIZE = 38mm (1-1/2") THICKNESS.

HEAT PUMP PIPING
FIBROUS GLASS SPLIT SECTIONAL PIPE INSULATION OF THE THICKNESS HEREINAFTER SPECIFIED WITH FACTORY APPLIED VAPOUR BARRIER JACKET AND SELF-SEAL LAP JOINT.
13mm (1/2") THROUGH 32mm (1-1/4") PIPE SIZE = 13mm (1/2") THICKNESS.

STORM AND SANITARY DRAIN PIPING
INSULATE EXPOSED HORIZONTAL ABOVE FLOOR STORM AND SANITARY DRAIN PIPE AND TYPE "K" COPPER TUBING AND CONCEALED HORIZONTAL STORM DRAINS.
INSULATE VERTICAL SECTIONS OF RAINWATER CONDUCTORS BETWEEN BODY OF ROOF DRAIN AND HORIZONTAL SECTION OF PIPE, ALSO ANY EXPOSED VERTICAL PIPING IN HIGH HUMIDITY AREAS SUCH AS LOCKER AND SHOWER ROOMS.
INSULATE EXPOSED WASTE PIPE OF HANDICAPPED LAVATOIRES.
INSULATION SHALL BE FIBROUS GLASS SPLIT SECTIONAL PIPE INSULATION CONFORMING TO CAN/CGSB-51.9-92 OF 25 MM (1") THICKNESS WITH FACTORY APPLIED VAPOUR BARRIER JACKET AND SELF-SEAL LAP JOINT.

REFRIGERANT PIPING
INSULATION FOR REFRIGERANT SUCTION, LIQUID AND BY-PASS LINES, BOTH ABOVE AND BELOW ROOF SHALL BE 19 MM (3/4") NOMINAL THICKNESS OF FIRE RETARDANT ELASTOMERIC CLOSED CELL FOAM OR NEOPRENE TUBING.

FIRE PROTECTION
SECTION 15300

1. SPRINKLER SYSTEM

GENERAL
MODIFY THE EXISTING SPRINKLER SYSTEM TO PROTECT THE COMPLETE AREA OF RENOVATION. DESIGN FOR HAZARD OCCUPANCY IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA NO. 13 AND THE ONTARIO BUILDING CODE.
INSTALLATION OF PIPE, FITTINGS, VALVES, AND ACCESSORIES SHALL CONFORM TO NFPA 13, MANUFACTURERS INSTALLATION INSTRUCTIONS AND CONDITIONS OF LISTINGS.
LOCATION, SPACING, AND POSITION OF SPRINKLER HEADS AND DRAINS SHALL CONFORM TO NFPA 13. REFER TO ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS AS WELL AS SITE CONDITIONS FOR BUILDING ELEMENTS, EQUIPMENT, AND SERVICES WHICH MAY AFFECT THIS WORK.
LOCATE SPRINKLER HEADS IN POSITIONS ACCEPTABLE TO THE ARCHITECT AND NFPA 13. IN "T" BAR CEILING THIS IS GENERALLY CONTROL OF TIE OR AT QUARTER POINTS W/ SPRINKLERS LOCATED SYMMETRICALLY WITH EACH OTHER IN THE AREA OR ROOM.

SUBMITTALS
SUBMIT CUTSHEETS FOR NEW SPRINKLER HEADS.

TESTING AND INSPECTION
TEST AUTOMATIC SPRINKLER IN ACCORDANCE WITH REQUIREMENTS OF NFPA 25 AND NFPA 13A.
ARRANGE AND PAY FOR ALL REVIEWS AND INSPECTIONS REQUIRED BY LOCAL INSPECTION AUTHORITY.
COORDINATE TESTING OF AUTOMATIC SPRINKLER SYSTEMS WITH FIRE ALARM IN FULL WHEREVER FEASIBLE, OR A RECOGNIZED ABBREVIATION OF SERVICE INVOLVED.

SPRINKLER HEADS
SEMI-RECESSED SPRINKLER HEADS: ULC LISTED, ORDINARY RATING, OFF-WHILE ESCUTCHION COUP, CHROME PLATED SPRINKLER HEAD, CONFORMING TO NFPA 13, COMPLETE WITH CHROME PLATED 2 PIECE ESCUTCHION PLATES TO PERMIT REMOVING CEILING TILES WITHOUT REMOVING SPRINKLERS.

PLUMBING
SECTION 15400

1. REFERENCES

THE SYSTEMS SHALL CONFORM TO ALL APPLICABLE CODES INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
CSA-B64.10-11: SELECTION AND INSTALLATION OF BACKFLOW PREVENTERS
2. CONNECTIONS SERVICES

3. PLUMBING EQUIPMENT, FIXTURES, AND VALVES

FLOOR DRAINS (FD)
PROVIDE FLOOR DRAINS SIZES AS INDICATED ON DRAWINGS, WITH TAPPED PRIMER CONNECTION. PROVIDE TAPPED FLOOR DRAIN INSTALLATION WITH DEEP SEAL "P" TRAP UNLESS OTHERWISE INDICATED. FURNISH TRAP PRIMER CONNECTION TAPPING TO CONFORM WITH CODE REQUIREMENTS.

CLEANOUTS (CO)
PROVIDE DRAINAGE CLEANOUT FITTINGS IN DRAINAGE PIPING AT LOCATIONS INDICATED ON DRAWINGS, AT BASE OF EACH VERTICAL STACK OR RAINWATER LEADER, AND AS CLOSE AS POSSIBLE TO WHERE STORM AND SANITARY LINES EXIT THE BUILDING, AS REQUIRED TO COMPLY WITH APPLICABLE PLUMBING CODE.
WHERE CLEANOUTS ARE CONCEALED IN WALLS, PROVIDE AN ACCESS COVER ON WALL. THE TYPE OF COVER TO SUIT WALL SURFACE AND CONSTRUCTION

4. PLUMBING VENTING

PLUMBING VENTING MAY NOT BE SHOWN ON DRAWINGS. PROVIDE A COMPLETE PLUMBING VENTING SYSTEM FOR ALL PLUMBING FIXTURES SHOWN, IN ACCORDANCE WITH OBC SECTION 7.5.

AIR DISTRIBUTION
SECTION 15700

1. SHEET METAL WORK

GENERAL
PROVIDE DUCTWORK CONSTRUCTED TO SMACNA 765 PA (3" W.G.) PRESSURE CLASSIFICATION.
PROVIDE DUCTWORK OF GALVANIZED STEEL SHEET UNLESS INDICATED OTHERWISE.
PROVIDE DUCTS OF SIZES INDICATED ON DRAWINGS. WHERE DUCTS ARE TO BE FURNISHED WITH INTERNAL ACOUSTICAL LINER, ADJUST DUCT SIZE TO ACCOMMODATE ACOUSTIC LINER THICKNESS, WITH CLEAR INSIDE DIMENSIONS AS INDICATED ON DRAWINGS.
CONTINUOUSLY SOLDER OR SEAL JOINTS IN EXTERIOR AIR INTAKE DUCTS AND PLENUMS TO PREVENT DRIPPING OF MOISTURE.

RECTANGULAR DUCTWORK
FOR LONGITUDINAL JOINTS ON RECTANGULAR DUCTWORK, FURNISH PITTSBURGH LOCK JOINTS TIGHTLY CLOSED ALONG FULL LENGTH OF SEAM.
WHERE ELBOWS ARE INDICATED AS SQUARE TYPE, PROVIDE AIR TURNING VANES OF DOUBLE BLADE CONSTRUCTION.
CROSS-BREAK FLAT SURFACES BETWEEN JOINTS, OR BETWEEN JOINTS AND INTERMEDIATE REINFORCEMENTS, TO PREVENT VIBRATION OR BUCKLING.
SEAL JOINTS ON RECTANGULAR DUCTWORK WITH HIGH VELOCITY DUCT SEALER.

FLEXIBLE TYPE ROUND DUCTS
FURNISH FLEXIBLE TYPE ROUND DUCTWORK BETWEEN TRUNK SUPPLY DUCT AND DROPS CEILING DIFFUSERS AND WHERE INDICATED ON DRAWINGS (MAXIMUM 5' LENGTH).
PROVIDE FLEXIBLE DUCT OF POLYMERIC LINER BONDED TO WIRE SPIRAL, WHERE INSTALLED IN CEILING SPACE USED AS A RETURN PLENUM DUCTS SHALL BE METE BUILDING CODE FAME SPREAD AND SMOKE DEVELOPMENT RATINGS.
PROVIDE SEALED JOINTS BETWEEN FLEXIBLE DUCT AND RIGID DUCTWORK OR EQUIPMENT, MAKE WITH NON-FLAMMABLE HIGH VELOCITY DUCT SEALER.

ROUND DUCTWORK
SEAL JOINTS IN ROUND DUCTWORK WITH HIGH VELOCITY DUCT SEALER.
FURNISH NINETY DEGREE ELBOWS WITH SMOOTH CENTRE LINE RADIUS OF 1.5 TIMES DUCT DIAMETER. ALTERNATIVELY FURNISH ELBOWS OF 5 PIECE CONSTRUCTION, SUBJECT TO APPROVAL BY CONSULTANT.
DUCTWORK SHALL USE SPIRAL LOCK SEAM TYPE DUCT. LAP SLIP JOINTS IN DIRECTION OF FLOW. MAKE EXTERNAL EDGED END. SEAL ENTIRE SURFACE OVERLAP WITH HIGH VELOCITY DUCT SEALER.

ACOUSTIC DUCT INSULATION
FURNISH RIGID COATED DUCT LINER CONFORMING TO ANSI/NFPA 90A-1996 AND 90B, OF 25 MM (1") THICKNESS AND 72 KG/M³ (4.5 LB/CU.FT) DENSITY. IN HIGH VELOCITY DUCTWORK FURNISH PERFORATED OR EXPANDED METAL INNER LINER OVER ACOUSTIC INSULATION.
FASTEN DUCT LINER WITH PLATE TYPE IMPALPING PINS AND SELF-LOCKING WASHERS.

SUPPORTS AND HANGERS
RECTANGULAR DUCTWORK
FURNISH STROD HANGERS OF GALVANIZED SHEET STOCK WITH EDGES FOLDED OVER FOR DUCTS UP THROUGH 760 MM (30") WIDTH. BEND STRAP HANGER AROUND BOTTOM OF DUCT FOR MINIMUM OF 38 MM (1-1/2") AND ATTACH TO SIDES AND BOTTOM OF DUCT. FURNISH MILD STEEL ROD HANGERS OF 10 MM (3/8") DIA MINIMUM SIZE FOR DUCTS OVER 760 MM (30") IN WIDTH AND FURNISH 38 MM X 38 MM X 3 MM (1-1/2" X 1-1/2" X 1/8") STEEL ANGLE ACROSS BOTTOM OF DUCT AND ATTACH HANGER TO ANGLE (NOT DUCT).

ROUND DUCTWORK
FURNISH STRAP BAND AND HANGER OF 1"x20 GA. GALVANIZED SHEET STOCK WITH EDGES FOLDED OVER FOR DUCTS UP THROUGH 900 MM (36") DIAMETER. BAND IS TO FIT TIGHT TO DUCT ALL AROUND, AND CONNECT TO HANGER STRAP WITH LOAD RATED FASTENER.

1. SHEET METAL SPECIALTIES

BALANCING DAMPERS
PROVIDE BALANCING DAMPERS, MANUALLY OPERATED OPPOSED BLADE TYPE, OR BUTTERFLY BLADE TYPE, FABRICATED FROM GALVANIZED STEEL SHEET WHERE INDICATED ON DRAWINGS AND AS REQUIRED TO ALLOW FOR SYSTEM BALANCING.

FIRE DAMPERS
PROVIDE FIRE DAMPERS OF HINGED, FUSIBLE LINK TYPE WITH CHANNEL FRAMES, BLADES AND HOUSING, ULC LABELED AND CONFORMING TO ANSI/NFPA 90A-1996. FURNISH "TYPE B" FIRE DAMPERS FOR RECTANGULAR OR SQUARE DUCTWORK AND "TYPE C" FIRE DAMPERS FOR ROUND DUCTWORK. FIRE DAMPERS SHALL BE RATED FOR [DYNAMIC]ED[STATIC] OPERATION. PROVIDE WHERE INDICATED ON DRAWINGS.

ACCESS DOORS
PROVIDE ACCESS DOORS IN DUCTWORK AND FOR PLENUMS TO ALLOW SERVICING, MAINTENANCE, AND INSPECTION OF CONTROL DAMPERS, FIRE DETECTORS, BOTH SIDES OF FIRE DAMPERS, CONTROL ELEMENTS, BEARINGS AND AS INDICATED ON DRAWINGS. FURNISH ACCESS DOORS AT LEAST 300 MM X 150 MM (12" X 6") UNLESS DUCT DIMENSIONS PREVENT.

2. DIFFUSERS, REGISTERS AND GRILLES

GENERAL
REFER TO DRAWINGS FOR ACCESSORIES, NECK SIZE, DIMENSIONS, CAPACITY, OF GRILLES, REGISTERS AND DIFFUSERS.
COORDINATE PLACING OF DIFFUSERS, REGISTERS AND GRILLES IN CEILINGS WITH ELECTRICAL AND CEILING INSTALLATION TRADES AND EXACT LOCATION TO FINAL APPROVAL OF CONSULTANT.

3. EQUIPMENT

VARIABLE REFRIGERANT DUCTED SPLIT SYSTEMS
SYSTEM SHALL CONSIST OF A INDOOR EVAPORATOR SECTION, QUANTITY AS INDICATED ON DRAWINGS, AND OUTDOOR AIR COOLED CONDENSING UNIT WITH VARIABLE COMPRESSOR SPEED INVERTER TECHNOLOGY.
SYSTEM SHALL HAVE A STANDARD COOLING OPERATION DOWN TO A MINIMUM AMBIENT TEMPERATURE OF 0°f (-18°C).
INDOOR UNIT SHALL BE FACTORY WIRD AND TESTED AND CONTAIN A DRAIN PORT, ADJUSTABLE LOUVER, WASHABLE FILTER, AND 4 SPEED FAN.
OUTDOOR UNIT SHALL BE COMPATIBLE WITH INDOOR HEAD TYPE AND QUANTITY AS SPECIFIED. UNIT SHALL BE CONSTRUCTED OF GALVANIZED STEEL PLATE AND CONTAIN DC DIRECT DRIVE FAN MOTORS, SCROLL COMPRESSOR WITH VARIABLE SPEED INVERTER TECHNOLOGY, AND HIGH PRESSURE AND OVER CURRENT PROTECTION DEVICES.
PROVIDE MICRO PROCESSOR CONTROL COMPATIBLE WITH EQUIPMENT TO PERFORM INPUT FUNCTIONS TO PROPERLY OPERATE THE SYSTEM AND PROVIDE THE CONTROL SEQUENCES INDICATED ON THE DRAWINGS.

CONTROLS
SECTION 15900

1. GENERAL

ELECTRICAL
PROVIDE POWER BOTH HIGH >120V AND LOW <120 VOLTAGE REQUIRED FOR THIS SECTION.
ELECTRICAL INTERLOCK WIRING OF EQUIPMENT SPECIFIED UNDER OTHER SECTIONS OF DIVISION 15 IS RESPONSIBILITY OF TRADE SECTION INSTALLING THAT EQUIPMENT UNLESS OTHERWISE INDICATED OTHERWISE.
SUPPLY AND INSTALL OF ELECTRICAL WIRING INCLUDING RACEWAYS FOR COMPONENTS FURNISHED UNDER THIS SECTION. INSTALL WIRING IN ACCORDANCE WITH GOVERNING ELECTRICAL CODE.

SYSTEM DESCRIPTION
MODIFY THE EXISTING DIRECT DIGITAL CONTROL SYSTEM COMPLETE WITH SENSORS, ACTUATORS, DIRECT DIGITAL CONTROLLERS, AS REQUIRED TO FULLY INTEGRATE THE NEW EQUIPMENT AND SEQUENCES AND ELECTRICAL CONTROL WIRING RESULTING IN COMPLETE AND OPERATING CONTROL SYSTEM CAPABLE OF PROVIDING FUNCTIONS SPECIFIED AND PERFORMING ASPECTS OF SEQUENCE OF OPERATIONS.
INSTALL CONTROLS SUPPLIED WITH EQUIPMENT UNLESS NOTED OTHERWISE

QUALIFICATIONS
MINIMUM OF 5 YEARS EXPERIENCE INSTALLING SIMILAR SYSTEMS INVOLVING COMPUTER BASED CONTROL SYSTEMS AND BE LICENSED REPRESENTATIVE, AFFILIATE, OR OPERATING DIVISION OF THE EXISTING CONTROLS MANUFACTURER. WHOLESALERS OR FRANCHISED DEALER/REPRESENTATIVES ARE NOT ACCEPTABLE. USE INSTALLATION PERSONNEL THAT ARE TRAINED AND CERTIFIED AS QUALIFIED BY CONTROLS MANUFACTURER.
UPON COMPLETION OF INSTALLATION, VERIFY BY TEST AND WRITTEN REPORT, THAT SYSTEM IS FULLY FUNCTIONAL, INSTALLED IN ACCORDANCE WITH PLANS AND SPECIFICATIONS, AND CALIBRATED WITHIN OPERATIONAL LIMITS SPECIFIED.

WARRANTY
PROVIDE LABOUR, MATERIAL AND EQUIPMENT NECESSARY TO MAINTAIN BENEFICIAL PERFORMANCE OF THR UPDATED SYSTEM COMPONENTS FOR PERIOD OF 2 YEARS AFTER ACCEPTANCE OF SYSTEM, OR PARTS THEREOF.

SEQUENCE OF OPERATIONS
PROVIDE NECESSARY CONTROL DEVICES AND APPLICATION SOFTWARE TO CARRY OUT DESCRIBED SEQUENCES OF OPERATION.
SEE DRAWINGS FOR REQUIRED SEQUENCE OF OPERATIONS

2. SUBMITTALS

SHOP DRAWINGS
PREPARE AND SUBMIT SHOP DRAWINGS FOR EQUIPMENT AND SYSTEMS COVERED BY THIS SECTION.

AS-BUILT SHOP DRAWINGS
PROVIDE COMPLETE AND APPROVED AS-BUILT SHOP DRAWINGS DETAILING EQUIPMENT, INSTALLATION DETAILS

3. TRAINING

GENERAL
PROVIDE OWNER'S SYSTEM OPERATORS COMPLETE INSTRUCTIONS FOR PROPER CONTROL OF SYSTEM UNDER MODES OF OPERATION INCLUDING BUT NOT LIMITED TO SUMMER/WINTER, OCCUPIED/UNOCCUPIED, ENERGY MANAGEMENT AND ALARM EVENT SEQUENCES.
CONDUCT INSTRUCTIONS DURING NORMAL WORKING HOURS, MONDAY THROUGH FRIDAY AT SITE.

PIPE STANDARDS

1. SANITARY DRAIN & VENT

BURIED SECTIONS WITHIN BUILDING PIPING 200mm (8") AND SMALLER: CAST IRON SOIL PIPE AND FITTINGS CONFORMING TO CSA B70-97. USE PLAIN END PIPE AND FITTINGS JOINED WITH NEOPRENE SLEEVES WITH STAINLESS STEEL GEAR TYPE CLAMPS EXCEPT WHERE LOCAL AUTHORITIES DO NOT APPROVE THEIR USE, IN WHICH CASE USE BELL AND SPIGOT PIPE AND FITTINGS WITH LEAD AND CEMENT JOINTS
OR
ABS OR PVC DRAINAGE PIPE AND FITTINGS WITH BELL AND SPIGOT ENDS AND CONFORMING TO CAN/CSA-B182.1-M92 OR B182.2-M. RUBBER JUNG GASKETS INTEGRAL WITH BELL.

ABOVE GROUND SECTIONS
PIPING 75mm (3") AND SMALLER: TYPE DW HARD DRAWN COPPER DRAINAGE TUBE CONFORMING TO ASTM B 306-99 WITH WROUGHT COPPER OR CAST BRASS SOLDER JOINT DRAINAGE FITTINGS TO ASME B16.29-1994 AND CSA B158.1-1976 (R1992).

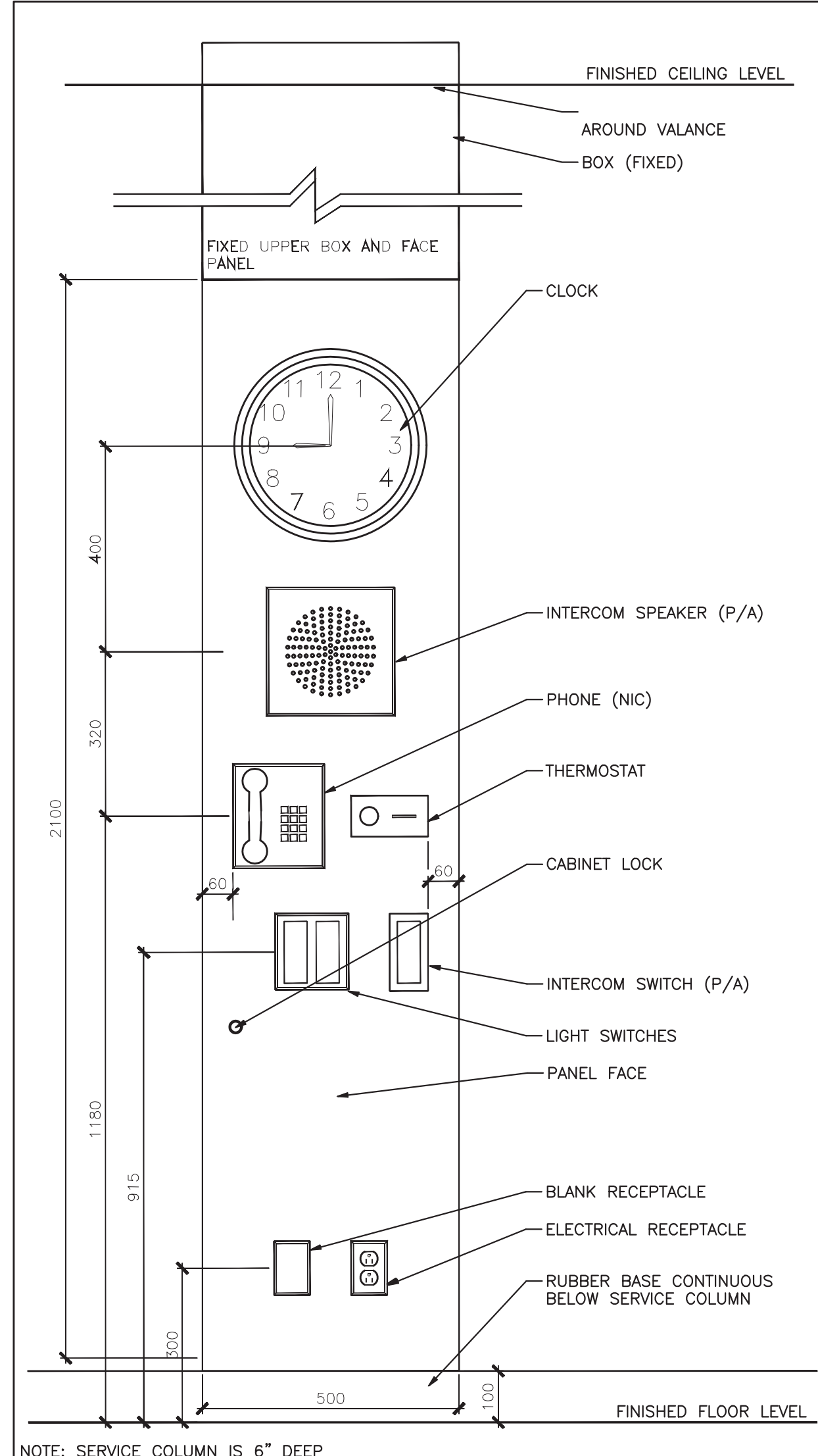
FOR NON-COMBUSTIBLE BUILDINGS AND HVAC PLENUMS:
SYSTEM XFR PVC. AS MANUFACTURED BY IPEX, IS PERMITTED IN BUILDINGS OF NON-COMBUSTIBLE CONSTRUCTION, HIGH-RISE BUILDINGS, AND IN RETURN AIR PLENUMS. IPEX SYSTEM XFR 15-50 DRAIN, WASTE AND VENT PIPE AND FITTINGS SHALL BE CERTIFIED TO CSA B181.2 AND WHEN USED IN NONCOMBUSTIBLE CONSTRUCTION, HIGH-RISE BUILDINGS AND AIR PLENUMS, THEY SHALL BE TESTED AND LISTED IN ACCORDANCE WITH CAN/ULC S102.2 AND CLEARLY MARKED WITH THE CERTIFICATION LOGO INDICATING A FLAME-SPREAD RATING NOT MORE THAN 25 AND A SMOKE-DEVELOPED CLASSIFICATION NOT EXCEEDING 50.

1. POTABLE HOT AND COLD WATER PIPING

ABOVE GROUND PIPING 75mm (3") AND SMALLER
TYPE "L" HARD DRAWN COPPER TUBING CONFORMING TO ASTM B 88-99. FITTINGS: WROUGHT COPPER, SOLDER JOINT. PRESSURE TYPE. PROVIDE SOLDER TO THREADED ADAPTERS AT SCREWED VALVES OR EQUIPMENT

ST. JOSEPH CATHOLIC SCHOOL RENOVATION

535 BIRCHBANK DRIVE, CORUNNA, ON

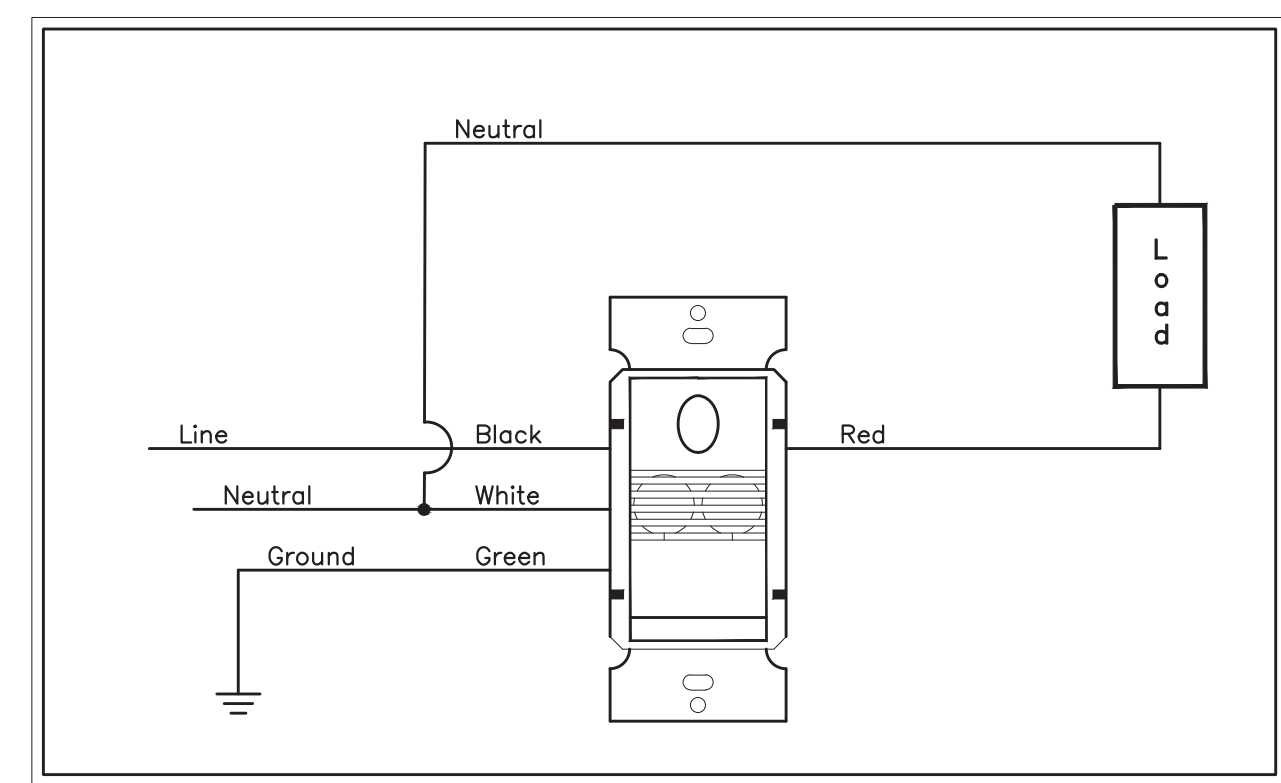


1 CLASSROOM SERVICE COLUMN - ELEVATION
 SCALE: NTS

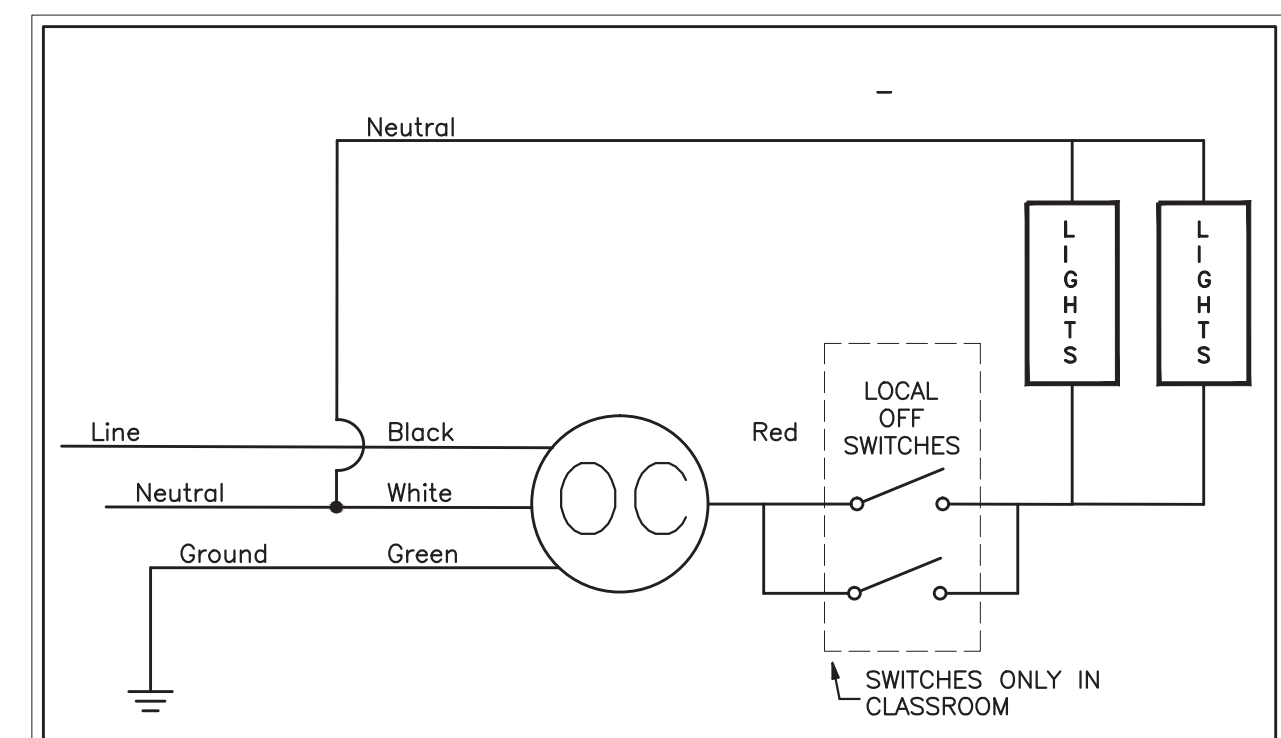
ELECTRICAL LEGEND	
SYMBOL	DESCRIPTION
	1'x4' FLUORESCENT LIGHT FIXTURE
	4' AND 8' FLUORESCENT STRIP LIGHT
	2'x4' FLUORESCENT TROFFER
	LIGHT FIXTURE REFER TO DRAWINGS FOR TYPE
	SWITCH
	2-GANG SWITCH
	CEILING MOUNTED OCCUPANCY SENSOR
	OCCUPANCY SENSOR SWITCH - WALL MOUNTED
	3 DENOTES 3-WAY SWITCHING
	DUPLEX RECEPTACLE
	DOUBLE DUPLEX RECEPTACLE
	O/C OVER COUNTER
	EX EXISTING FIXTURE, WIRING TO REMAIN
	N NEW FIXTURE
	DENOTES DEMOLITION (TO BE REMOVED)
	ER EXISTING FIXTURE, WIRING TO SUIT RENOVATIONS
	ELECTRICAL PANEL
	MOTOR OR MOTORIZED PIECE OF EQUIPMENT
	CIRCUIT WIRE
	TELEPHONE OUTLET
	TELEPHONE/DATA OUTLET
	DATA OUTLET
	MICROPHONE

ELECTRICAL LEGEND	
SYMBOL	DESCRIPTION
	INTERCOM
	WALL MOUNTED P/A SPEAKER
	CEILING P/A SPEAKER
	CABLE OUTLET
	GFI RECEPTACLE
	ELECTRIC THERMOSTAT
	NON-FUSED DISCONNECT
	EMERGENCY LIGHTING BATTERY
	EMERGENCY LIGHT HEADS - SINGLE AND DOUBLE
	EXIT SIGNS (CURRENT OBC)
	COMBINATION EMERGENCY LIGHT, BATTERY PACK AND EXIT SIGN - CURRENT OBC AND PRE-2012 OBC
	FIRE ALARM HORN
	RATE-OF-RISE HEAT DETECTOR
	MANUAL PULL STATION
	SMOKE DETECTOR
	FIRE ALARM PANEL
	EXISTING HEATING FAN
	WIRE GUARD
	ERL EXISTING ELECTRICAL DEVICE IN RELOCATED POSITION

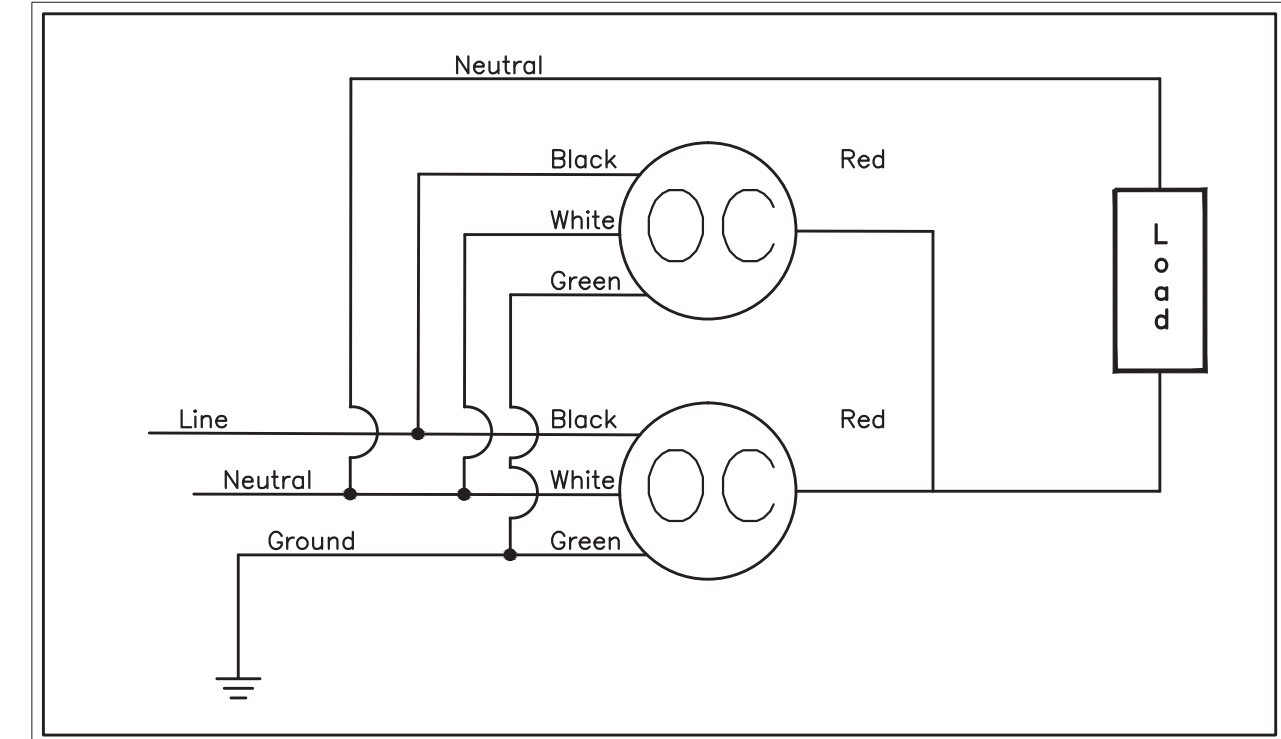
LIGHTING FIXTURE SCHEDULE				
SYMBOL	DESCRIPTION	VOLTAGE	LAMPS	MOUNTING
A	2X4 RECESSED TROFFER, LED SOURCE LAMPS, 6000 LUMEN RATED OUTPUT, 0.125"(3MM) ACRYLIC K12 LENS MVOLT DRIVER, 4000K LED COLOR TEMPERATURE. LITHONIA - 2GTL4-60L-EZ1-LP840	120	LED 5200 LU	RECESSED



2 WALL OCCUPANCY SENSOR SWITCH - WIRING DETAIL
 SCALE: NTS



3 CEILING OCCUPANCY SENSOR WIRING - CLASSROOM
 SCALE: NTS



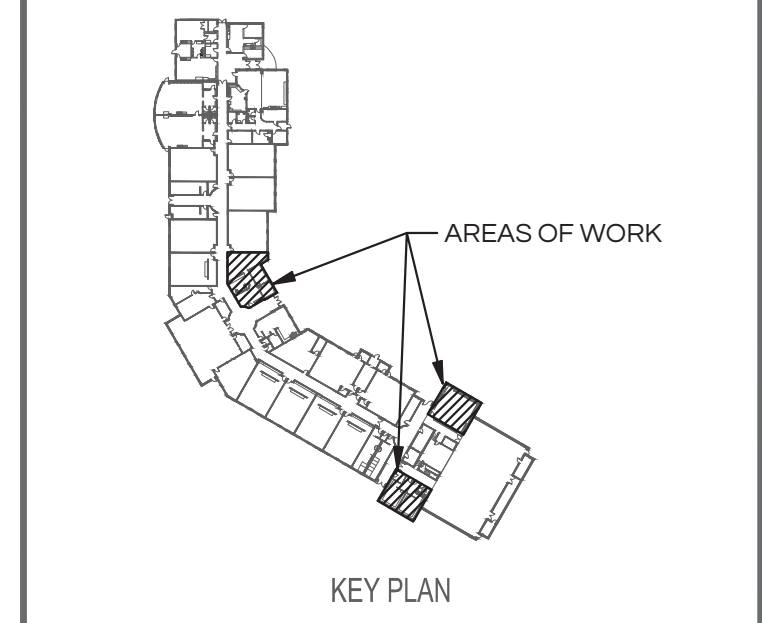
4 CEILING OCCUPANCY SENSOR WIRING - CHANGE ROOMS
 SCALE: NTS

WIRING FOR MECHANICAL EQUIPMENT SCHEDULE																	
LABEL	DESCRIPTION	LOCATION	VOLT	PH	HP	WATTS	MCA	ISO SWITCH	P	POWER WIRING	CONTROL BY DIV. 16	SOURCE PANEL	DISC AMP	FUSE	BRK	P	REMARKS
AC-101	AIR HANDLER	REFER TO DWG'S	208	1	-	-	-	15A	2	2-#12	-	PANEL A	-	-	20A	2	1,4.
CU-101	CONDENSER	REFER TO DWG'S	208	1	-	-	-	20A	2	2-#12	-	PANEL A	-	-	15A	2	-

ABBREVIATIONS:
 CONT - CONTACTOR, SIZE AS INDICATED
 COMB - COMBINATION DISCONNECT & STARTER
 FVNR - FULL VOLTAGE NON REVERSING STARTER
 HOA - HAND OFF AUTO SWITCH C/W ON PILOT LIGHT
 MAN - MANUAL MOTOR SWITCH C/W PILOT LIGHT

OS - OCCUPANCY SENSOR
 RAT - REVERSE ACTING THERMOSTAT
 R - RELAY
 RPB - REMOTE PUSH BUTTON OFF
 SW - LIGHT SWITCH
 TC - 7 DAY PROGRAMMABLE TIMECLOCK
 TS - TIMER SWITCH
 WP - WEATHER PROOF

NOTES:
 1. INSTALL ALL WIRING IN CONDUIT WITH SHORT LENGTH LIQUID TIGHT FLEX TO MOTOR OR VIBRATING EQUIPMENT.
 2. WIRE THROUGH TO OR RAT SUPPLIED BY DIVISION 15.
 3. PROVIDE ROOF MOUNTED RECEPTACLE. SEE DETAIL.
 4. PROVIDE 15A, 2P BREAKER IN PANEL A FOR POWER TO UNIT.
 5. REUSE 20A, 2P BREAKER FROM ELECTRIC HEATERS FOR POWER TO CONDENSING UNIT



NOTES

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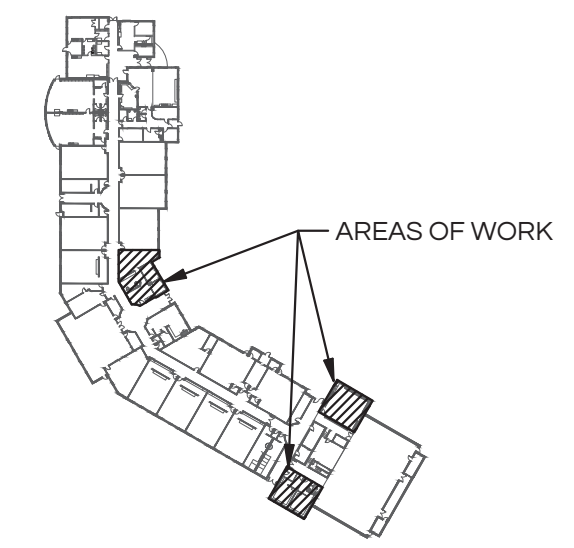
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DATE	DESCRIPTION	No.
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PROJECT TITLE:
 ST. JOSEPH CORUNNA CATHOLIC SCHOOL OFFICE, CLASSROOM & LIBRARY RENOVATION

DRAWING TITLE:
 ELECTRICAL LEGEND, DETAILS AND SCHEDULES

DATE: 05/24/2017	DRAWN: GAS	DRAWING No.:
SCALE: AS NOTED	CHECKED: SGH	E1 OF 5
PROJECT No.:		CE-3660

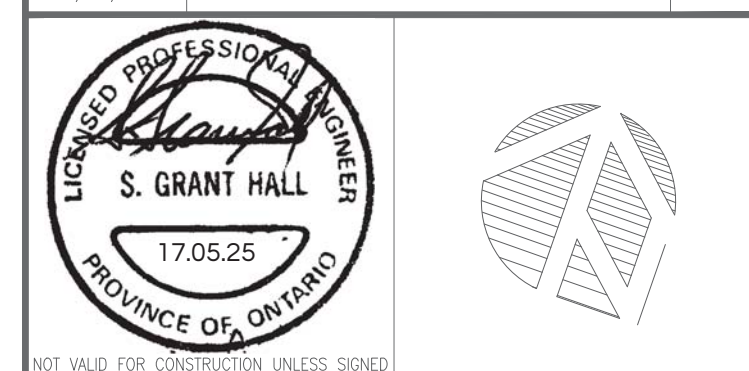


KEY PLAN

NOTES

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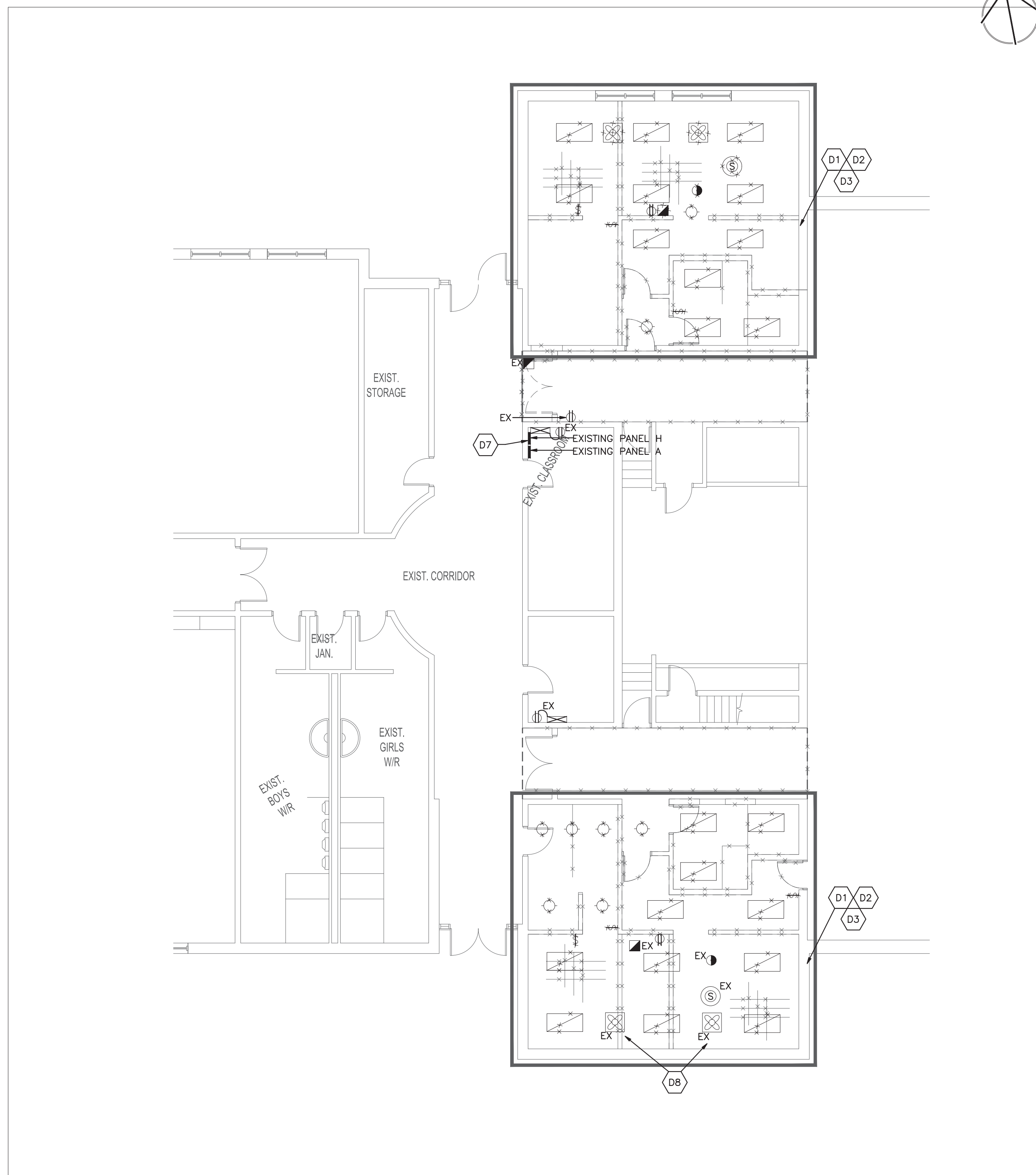
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PROJECT TITLE:
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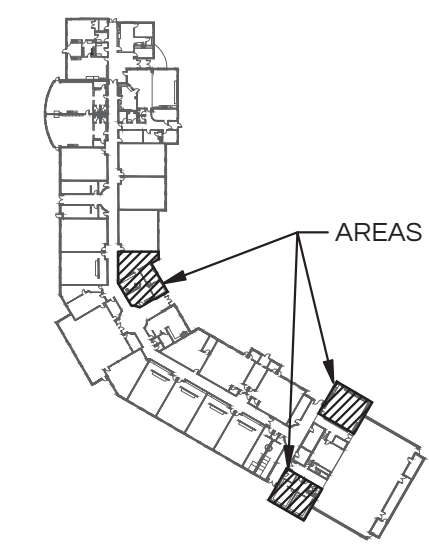
DRAWING TITLE:
DEMOLITION PLAN

DATE: 05/24/2017	DRAWN: GAS	DRAWING No.:
SCALE: AS NOTED	CHECKED: SGH	E2 OF 5
PROJECT No.:		CE-3660



E4 CLASSROOM AND CHANGEROOM DEMOLITION PLAN
 SCALE: 1:100

- DEMOLITION NOTES:
- (D1) - DISCONNECT AND REMOVE EXISTING LIGHTING AS INDICATED
 - (D2) - DISCONNECT AND REMOVE EXISTING LIGHTING CONTROLS AS INDICATED
 - (D3) - EX = EXISTING ELECTRICAL DEVICE. WIRING ON EQUIPMENT TO REMAIN.
 - (D4) - ER = EXISTING ELECTRICAL DEVICE. RELOCATE TO SUIT NEW LAYOUT. SEE NEW FLOOR PLAN.
 - (D5) - DISCONNECT AND REMOVE EXISTING ELECTRICAL DEVICES AND RELATED WIRING AND RACEWAYS. MAKE ALL CIRCUITS SAFE AND CONTINUOUS THAT ARE AFFECTED BY REMOVALS. TRACE OUT CIRCUIT WIRING BACK TO LAST.
 - (D6) - DISCONNECT AND RELOCATE EXISTING EMERGENCY LIGHTING BATTERY PACKS. EXTEND EXISTING DC VOLTAGE WIRING TO NEW BATTERY LOCATIONS.
 - (D7) - EXISTING PANEL 'A'. REMOVE 20A, 2P BREAKER FEEDING ELECTRIC HEATING IN EXISTING BOY'S CHANGE ROOM BEING DEMOLISHED REMOVE ADDITIONAL SPACE BREAKERS IN PANEL 'A' TO FREE UP SPACE FOR NEW BREAKER FOR NEW HVAC EQUIPMENT.
 - (D8) - DISCONNECT AND REMOVE EXISTING FAN FORCED ELECTRIC HEATERS. CLEAN AND LUBRICATE FOR REUSE IN NEW LAYOUT. MAINTAIN CIRCUIT WIRING.

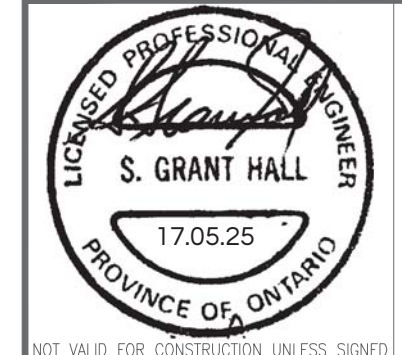


KEY PLAN

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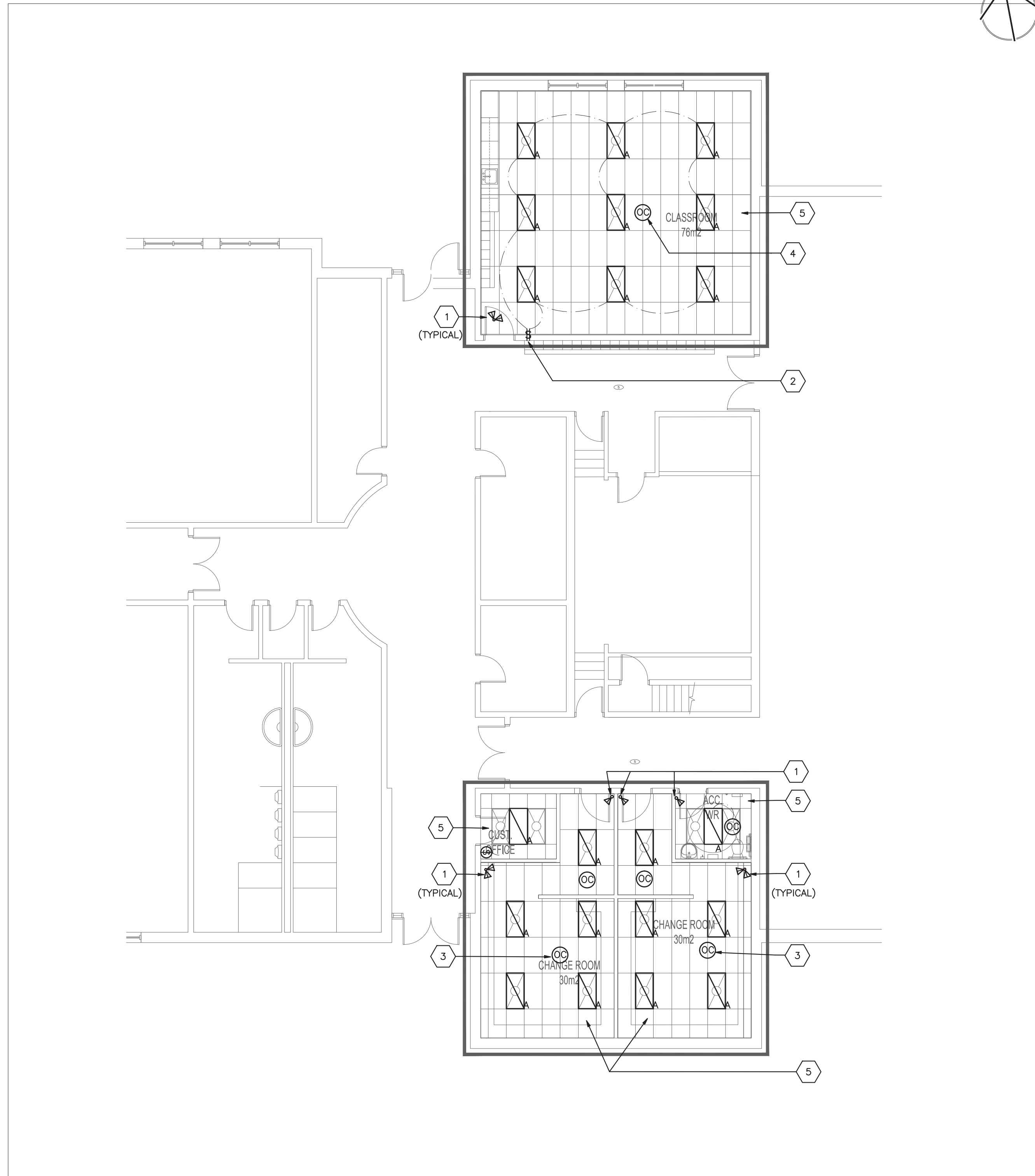
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PROJECT TITLE:
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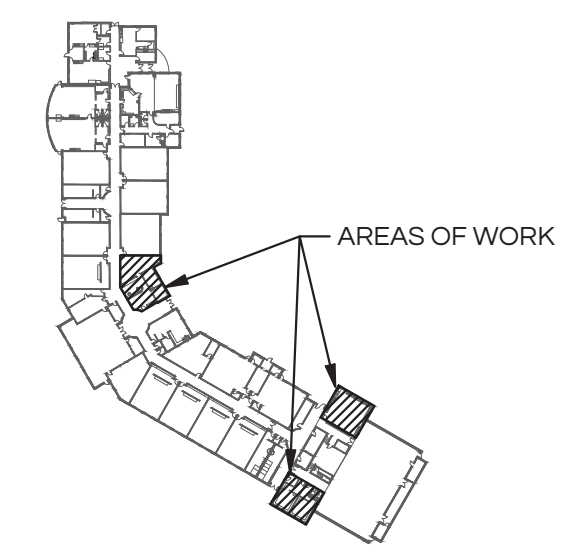
DRAWING TITLE:
LIGHTING AND CONTROLS LAYOUT

DATE: 05/24/2017	DRAWN: GAS	DRAWING No.:
SCALE: AS NOTED	CHECKED: SGH	E3 OF 5
PROJECT No.: CE-3660		



CLASSROOM AND CHANGEROOM LIGHTING LAYOUT
 SCALE: 1:100

- NOTES:
- ① CONNECT NEW EMERGENCY LIGHTING TO EXISTING EMERGENCY POWER BATTERY SOURCE. CONFIRM OPERATING AND DC VOLTAGE OF EXISTING BATTERY UNIT(S) AND MATCH NEW HEADS TO EXISTING VOLTAGES.
 - ② PROVIDE LOCAL ON/OFF SWITCHES FOR LIGHTING CONTROLS AS INDICATED. MOUNT SWITCHES IN CLASSROOM SERVICE COLUMN.
 - ③ REFER TO WIRING DIAGRAM FOR CHANGE ROOMS (DETAIL 4/E1).
 - ④ REFER TO WIRING DIAGRAM FOR CLASSROOM (DETAIL 3/E1)
 - ⑤ CONNECT NEW LIGHTING TO EXISTING LIGHTING CIRCUIT IN THE SPACE. WIRE NEW LIGHTING CONTROLS AS INDICATED.
 - ⑥ EXISTING EMERGENCY LIGHTING BATTERY UNIT. CONFIRM EXACT LOCATION WITH ON SITE CONDITIONS.

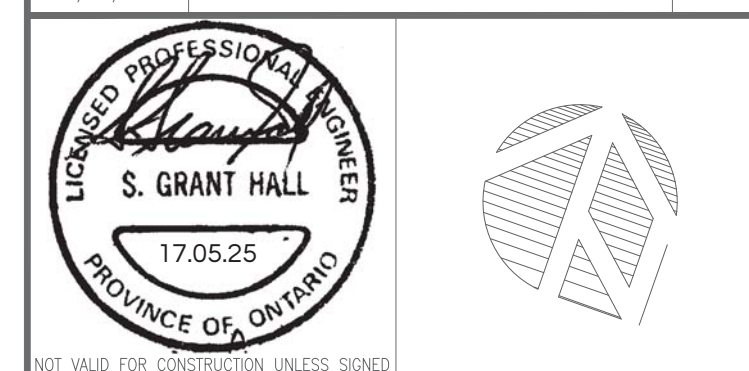


KEY PLAN

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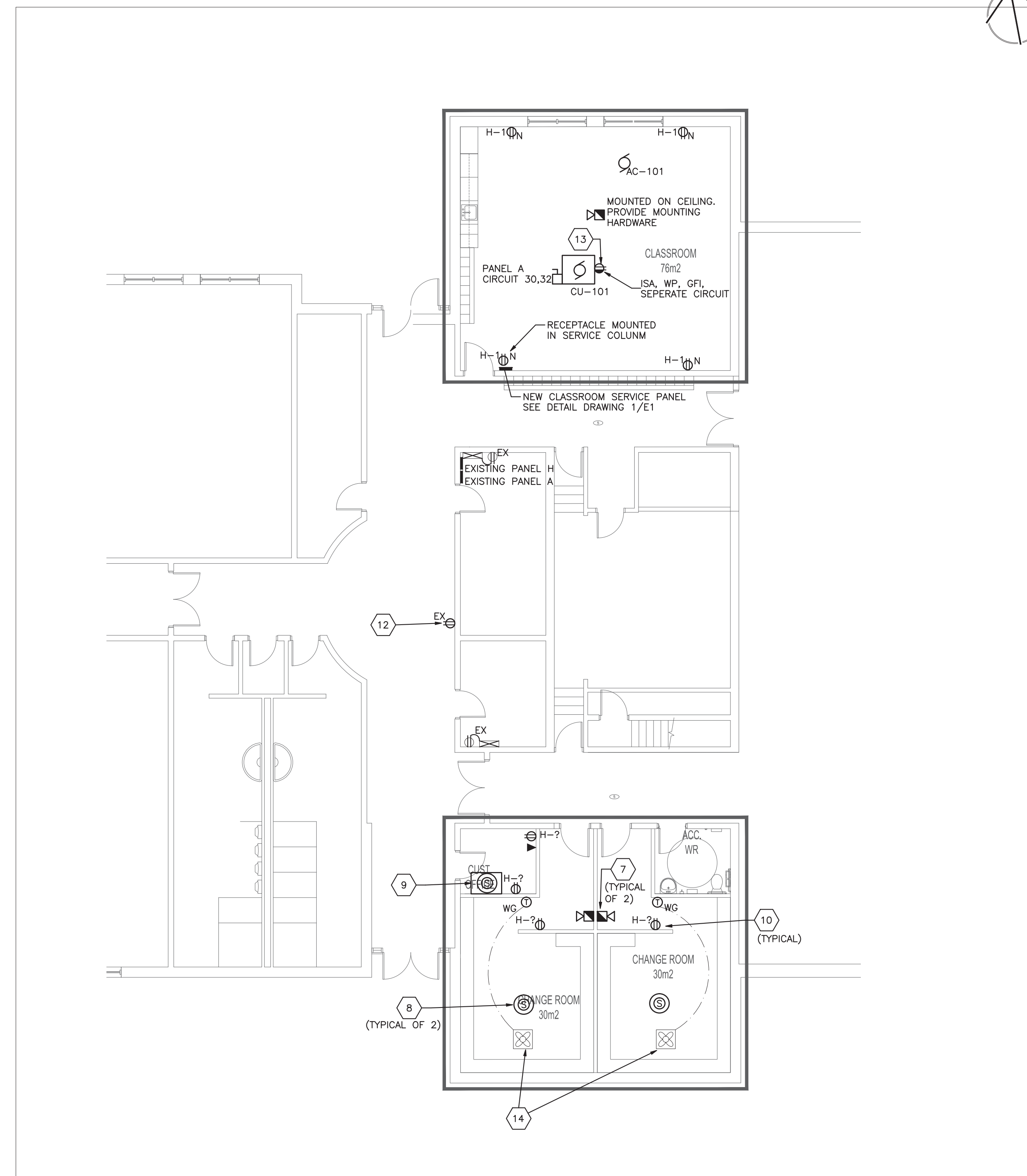
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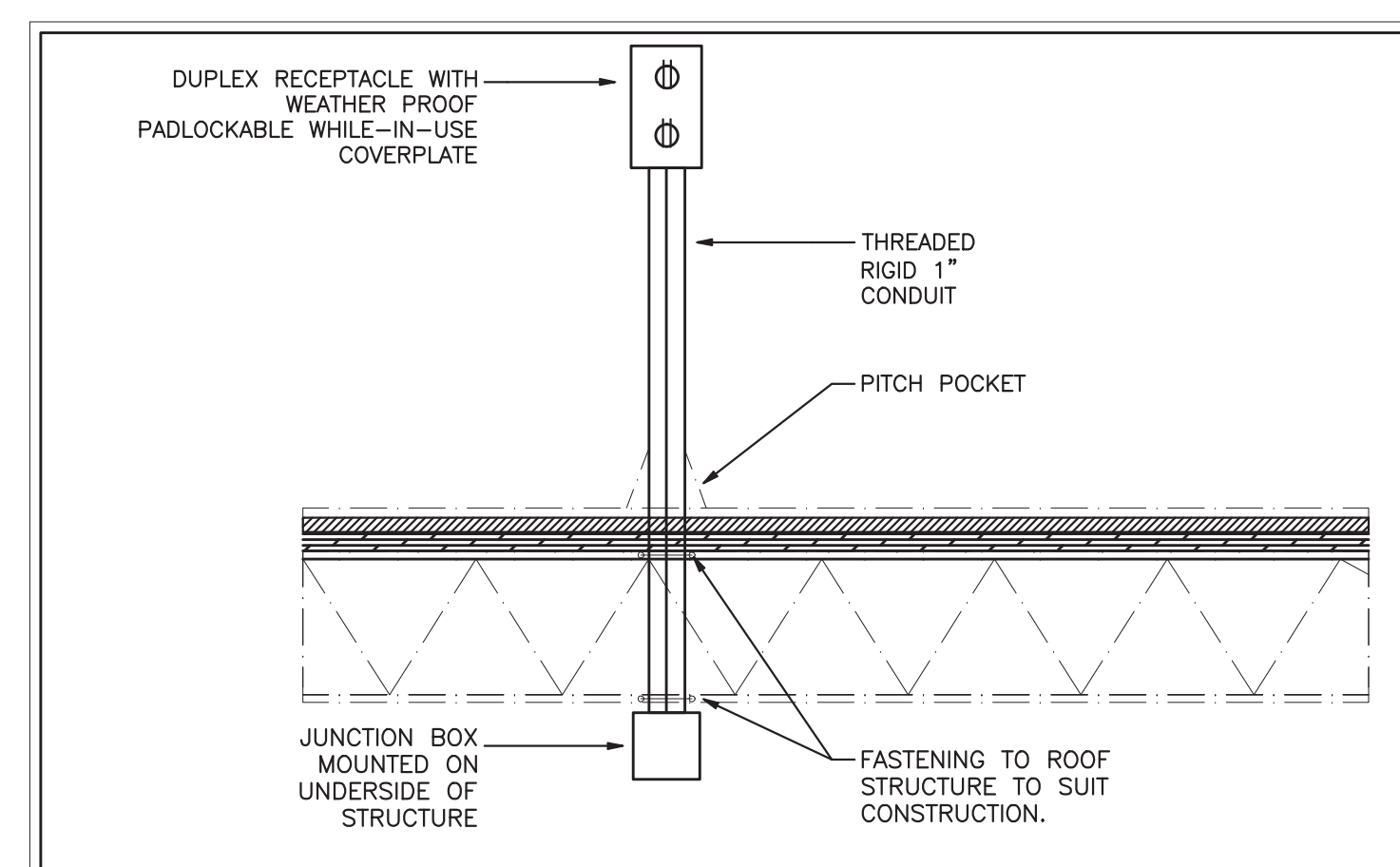
PROJECT TITLE:
ST. JOSEPH CORUNNA CATHOLIC SCHOOL OFFICE, CLASSROOM & LIBRARY RENOVATION

DRAWING TITLE:
POWER AND SYSTEMS LAYOUT

DATE: 05/24/2017	DRAWN: GAS	DRAWING No.:
SCALE: AS NOTED	CHECKED: SGH	E4 OF 5
PROJECT No.:	CE-3660	



E3 CLASSROOM AND CHANGEROOM ELECTRICAL LAYOUT
 SCALE: 1:100



E4 ROOF TOP RECEPTACLE DETAIL
 SCALE: NTS

NOTES:

- 1- RELOCATE EXISTING EMERGENCY LIGHTING BATTERY PACK TO THIS LOCATION. EXTEND WIRING TO NEW BATTERY PACK LOCATION (AC POWER AND DC POWER).
- 2- RELOCATE EXISTING P/A SYSTEM CONSOLE AND WIRING INCLUDING POWER SUPPLY TO THIS LOCATION.
- 3- ROUTE POWER AND COMMUNICATIONS WIRING THROUGH WALL FURRING AT END OF MILLWORK OR THROUGH EXISTING PARTITION WALL.
- 4- RESERVED
- 5- RELOCATE EXISTING P/A MICROPHONE INPUT TO EXISTING PA SYSTEM TO NEW DESK. LOCATE ON DESK ON SITE. CO-ORDINATE LOCATION WITH ADMINISTRATION STAFF
- 6- EXISTING MOTION DETECTOR TO REMAIN
- 7- PROVIDE NEW FIRE ALARM SIGNAL DEVICE. CONNECT TO EXISTING FIRE ALARM SIGNAL CIRCUIT. LOCATE ON SITE. MATCH SIGNAL DEVICE TO EXISTING ON SITE DEVICES FOR SOUND.
- 8- PROVIDE NEW P/A SPEAKER RECESSED IN CEILING
- 9- RESERVED
- 10- RESERVED
- 11- INSTALL NEW DUPLEX RECEPTACLES IN EXISTING EXTERIOR MASONRY WALL CONSTRUCTION. TRACE OUT EXISTING WIRING. REMOVE AND PROVIDE NEW CONTINUOUS WIRING TO NEW

DEVICES FROM LAST POINT OF SUPPLY.

- REROUTE EXISTING ELECTRICAL RACEWAYS UP INTO EXISTING WALL. REMOVE AND REPLACE EXISTING WALL SEGMENTS AS REQUIRED TO REGRESS NEW DEVICES INTO EXISTING WALL. PATCH AND REPAIR WALL AS REQUIRED TO MATCH EXISTING SURFACES. SET NEW BOXES ON MASONRY SEGMENTS AND NOT ON MORTAR JOINTS.
- 12- DISCONNECT AND RECONNECT POWER TO NEW WALL MOUNTED PIPING FOR FOUNTAIN.
 - 13- REFER TO DETAIL 1/E4 FOR INSTALLATION NOTES
 - 14- REINSTALL EXISTING CEILING MOUNTED FAN FORCED ELECTRIC HEATERS. REMOVE EXISTING BUILT-IN THERMOSTAT AND PROVIDE NEW ELECTRONIC PROGRAMMABLE LINE VOLTAGE THERMOSTAT COMPLETE WITH PROTECTIVE VANDAL-RESISTANT COVER COMPATIBLE WITH EXISTING HEATER. PROVIDE FLAME-IN KIT FOR EXISTING HEATER FOR T-BAR INSTALLATION. TYPICAL OF 2.

1. GENERAL CONDITIONS
1.1 PERFORM ALL WORK OF THIS TRADE IN ACCORDANCE WITH THE LATEST EDITION OF THE ONTARIO ELECTRICAL SAFETY CODE (OESC)...
1.2 BEFORE TENDERING, EXAMINE THE SITE AND ALL DRAWINGS AND SPECIFICATIONS OF ALL TRADES AND BE FAMILIAR WITH THE WORK OF THIS TRADE...

3.4 PROVIDE A TYPED LABEL ON EACH DEVICE PLATE INDICATING THE PANEL BOARD NAME AND CIRCUIT NUMBER THE DEVICE IS FED FROM.
3.5 COLOUR OF DEVICES: MATCH EXISTING DEVICE COLOURS.
3.6 EQUIPMENT ISOLATING DISCONNECTS: SIZE DISCONNECTING DEVICES FOR THE CURRENT CARRYING CAPACITIES OF THE EQUIPMENT TO BE ISOLATED...

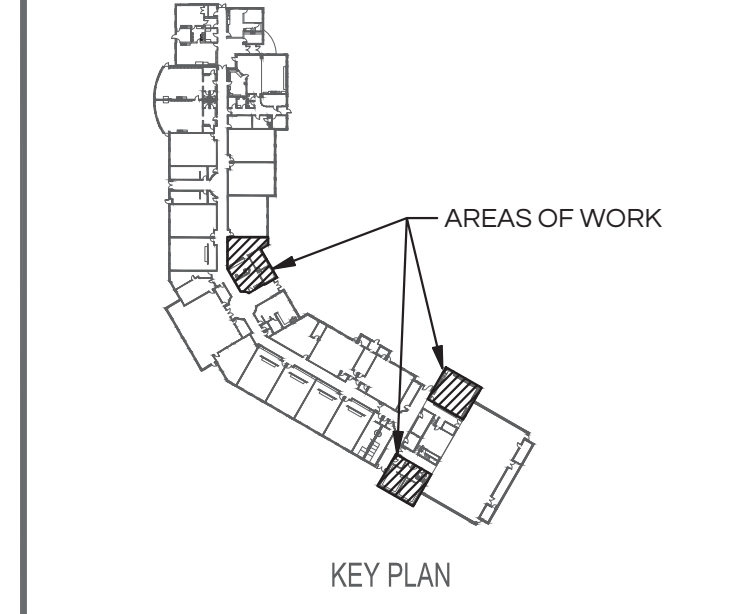
8.4.1 NEW FIRE ALARM SIGNAL APPLIANCES MUST MATCH THE EXISTING FIRE ALARM SYSTEM SIGNAL DEVICES FOR SOUND GENERATION METHOD, CONFIRM EXISTING SIGNAL DEVICES ON SITE AND PROVIDE NEW DEVICES TO MATCH THE EXISTING...
8.4.2 CONFIRM THROUGH MEASUREMENT THE PROPOSED NEW SIGNAL DEVICE LAYOUT WILL SATISFY THE OESC REQUIREMENT FOR EQUIPMENT PRESSURE LEVELS OF MINIMUM 65 DBA THROUGHOUT THE AREAS OF RENOVATION ONLY...

13.1 THE SECURITY SYSTEM IS EXISTING IN THE BUILDING. PROVIDE MODIFICATIONS AS NOTED ON THE DESIGN DRAWINGS AND IN THESE SPECIFICATIONS. SECURITY DEVICES WILL BE PROVIDED BY THE OWNER OR OWNER'S REPRESENTATIVE. SECURITY CONTROL PANEL IS EXISTING.
13.2 PROVIDE SECURITY WIRING TO EACH SECURITY MONITORING LOCATION. ALL WIRING TO TERMINATE AT THE SECURITY PANEL BACKBOARD. LOCATE ON SITE.
13.3 LABEL EACH NEW WIRE FROM EACH NEW DEVICE LOCATION AT BOTH ENDS. PROVIDE A MARKED UP DRAWING INDICATING EACH DEVICE WITH ITS DESIGNATION NUMBER AND THE WIRING ROUTING BACK TO THE SECURITY PANEL...

RWA logo with address: 280 QUEENS AVENUE, SUITE 10 LONDON, ONTARIO N6B1X3. Phone: 519-439-0611. Website: www.rwarchitect.ca

ST. CLAIR CATHOLIC DISTRICT SCHOOL BOARD logo with tagline 'Lighting the Way - Rejoicing in Our Journey'

Callidus Engineering logo with tagline 'A Division of 1640286 Ontario Inc.'



NOTES

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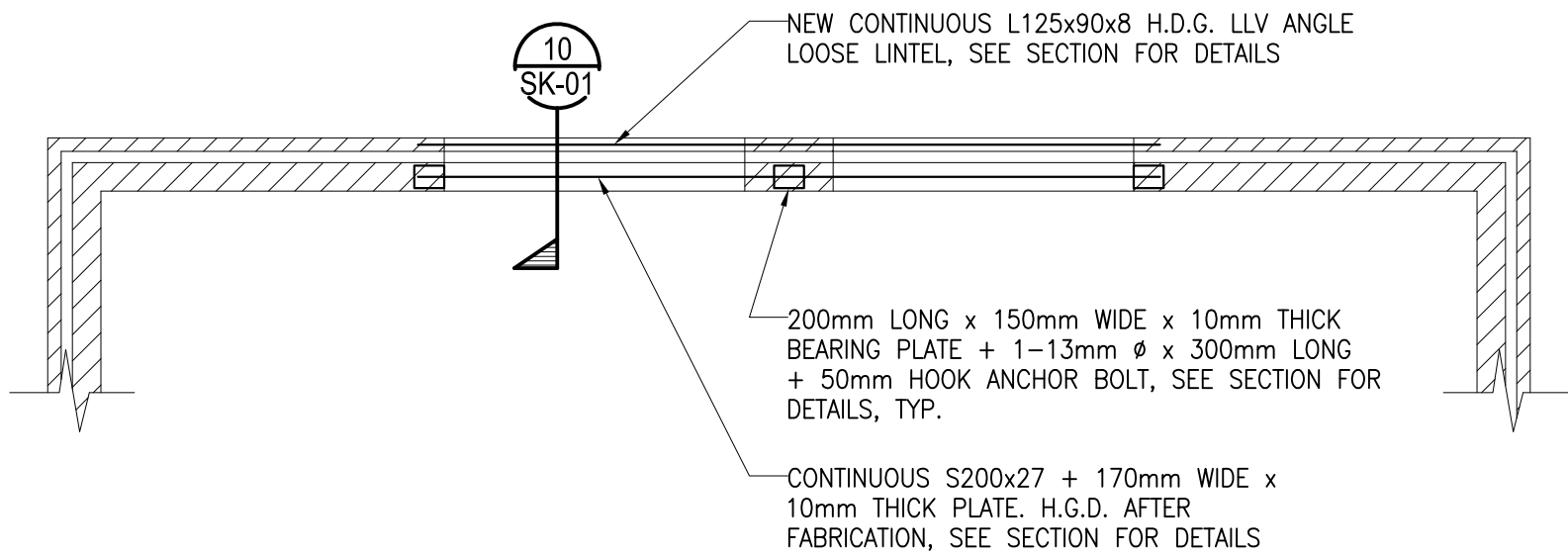
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PROJECT TITLE: ST. JOSEPH CORUNNA CATHOLIC SCHOOL OFFICE, CLASSROOM & LIBRARY RENOVATION

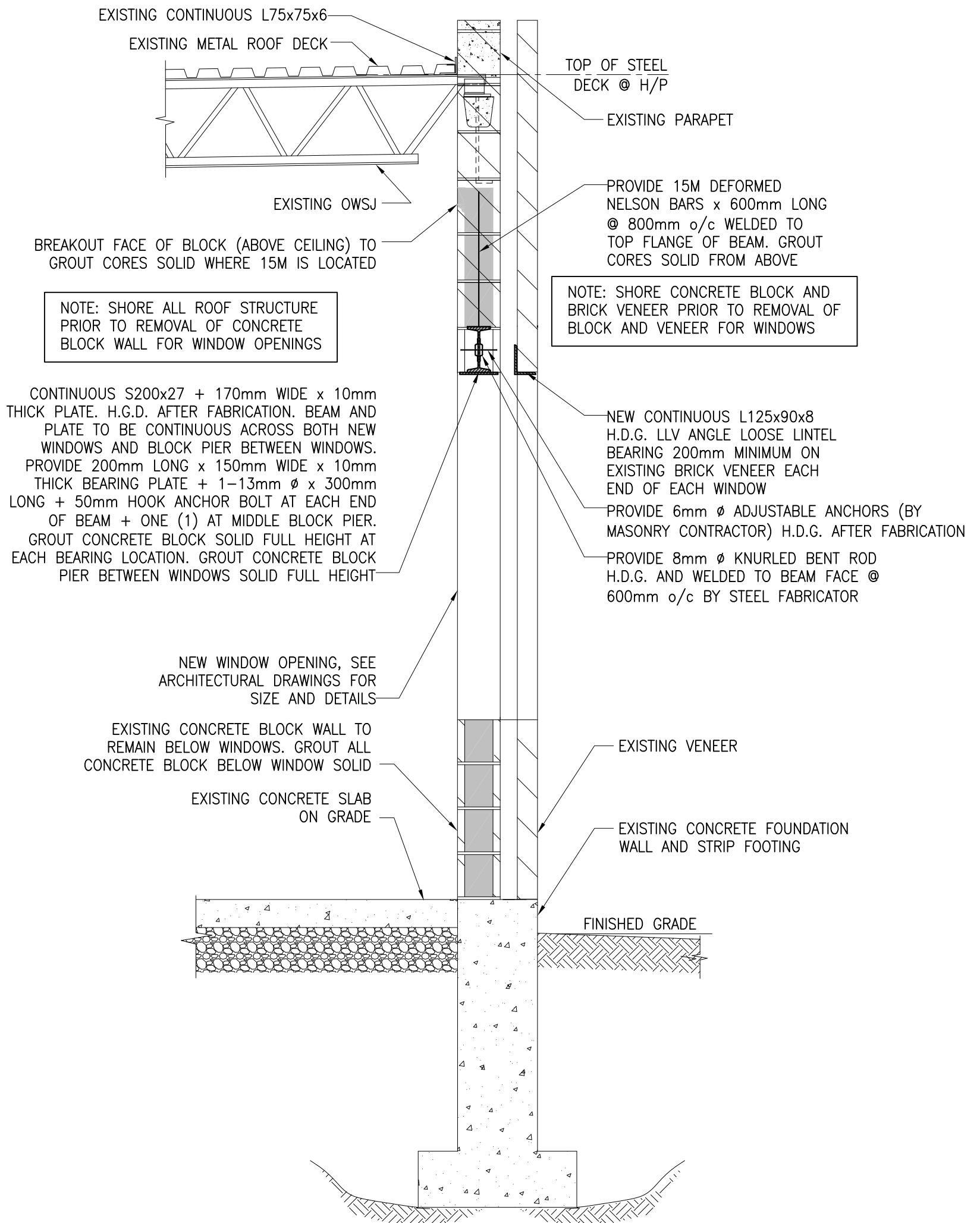
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E5 OF 5



PART LINTEL FRAMING PLAN

SCALE: 1:50



SECTION 10
SCALE: 1:20 SK-01

ST. JOSEPH CORUNNA
CATHOLIC SCHOOL OFFICE,
CLASSROOM, AND LIBRARY
RENOVATIONS

CORUNNA ONTARIO

VB&S VanBoxmeer &
Stranges Ltd.
STRUCTURAL ENGINEERS
458 Queens Ave, London, ON, Canada N6B 1X9
tel. (519) 433-4661 fax. (519) 433-6420

DRAWN BY:
MBM

PROJECT #:
17158

CHECKED BY:
PR

DRAWING #:

DATE:
MAY 24 2017

SK-01

No.	TENDER	2017/05/24
	ISSUED FOR	YYYY/MM/DD