TECHNICAL SPECIFICATIONS FOR:

PROJECT:

Township of West Lincoln Municipal Building Renovations

318 Canborough Street, West Lincoln, Ontario L0R 2A0

CLIENT: Township of West Lincoln

PROJECT No.: 2020-18

DATE: August 2020

ARCHITECT:

GRGURIC ARCHITECTS INCORPORATED

28 King Street East, Unit B, Stoney Creek, ON L8G 1J8

Tel: 905-664-8735 Fax: 905-664-8737

Email: office@2gai.com Website: www.2gai.com

MECHANICAL ENGINEER:

Filer Engineering Ltd.

1046 Botanical Drive
Burlington, Ontario L7T 1V1

Tele: (905) 526-7411
Fax: (905) 526-8899

ELECTRICAL ENGINEER:

SEI Electrical Engineering

12 Argyle Street N., Caledonia, ON, N3W 1B6

www.sei-ee.com

SPECIFICATIONS

	DIVISION 9 - FINISHES	
09000	Finishes and Colour Notes	1-2
09111	Metal Stud System	1-2
09250	Gypsum Board	1-3
09510	Acoustic Unit Ceiling	1-2
09660	Resilient Tile Flooring and Rubber Base	1-3
09680	Carpeting	1-2
09900	Painting	1-4
	DIVISION 10 – SPECIALTIES	
10001	Manufactured Specialties	1-1
ARCHITECTURAL DETAIL DRAWINGS		1-6

DRAWINGS NO.	**DESCRIPTION**
	ARCHITECTURAL DRAWINGS
A0.00	Cover Sheet & OBC Matrix
A2.00	Floor Plan, Demolition Plan & Schedules
A2.10	Reflected Ceiling Plan, Partial Roof Plan & Wall Types
A3.00	Building Elevations
A4.00	Wall Sections & Details
	MECHANICAL DRAWINGS
M1	Mechanical Key Plan and Legends
M2	Ground Floor Mechanical Plan
M3	Mechanical Details and Specifications
	ELECTRICAL DRAWINGS
E0.1	Legend and Schedules
E0.2	Electrical Specifications
E1.0	Electrical Demolition
E2.0	Electrical New Power and Devices
E2.1	Electrical New Lighting

End of Section

1. Name of General Contractor

1. Name: _____
2. Address: _____
3. Phone: _____

2. Name of Project

Township of West Lincoln Municipal Building Renovations
318 Canborough Street, West Lincoln, Ontario L0R 2A0

3. Addressed to Owner

Township of West Lincoln
Attention: Ray Vachon, CET – Project Manager
318 Canborough Street, West Lincoln, Ontario L0R 2A0
Bidders submit their bids via email to: Ray Vachon - rvachon@westlincoln.ca

4. Tender Amount

We, the undersigned General Contractors, having visited the Site and examined all conditions affecting the work, propose to furnish all materials, labour and equipment required to construct project according to all Contract Documents including addenda numbered _____
for the stipulated price of (in Canadian funds):

General Trades: $_____

Mechanical: $_____

Electrical: $_____

Cash Allowance: $ 25,000

CONTRACT PRICE _____

The Contract Price **excludes** all applicable taxes including **HST**. This price will remain in effect for a period of ninety (90) days after Tender Closing.

5. Cash Allowance

The Stipulated Sum includes the Cash Allowance specified in Section 01020.

6. Bonds

Enclosed with this Tender are:

1. A Bid Bond in the amount of 10% of the Tender Sum quoted.

2. An Agreement to Bond from an approved bonding Company for a 50% Performance Bond and for a 50% Labour and Material Bond, should this Tender be accepted.

7. Construction Schedule

Should this tender be accepted on or prior to **September 28, 2020**, the contract will be substantially performed no later than **December 14, 2020**, and the contract will be completed no later than **December 23, 2020**.

8. Conflict Declarations

We, the undersigned declare that this tender is made without any connection, knowledge, comparison of figures or arrangements with any other company, firm or person making a tender for the same work and is fair and without collusion or fraud.

9. Signatures

We are submitting this Tender under Corporate Seal as a Limited Company or witnessed as an individual or partnership.

_____
Name of Official Position of Signature below

_____
Signature of Authorized Officer of Company

_____
Witness

Dated at_____ on _____ 2020.

10. Subcontractor List

DIVISION	NAME
Demolition	
Millwork	
Doors + Frames	
Drywall / Ceilings	
Windows	
Flooring	
Painting	
Carpentry	
Masonry	
Roofer	
Electrical	
Mechanical	

End of Tender Form

1.1 Tenders

1. Tenders are invited for the supply of all labour, materials, equipment and service to complete the above noted project, in accordance with the Drawings and Specifications as prepared by Grguric Architects Incorporated, Stoney Creek, Ontario.

2. Tenders for the work will only be accepted on the special forms provided for this purpose by the Architect.

3. In the receipt of Tenders for the work, no obligation is incurred to accept the lowest or any proposal. The Owner reserves the right to refuse any of all Tenders for any subdivision of the work. Each Bid must be construed to cover all of the work of the trade bid, for notwithstanding the fact, that the Bid in recapitulating the same may omit some parts.

4. The Owner reserves the power and right to reject Tenders received from parties who cannot show a reasonable acquaintance with, and preparation for the proper performance of the class of work herein specified and shown on the drawings. Evidence of such competency must be furnished by the Bidders when requested to do so.

5. Tenders containing escalation clauses will not be considered.

6. Bidders must furnish all information requested on the Tender Form and should any uncertainty arise as to the proper manner of completing the Form, the Architect will give the requisite information. Tender Forms must be completed in a legible manner without alterations or erasures. Incomplete Tenders will not be considered.

7. Tenders must remain open for acceptance for a period of ninety (90) days and until a formal Contract and Bond for the work is executed by the successful Tenderer, as approved by the Owner.

1.2 Tender Closing Date

1. Closing Date: Bid submissions are due on **September 10, 2020 at 2:00:00PM via email only** to Ray Vachon rvachon@westlincoln.ca

1.3 Examination of Site

1. Mandatory Bidders Site Visit is scheduled on **September 1, 2020 at 10:00AM at the** Township of West Lincoln, 318 Canborough Street, West Lincoln, Ontario L0R 2A0

   IMPORTANT: While all companies should first and foremost adhere to Public Health guidelines, all attendees MUST follow these procedures:
   - a (mask REQUIRED) (note that these will not be supplied for you);
   - Be conscious to maintain a minimum 6 ft separation between yourself and those around you; and
   - Only send 1 representative to site from your company.
   - A max. of 5 persons will be permitted at a time review the work space.

2. Bidders must visit and thoroughly examine the site to fully familiarize themselves with the existing conditions including but not limited to: access to the site and the existing

configuration. The Contractor will be held to have visited the site and examined all conditions affecting the proposed work including location of all services which may have to be protected, removed or relocated. The site shall be accepted by the Contractor in its present condition. No claims for extra payment will be considered for extra work, expense or difficulties encounter due the existing site conditions which were visible from an examination of the site. The submission of Tender shall be deemed confirmation that the Bidder has inspected the site and is thoroughly familiar with existing conditions. Contractor shall accept sole responsibility for any error or neglect on their part in this regard.

1.4 Questions Re: Drawings and Specifications

1. Bidders finding discrepancies in, or omissions from the Drawings and Specifications, or in doubt as to the meaning and intent of any part thereof, must contact the Architect office by email only for clarification, Attention: John Grguric, email: office@2gai.com. Phone calls will not be entertained. The Architect will not be held responsible for verbal instructions or any explanations or interpretations of the drawings and specifications. If necessary, any and all instructions or clarifications will be in the form of a written Addenda sent by the Architect. The Architect must receive questions not less than two (2) days before date set for receipt of Tenders.

   The information contained in the Addenda supersedes and amends the Drawings, Specifications and Schedules, as set forth therein. Bidders must include and allow for addenda instructions and information accordingly. Bidders must state on the Tender Form in the space provided, the numbers of all Addenda received and included for, by them in the preparation of the Tender.

1.5 Bond

1. Submit a Bid Bond issued by an acceptable Guarantee Company in the amount of 10% of the Tender Sum being quoted, to be forfeited should the party whose Tender is accepted, fail to enter a Contract on his tender and is called on to do so within ten (10) days after the Contract is submitted to him for execution. The General Contractor's securities will be returned after the contract has been signed and he has furnished approved Bonds.

1.6 Subcontractor

1. The Bidder must be responsible that all materials and labour called for in the Specifications and Drawings (and any Addenda or changes thereto) are included in the Tender. The Bidder to state the names of all subcontractors and manufacturers as called for on the Tender Form. The List of Subcontractors and manufacturers set forth **are not to be altered or changed,** except as may be directed by the Architect who may require that an alternative subcontractor be employed at the time of the signing of the Contract, provided that the necessary adjustment is made to the Contract Amount.

1.7 Contract

1. The successful Bidder is required to execute the "Canadian Standard Construction Document Stipulated Price Contract CCDC 2, 2008", revised to include amendments thereto, as set out in the Amendments to General Conditions.

2. The successful Bidder is to execute the said formal contract as called for within ten (10) days after notification of the acceptance of his Tender or forfeit the amount of the Bid Bond enclosed with the Tender.

1.8 Completion Date

1. The work is to be carried to completion as rapidly as possible, consistent with good building practice and reasonable economy ready for the Owner's full occupancy in the time stated in the Tender.

2. The term "Completion" is understood to mean that the work of the Contract has been completed, including all items of the Architect's Deficiency List, to the Architect's satisfaction and the work accepted by the Owner.

1.9 Sales Taxes

1. The Tender Amount shall not include any value added or consumption taxes including without limitation Harmonized Sales Tax (HST), collectively referred to as ‘Taxes’.

2. The successful General Contractor shall account separately on each application for payment the appropriate amount of Taxes which the General Contactor is legally obliged to collect and remit to the Government.

1.10 Drawings & Specifications

1. The drawings hereinafter referred to will be those listed in this Specification, together with such other working drawings as may be issued by the Architect during the progress of the work.

2. Bidders must examine the Architectural, Mechanical and Electrical Drawings and Specifications, and fully inform themselves regarding the requirements, conditions and limitations pertaining to the work of the Contract, and include and allow for accordingly in the preparation of their Tender.

1.11 Change Orders

1. The Allowance for overhead and profit, shall be as follows:
    a) for work carried out by Contractor's own forces: 10% of the net increase in the contract price.
    b) for work carried out by Subcontractors: 10% of the net increase in the contract price.

End of Section

1. Definitions

1. The following Section of this Specification are of the abbreviated type and include incomplete sentences. Definite and indefinite articles have often been omitted and sentences are written in the form of direct instructions to the Contractor without using the phrase `the Contractor shall.' Standard specifications and other quality references inserted govern materials and workmanship without using phrases `conform with,' `conformity therewith,' etc. Omitted words and phrases to be supplied in the same manner as they are when a note appears on the Drawings.

2. The Specifications are separated into Sections for reference convenience only. Such separation must in no instance make Owner or his Consultants arbiter to establish subcontract limits between Contractor and Subcontractor.

3. Provide all items, articles, materials, operations or methods listed, mentioned or scheduled on Drawings and/or in Specifications, including all labour, materials, equipment, tools, services, and incidentals necessary and required to complete the work. Responsibility for breakdown into and extension of subcontracts, including co-ordination of same, rests entirely with the Contractor.

4. Standard Specifications referred to are editions in force at Tender Closing Date.

2. Terminology

1. Consultants are the team of Architects, Engineers and other experts commissioned by the Owner, directly or indirectly, to execute design, contract documents and supervision for the project, including any of their agents or employees.

2. Prime Consultant is the Architect.

3. Contractor is the Firm or Corporation who, having signed the Agreement, has the sole legal responsibility to carry out the work shown or described in the Contract Documents for the Owner, whether contractually assigned to a Subcontractor or supplier, or not.

3. Minimum Standards

1. Unless otherwise specified, work and material to conform or exceed the minimum standards set out in the editions of the Canadian Government Specification Board, Canadian Standards Associations, the Ontario Building Code, Underwriters' Laboratories of Canada, the Canadian Electrical Code, the Local Building Code in force, whichever is applicable.

2. Copies of Standard Specifications referred to in this Specification to be kept on the site.

3. The use of the name (or its abbreviation) of any of the following bodies, accompanied by the reference number of a specification of that body to mean that the entire specification of the body to apply as noted:

    AISC: American Institute of Steel Construction;

ASTM: American Society for Testing Materials;
CEC: Canadian Electric Code;
CGSB: Canadian Government Specification Board;
CISC: Canadian Institute of Steel Construction;
CRCA: Canadian Roofing Contractors' Association;
CSA: Canadian Standards Association;
OBC: Ontario Building Code;
ULC: Underwriters' Laboratories of Canada;
CLA: Canadian Lumbermen's Association.

4. Cooperation

1. Each trade to co-operate with the trades of adjacent or affected work. Supply in good time requirements effecting adjacent and underlying work in writing and items to be set or built in. Similarly, heed requirements and build-in items provided by other trades.

2. Take necessary precautions to protect work of other trades from contamination, marring or other damage due to application or installation processes, methods and activities.

3. General Contractor and each trade to co-operate with Contractors which may be assigned or selected by the Owner to perform work under Cash Allowances. Owner reserves the right to assign non-unionized labour to perform work under Cash Allowances, at Owners discretion.

5. Coordination

1. Co-ordinate the work of all trades in such a manner that each trade co-operates with the trade of adjacent work.

2. Organize weekly job site meetings and send out notices stating time and place to Consultants, subcontractors, Suppliers and all others whose presence is required at the meetings.

3. Take note of all persons attending these meetings and submit to Consultants and Owner, Minutes of these Meetings showing any major decisions made and instructions or information required.

4. Co-ordinate the Work in this Contract with the work of others awarded work under Cash Allowances.

6. Building Dimensions and Co-ordination

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

2. Verify that all work, as it proceeds, is executed in accordance with dimensions and positions indicated which maintain levels and clearances to adjacent work, as set out by

requirements of the drawings, and ensure that work installed in error is rectified before construction resumes.

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

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

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

6. Advise Consultant of discrepancies and if there are omissions on drawings, particularly reflected ceiling plans and jointing patterns for paving, ceramic tile, or carpet tile layouts, which affect aesthetics, or which interfere with services, equipment or surfaces. DO NOT PROCEED without direction from the Consultant.

7. Ensure that each Subcontractor communicates requirements for site conditions and surfaces necessary for the execution of the Subcontractor's work, and that he provides setting drawings, templates and all other information necessary for the location and installation of material, holes, sleeves, insets, anchors, accessories, fastenings, connections and access panels. Inform other Subcontractors whose work is affected by these requirements and preparatory work.

8. Prepare interference drawings to properly co-ordinate the work where necessitated. Refer to Section 01340.

7. Use of Premises Before Substantial Performance

1. The Owner shall have the right to enter and occupy the building, in whole or in part, for the purpose of placing fittings and equipment, or for other use, before completion of the Contract if, in the opinion of the Consultant, such entry and occupancy does not prevent or interfere with the Contractor in the performance of the Contract. Such entry shall in no way be considered as an acceptance of the Work in whole, or in part, nor shall it imply acknowledgment that terms of the Agreement are fulfilled.

8. Layout of Work

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

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

9. By-Laws and Regulations

1. Nothing contained in the Drawings and Specifications are to be so construed as to be knowingly in conflict with any law, by-law or regulation of municipal, provincial or other authorities having jurisdiction.

2. Perform work in conformity with such laws, by-laws and regulations and make any necessary changes or deviations from the Drawings and Specifications subsequently required as directed and at no cost to the Owner unless notification is given in writing before Tender Closing Date.

3. Furnish inspection certificates and/or permits as may be applicable as evidence, that installed work conforms with laws, by-laws, and regulations of authorities having jurisdiction.

10. Protection

1. Take necessary precautions and provide and install required coverings to protect material, work and finishes from contamination, damage, the elements, water and frost.

2. Make good any damage or replace damaged materials, as directed. Repairs to be made by the trade having originally installed or fabricated the damaged material, finish or item. Protect electrical equipment from water and the elements.

3. Protect adjacent private and public property from damage and contamination.

4. Protect curbs and sidewalks from damage from trucking by means of boards and the like. Repair, or pay or repair of damage to existing roads and sidewalks.

5. Mark glass after glazing in an acceptable manner, and leave in place until final clean-up.

6. Protect floor finishes from construction traffic and transport of construction materials and equipment by means of 6 mm plywood panels.

11. Delivery, Handling and Storage of Materials

1. Schedule material delivery so as to keep storage at site to the absolute minimum, but without causing delays due to late delivery.

2. Store materials which will be damaged by weather in suitable dry accommodation. Provide heat, as required, to maintain temperatures recommended by material manufacturer.

3. Store highly combustible or volatile materials separately from other materials, and under no circumstances, within the building. Protect against open flame and other fire hazards. Limit volume of supply on the site to minimum required for one day's operations.

4. Handle and store material so as to prevent damage to material, structure and finishes. Avoid undue loading stresses in materials or overloading of floors.

5. Do not store material and equipment detrimental to finished surfaces within areas of the building where finishing has commenced or has been completed. All material storage within the building is subject to relocation, as directed.

6. Deliver package material in original, and Storage of unopened and undamaged containers with manufacturer's labels and seals intact.

12. Debris

1. Assign clean-up duties to a crew with own Foremen which will be of sufficient size to prevent accumulation of debris and dirt in any part of the structure or on the site.

2. Remove construction debris on a daily basis and legally dispose of same.

3. Under no circumstances, should debris, rubbish or trash be burned or buried on the site.

13. Cutting, Fitting and Patching

1. Required cutting to be done by General Contractor. Patching and painting of work to be executed by the General Contractor.

2. All sub-trades are to notify the General Contractors bidding as to the extent of the cutting, patching, and painting of their respective trades.

3. Drilling, cutting, fitting and patching necessary due to failure to deliver items to be built-in time, or installation in wrong location to be executed, as directed, at no cost to the Owner.

4. Give written notification prior to commencement of drilling and cutting of load bearing structural members and finished surfaces.

5. Cut holes with smooth, true, clean edges, after they are approved by applicable trade. Size holes and openings for hot water and steam pipes, so as to allow for expansion and contraction of such pipes.

14. Fastenings

1. Supply all fastenings, anchors and accessories required for fabrication and erection or work.

2. Metal fastenings to be of the same material as the metal component they are anchoring, or of a metal which will not set up an electrolysis action which would cause damage to the fastening or metal component under moist conditions.

3. Exposed metal fastenings and accessories to be of the same texture, color, and finish as base metal on which they occur. Keep to a minimum; evenly space and lay out.

4. Fastenings to be permanent, of such a type and size and installed in such a manner to provide positive anchorage of the unit to be secured. Wood plugs are not acceptable. Install anchors at required spacing to provide required load bearing or shear capacity.

5. Power actuated fastenings not to be used without prior written approval for specific use.

15. Surplus Materials

1. Surplus materials specifically so specified, to remain property of the Owner and be neatly stockpiled or stored, as directed.

2. All other surplus materials to become property of the Contractor; to be removed from the site and legally disposed of.

16. Setting of Work

1. Provide and pay for the services of a Land Surveyor, registered in the Province of Ontario to establish the building location and two (2) widely separated bench marks at the commencement of the work.

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

3. Provide to the Consultant a survey plan on CAD indicating location of perimeter foundation walls relative to property lines and their top elevation, before construction proceeds on the foundation walls.

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

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

6. Preserve and protect bench marks, elevation datum and monuments and check periodically for accuracy until all work is complete. Remove same and their protection, as directed, and make good site.

17. Documents Required and General Duties

1. **At Commencement of Contract**
   - .1 Supply Performance Bond and Labour and Material Bond within fourteen (14) days of acceptance of the Tender.
   - .2 Supply Public Liability and Property Damage Insurance Certificates.
   - .3 Supply Certificates of good standing from Workers' Compensation Board for the General Contractor and all Subcontractors.
   - .4 Supply Contract Sum Breakdown of all sub-trades or parts of work and general

expense items.

.5 Supply Construction Schedule.

.6 Supply Schedule of Shop Drawing Submissions.

.7 The Owner has paid for the cost of the Building Permit. Mechanical Subcontractor will pay the cost of other Fees related to the Work Specified under Mechanical Scope. Electrical Subcontractor will pay the cost of all permits and fees related to the Work specified under Electrical Scope.

.8 The General Contractor is to pay all other fees and refundable deposits if applicable.

2. **During Construction**

.1 Adjust Allowances, as required.

.2 Organize Job Meetings in accordance with Section 01200.

.3 Supply Monthly Progress Reports and Construction Schedule in accordance with Section 01200.

.4 Confirm that payments are being made to subcontractors and suppliers by submission of receipts with the second and subsequent Progress Payment Application. No payment will be made for unincorporated material on the site, unless Bill of Sale in proper format is provided.

3. **Upon Completion**

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

.1 All deficiencies to have been completed in a satisfactory manner.

.2 All final clean-up to have been executed, as specified in Section 01710.

.3 Finishing Hardware, Inspection and Verification.

.4 Organize a Final Inspection tour at which to be present:

- the Owner's authorized representative.
- the Architectural, Structural, Mechanical and Electrical Consultants, and their supervisory personnel, if any;
- the Contractor and his superintendent.

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

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

.7 Certificates of good standing from the Workers' Compensation board, for the General Contractor and all Subcontractors.

.8 All reference records, as specified, under Section 01720.

.9 Certificate of Inspection from Mechanical and Electrical Engineers.

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

.11 Statement of Completion from General Contractor.

.12 Final adjustment of all Allowances.

.13 H.E.P.C. Inspection Certificate and all other Inspection Certificates required by

Provincial, Municipal and other authorities having jurisdiction.

.14 Balancing Reports.

.15 As-Built Drawings. – Hardcopy mark ups and digital pdf file.

.16 Two hard copies of Operation and Maintenance Manuals. A digital copy (pdf file) of all closeout documents to be provided on a CD or USB memory stick format.

18. Progress Reports

1. Submit to the Architect, Monthly Progress Reports consisting of a concise narrative and a marked-up summary schedule showing physical percentage complete by item and in total. These progress calculations must agree with the Progress Payment Claims.

2. Keep permanent written daily records on the site on the progress of work. Record to be open to inspection at reasonable times and copies to be furnished upon request. Records to show notes of commencement and completion of different trades and parts of work; daily high and low temperatures and other weather particulars; number of men engaged on the site (including sub-trades) broken down in groups for each type of construction work, and particulars about excavation and shoring; erection and removal of form work; pouring and curing of concrete; floor finishing; placing and compaction of backfill, masonry work; roofing.

3. Daily progress to give particulars on commencement and completion of each trade or part of work; form work erections and removal; concrete pouring and curing; floor finishing; masonry work; roofing; waterproofing; finishing trades, tests and inspection and the like.

19. Inspection and Testing

1. The contractor is responsible to provide his own quality control in order to meet or exceed the requirements of specified standards, codes, design criteria and referenced documents.

End of Section

1. Selection of Products

1. If requested by the Consultant, provide the following services and/or information:

   .1 Assist the Consultant in determining qualified suppliers.
   .2 Obtain proposals from suppliers.
   .3 Make appropriate recommendations for consideration of Consultant.
   .4 Notify Consultant of any effect anticipated by selection of product or supplier under consideration, on construction schedule and contract sum.

2. On notification of selection, enter into purchase agreement with designated supplier.

2. Cash Allowance

1. Expend cash allowance **only** on the Consultant's written instructions.

2. Include in Contract price the Contractor's charges for handling at site, including uncrating and storage, protection from elements and damage, labour, installation and finishing, testing, adjusting and balancing, and other expenses including overhead and profit on account of Cash Allowance in accordance with Article GC4.1 of the General Conditions of the Contract as amended.

3. Credit the Owner with any unused portion of Cash Allowances in the statement for final payment.

4. If a test made under payment by a specific allowance proves that the material or system is not in accordance with the Documents, then the subsequent testing including Owner's testing of replacement materials or systems shall be Contractor's expense and not taken from Cash Allowance.

5. Add or deduct any variation in cost from the Cash Allowance. No adjustment will be made to Contractor's expense.

6. The amount of each allowance includes the net cost of the product or service, delivery and unloading at the site.

7. All refunds, trade and/or quantity discounts which the Contractor may receive in the purchase of goods under allowances, to be extended to the Owner.

8. Receipted invoices covering all disbursements made by the Contractor under Allowances, to be submitted to the Consultant for audit.

9. Where the Cash Allowance stipulates "Supply Only," the Contract Price and not the Cash Allowances include the installation and hook-up costs. The installation and hook-up of some equipment and materials are specified under other Sections of the Specifications. The General Contract includes the installation and hook-up not specified elsewhere.

10. Contractor's profit and overhead on all Cash Allowances to be carried in his lump sum amount, not in the Cash Allowances.

11. All Cash Allowances will be dealt with in accordance with Article GC4.1 of the General Conditions.

12. All expenditures under Cash Allowances must be approved by the Owner.

13. Include in the Stipulated Price quoted, a Cash Allowance in the amount of **Twenty Five Thousand dollars - $25,000**.

    To be allocated as follows:

1.	Hardware, supply only	$12,000
2.	Signage	$ 3,000
3.	Data/Communications	$10,000

14. H.S.T. Goods and Services tax is not included in Cash Allowance amount and is to be carried in the General Contractor's Stipulated Sum Amount.

15. Refer to Section 01005 for co-operation with others assigned to this Section.

End of Section

1. Project Meetings for Coordination

1. In consultation with the Consultant during the second week of construction, arrange for site meetings every 2 weeks as appropriate to the stage of construction, for project coordination. Such meetings shall fall at the same time each week the meeting is scheduled.

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

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

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

5. Within three days after each meeting, distribute digital copies of the minutes to each invited person.

2. Pre-construction Meeting

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

2. Include in the agenda the following:

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

3. Project Meetings for Progress of Work

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

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

3. Include in the agenda the following:

   .1 Review, approval of minutes of previous meeting.
   .2 Review of Work progress since previous meeting.
   .3 Field observations, problems, conflicts.
   .4 Problems which impede construction schedule.
   .5 Review of off-site fabrication delivery schedules.
   .6 Corrective measures and procedures to regain projected schedule.
   .7 Revisions to construction schedule.
   .8 Progress during succeeding work period.
   .9 Review submittal schedules: expedite as required.
   .10 Maintenance of quality standards.
   .11 Pending changes and substitutions.
   .12 Review proposed changes for effect on construction schedule and on completion date.
   .13 Other business.

4. Progress Records

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

   .1 Daily weather conditions, including maximum and minimum temperatures.
   .2 Dates of the commencement and completion of stage or portion of the work of each trade in each area of the project.
   .3 Conditions encountered during excavation.
   .4 Dates of erection and removal of formwork, in each area of the project.
   .5 Dates of pouring the concrete in each area of the project, with quantity and particulars of the concrete.
   .6 Work force on project daily per trade.
   .7 Visits to site by personnel of Consultant, Jurisdictional Authorities and testing companies.

End of Section

1. General

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

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

2. Shop Drawings

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

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

3. Maximum sheet size 24” x 36” as a PDF.

3. Project Data

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

2. Above will only be accepted if they conform to following:
   .1 Delete information which is not applicable to project.
   .2 Supplement standard information to provide additional information applicable to project.
   .3 Show dimensions and clearances required.
   .4 Show performance characteristics and capacities.
   .5 Show wiring diagrams (when requested) and controls.

4. Coordination of Submissions

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

2. Verify:
   .1 Field measurements.
   .2 Field construction criteria.
   .3 Catalogue numbers and similar data.

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

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

5. Contractor's responsibility for deviations in submission from requirements of Contract documents is not relieved by Architect's review of submission, unless Architect gives written acceptance of specified deviations.

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

7. After Architect's review, distribute copies.

5. Submission Requirements

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

2. Submit a digital copy (PDF) of shop drawings, product data to Architect for review.

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

4. Submissions must include:
   .1 Date and revision dates.
   .2 Project title and number.
   .3 Name of:
      .1 Contractor.
      .2 Subcontractor.
      .3 Supplier.
      .4 Manufacturer.
      .5 Separate detailer when pertinent.

5. Identification of product or material.
   .1 Relation to adjacent structure or materials.
   .2 Field dimensions, clearly identified as such.
   .3 Specification Section number.
   .4 Applicable standards, such as CSA or CGSB numbers.
   .5 Contractor's stamp, initialled or signed, certifying review of submission, verification of field measurements and compliance with Contract documents.

6. Interference Drawings
   .1 Prepare interference drawings for all work in confined space ie: ceiling space.

End of Section

1. Access

1. If required, provide and maintain adequate service roads to project site to provide safe and convenient access for deliveries.

2. Contractor's Site Office

1. Contractor's trailer will be used as site office during construction and to accommodate site meetings. It shall be furnished with drawing layout table, telephone, and facsimile machine for the duration of the project. Facsimile is to be installed on dedicated line and not connected to telephone line. Pay telephone not acceptable.

2. Maintain in clean condition.

3. Provide and maintain in clean condition: two separate plans layout tables, minimum 48" x 72" each. One table shall be used by the General Contractor, and Subcontractors, at their discretion. The second shall be provided for use by subcontractors and by the consultant or Inspection and Testing Companies during site visits or project meetings.

3. Storage Sheds

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

4. Sanitary Facilities

1. Existing sanitary facilities cannot be used during construction. Keep area and premises in sanitary condition.

5. Parking

1. Existing on-site parking can be used during construction. Spaces will be designated by owner.

6. Site Enclosures

1. Erect temporary site enclosures, hoarding, using prefabricated lock fence system.

2. Size and location of enclosure to suit area of construction.

7. Enclosure of Structure

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

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

3. Design enclosures to withstand wind pressure.

4. Erect dust barriers to prevent dust migration to non-renovated areas.

8. Power supply

1. Electrical power is available in existing building and will be provided at no charge for construction purpose.

9. Water Supply

1. Water is available in existing building and will be provided at no charge for construction purpose.

10. Scaffolding

1. Construct and maintain scaffolding in rigid, secure and safe manner.

2. Erect scaffolding independent of walls. Remove promptly when no longer required.

3. Scaffolding to be designed by a professional Engineer when required under the Occupational Health and Safety act.

11. Heat and Ventilating

1. Not applicable.

End of Section

1. Construction Safety Measures

1. Observe and enforce construction safety measures required by the National Building Code; the O.B.C.; The Provincial Government; Workers' Compensation Board; and, Municipal authorities.

2. In particular, the Occupational Health and Safety Act (Ont. Re. 213/91), the Occupational Health and Safety Act, the regulations of the Ontario Ministry of Labour and Ontario Hydro Safety requirements shall be strictly enforced.

3. Contractor shall ensure that copies of all applicable construction safety regulations, codes and standards are available on the job-site throughout the period of construction. All workers are to be informed that these documents are available for reference at any time.

4. The Contractor shall ensure that all supervisory personnel on the job-site are fully aware of the contents of the Occupational Health and safety Act (Ontario Regulation 213/91 - Construction Projects) the Workers' Compensation Act" and, Bill 208 (Chapter 7, Standards of Ontario) “An Act to Amend the Occupational Health & Safety Act and the Workers’ Compensation Act”, and, that they comply with all requirements and procedures prescribed therein. These documents include, but are not limited to, the following construction safety requirements:

    .1 Contractor to register with the Director of the Occupational Health and Safety Division before or within 30 days of the commencement of the project, (O.Reg. 213/91, sec 5).
    .2 File a notice of project with a Director before beginning work on the project, (O.Reg 313/91, sec 6).
    .3 Notification prior to trenching deeper than 1.2m, (O.Reg. 213/91, sec 7).
    .4 Accident Notices and Reports, (O.Reg. 213/91, sec 8 through sec 12).
    .5 General Safety Requirements, (O.Reg. 213/91, sec 13 through sec 19).
    .6 General Construction Requirements, e.g. protective clothing, hygiene practices, housekeeping, temporary heat, fire safety, access to the job-site, machine and equipment guarding and coverings, scaffolds and platforms, electrical hazards, roofing, et al, (O.Reg. 213/91, sec 20 through sec 221).
    .7 Establish a Joint Health and Safety Committee where more than 19 workers are employed for more than 3 months, (Bill 208, S.8(2) to S.8(14).
    .8 Establish a Worker Trades Committee for all projects employing more than 49 workers for more than 3 months, (Bill 208, S-8a(1) to S.8b(4).
    .9 Ensure that all activities arising out of (.07) and (.08) above are recorded and that minutes are available to an inspector of the Ontario Ministry of Labour.

5. The Contractor shall be considered as the "Constructor" in consideration of the rights and responsibilities for all construction safety requirements, procedures, facilities and inspection of all work performed by the Contractor, Subcontractors/Sub-trades and other Contractors engaged on this project.

6. In the event of a conflict between any of the provisions of the above authorities the most stringent provisions are to be applied.

2. Material Safety Data Sheet

1. Material safety Data Sheets (MSDS) must be available at the job-site for any product listed on the Hazardous Ingredients List prior to being used, installed or applied inside of the building.

2. A Material Safety Data Sheet is to be submitted to the Architect for any product which is known to create, or suspected of creating, a health hazard or discomfort during construction or upon commissioning of the project including, but not limited to, the following:
   .1 adhesives
   .2 solvents
   .3 sealants, (caulking, vapour seals, etc.)
   .4 sprayed-on fireproofing
   .5 resilient flooring
   .6 carpet, paint, varnish or other coatings
   .7 exposed membrane waterproofing
   .8 special coatings, (terrazo sealants, chafing coatings, etc.)
   .9 solder, brazing and welding and other filler metal
   .10 other products whose particles or vapours may become air borne after installation.
   .11 any other product as directed by the Consultant.

3. Comply with WHMIS regulation, Workplace Hazardous Material Information System.

3. Fire Safety Requirements

1. Comply with requirements for Building Construction, the Ontario Building Code, the Ontario Fire Code, the requirements of Local Fire Authorities and of the requirements of the Office of the Fire Marshal.

4. Overloading

1. Ensure no part of Work is subjected to a load which will endanger its safety or will cause permanent deformation.

5. Falsework

1. Design and construct falsework in accordance with CSA S269.1-1975.

6. Scaffolding

1. Design and construct scaffolding in accordance with CSA S269.2-M1980.

2. Scaffolding to be designed by a Professional Engineer when required under the Occupational Health and Safety Act.

7. Materials Specifically Excluded

1. Asbestos and/or asbestos-containing products are not permitted. Submit Material Safety Data Sheets for any product suspected of containing asbestos if so requested by Consultant. Examples of some materials requiring close scrutiny and/or confirmation include:
   .1 Transite drainage pipe - whether buried or above grade - not permitted.
   .2 Composite floor tile containing asbestos - not permitted.
   .3 Lay-in ceiling tiles containing asbestos - not permitted.
   .4 Insulation and/or jacketing for pies, ducts, motors, pumps, etc. - not permitted if any asbestos is present.

2. Solder for all piping is to be lead-free.
   .1 "Lead Free" shall mean solder which contains less than 0.030% of lead when dissolved in fluoroboric and nitric acids and tested by inductively coupled argon plasma atomic emission spectroscopy. "Steelbond 281" and "Silverbrite" are acceptable solder products.
   .2 The mechanical contractor shall provide an affidavit signed by the Principal of the company, on company letterhead, that all of the solder used on the project was either one of the two acceptable products or that the solder used (identified by brand name) meets or exceeds the testing criteria.
   .3 The Owner shall undertake random testing of the soldered joints. Should testing prove that the solder used was not as specified, the Owner shall take action against the contractor to the full extent of the law.

3. All paint and finish coatings are to be lead and mercury-free. Submit Material Safety Data Sheets confirming that these products are free of all lead and/or mercury compounds.

8. COVID-19 Policy

1. General Contractor to provide owner with Covid-19 policy for review and approval prior to mobilizing on site.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. These specifications apply to all 16 divisions of the project specification. It is the responsibility of the contractor to apply these provisions wherever practical within specification limits to all products and services used on this project.

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

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

1.2 Compliance Specifications

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

1.3 Beyond Compliance Specifications

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

2. Beyond compliance specifications recognize that performance well beyond the minimum regulatory standard is often desirable, possible and affordable, often with no cost or low cost options. It also recognizes that application methods or protocols may be as important as the material specified. Therefore these specifications cover both material and methods.

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

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

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

1.4 Exceptions

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

PART 2 - MATERIALS

2.1 Products or Substances to be Avoided or Limited in Use

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

2.2 Volatile Organic Compounds

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

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

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

2.3 Chlorinated Substances

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

2.4 Plasticizers

1. Plasticisers which offgass (low molecular weight) should be avoided.

2.5 Man Made Mineral Fibres

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

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

2.6 Radiation

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

2.7 Biocides

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

2.8 Heavy Metals

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

2.9 Aluminum

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

2.10 Ozone Depleting Substances

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

2.11 Greenhouse Gasses

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

2.12 Bituminous (tar) Products

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

2.13 Chemical Compounds

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

2.14 Adhesives

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

2.15 Composite Products

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

2.16 Cleaners and Solvents

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

End of Section

1. Fires

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

2. Disposal of Wastes

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

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

3. Asbestos and Hazardous Substances

1. General Contractor is to inform Architect in the event of encountering material suspected of containing asbestos or hazardous substances.

2. Architect will notify owner of such findings and owner to engage directly a certified Asbestos Abatement Contractor.

End of Section

1. General

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

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

3. Prevent accumulation of wastes which create hazardous conditions.

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

2. Materials

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

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

3. Cleaning During Construction

1. Maintain project grounds, and public properties free from accumulations of waste materials and rubbish.

2. Remove waste materials, and rubbish from site.

3. Vacuum clean interior building areas when ready to receive finish painting, and continue vacuum cleaning on an as-needed basis until building is ready for substantial completion or occupancy.

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

4. Final Cleaning

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

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

3. In preparation for Substantial Performance or Fitness for Occupancy status, whichever occurs first, conduct final inspection of interior and exterior surfaces exposed to view, and of concealed spaces.

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

5. Clean and polish glass and mirrors.

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

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

8. Clean exposed ductwork and structure.

9. Replace filters.

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

11. Clean diffusers and grilles.

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

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

End of Section

1. Requirements Included

1. Record documents, samples, and specifications.

2. Equipment and systems.

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

2. Quality Assurance

1. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

3. Format

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

2. Binders: commercial quality, 8½" x 11" maximum 2½" ring size.

3. When multiple binders are used, correlate data into related consistent groupings.

4. Cover: Identify each binder with type or printed title "Project Record Documents", list title of Project, identify subject matter of contents.

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

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

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

4. Contents, Each Volume

1. Table of Contents: Provide title of project; names, addresses, and telephone numbers of Consultant and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.

2. For each Product or System: list names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

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

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

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

5. Submission

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

2. Copy will be returned after inspection, with Consultant comments.

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

4. Submit two copies of revised volumes of data in final form within ten days after final inspection.

5. For contract drawings (architectural, landscaping, structural, mechanical, electrical), transfer neatly as-built notations onto second set and submit both sets.

6. Prepare digital pdf file for submission on CD of USB of completed closeout documents.

6. Record Documents and Samples

1. In addition to requirements in General Conditions, maintain at the site for Owner one record copy of:
   .1 Contract Drawings.
   .2 Specifications.
   .3 Addenda
   .4 Change Orders and other modifications to the Contract.
   .5 Reviewed shop drawings, product data and samples.
   .6 Field test records.
   .7 Inspection certificates.
   .8 Manufacturer's certificates.

2. Store Record Documents and Samples in Field Office apart from documents used for construction. Provide files, racks, and secure storage.

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

4. Maintain Record Documents in a clean, dry, and legible condition. Do not use Record Documents for construction purposes.

5. Keep Record Documents and samples available for inspection by Consultant.

7. Recording As-Built Conditions

1. Consultant will provide two (2) complete sets of white prints of project drawings and two (2) complete sets of specifications for the purpose of recording as-built conditions. Mark and record one set on an on-going basis as construction proceeds. **Near the end of the construction period transfer all marks neatly to second set for submission as project record documents.**

2. Refer to drawings/specifications for additional mechanical and electrical requirements.

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

4. Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:
   .1 Measure depths of elements of foundation in relation to finish first floor datum.
   .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
   .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
   .4 Field changes of dimension and detail.
   .5 Changes made by change orders.
   .6 Details not on original Contract Drawings.
   .7 References to related shop drawings and modifications.

5. Specifications: legibly mark each item to record actual construction, including:
   .1 Manufacturer, trade name, and catalog number of each project actually installed, particularly optional items and substitute items.
   .2 Changes made by Addenda and Change Orders.

6. Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

8. Digital As-Built Drawings

1. Retain the services of a CAD drafting company acceptable to the consultant to prepare digital CAD As-Built documents for all Architectural and Engineering drawings.

2. After the consultant has found the Redlined As-Built drawings to be acceptable, transfer to digital file all information recorded on As-Built drawings. Layering of information as per consultant's instructions.

9. Equipment and Systems

1. Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

2. Panelboard Circuit Directories: provide electrical service characteristics, controls, and communications.

3. Include installed colour coded wiring diagrams.

4. Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instruction. Include summer, winter, and any special operating instructions.

5. Maintain Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair and reassemble instructions; and alignment, adjusting, balancing, and checking instructions.

6. Provide servicing and lubrication schedule, and list of lubricants required.

7. Include manufacturer's printed operation and maintenance instructions.

8. Include sequence of operation by controls manufacturer.

9. Provide original manufacturer's parts lists, illustrations, assembly drawings, and diagrams required for maintenance.

10. Provide installed control diagrams by controls manufacturer.

11. Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.

12. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

13. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

14. Include test balancing reports as specified in mechanical specifications.

15. Additional Requirements: As specified in individual specification sections.

10. Materials and Finishes

1. Building Products, Applied Materials, and Finishes: include product data, with catalog number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.

2. Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

3. Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommend schedule for cleaning and maintenance.

4. Additional Requirements: as specified in individual specifications sections.

11. Guarantees, Warranties and Bonds

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

2. List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal. Use Guarantee/Warranty Form as provided in Section 01721 whenever standard preprinted trade or manufacturer's Guarantee/Warranty forms are not available.

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

4. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.

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

6. Co-execute submittals when required.

7. Retain warranties and bonds until time specified for submittal.

End of Section

1. Notes

1. To be made out on the letterhead of Guarantor or Warrantor which usually is a Subcontractor.

2. This format is to be used only when standard preprinted trade or manufacturer's forms are not available. Preprinted forms are to include all elements of information shown on this sample or as a minimum.

3. Comply with Requirements for Guarantee/Warranty as specified in Section 01720, Article 10.

To: Township of West Lincoln
318 Canborough Street, West Lincoln, Ontario L0R 2A0

Date: _____

SECTION _____

TITLE _____

GUARANTEE/WARRANTY TO:

OWNER	Township of West Lincoln
PROJECT	Municipal Building Renovations
ARCHITECT	Grguric Architects Incorporated
REFERENCE	(to specifications or drawings)
TIME	Period of Guarantee/Warranty:_____ years
GUARANTEE/ WARRANTY	Starting Date: Substantial Performance as certified by Architect Date: _____

(Description of Guarantee/Warranty)

_____

_____

_____

Upon written notification from the Owner or the Consultant that the above work is defective any repair or replacement work required shall be to the Consultant's satisfaction at no cost to the Owner.

This guarantee shall not apply to defects caused by the work of others, maltreatment of materials, negligence or Acts of God.

SUBCONTRACTOR

_____ _____
Signature Date

Authorized Signing Officer:

_____
(Name Printed)

_____
Title

Name of Firm: _____

Address: _____

Telephone Number _____

CONTRACTOR

_____ _____
Signature Date

Authorized Signing Officer:

_____ _____
(Name Printed)

_____
Title

Name of Firm: _____ SEAL

Address: _____

Telephone Number _____

End of Section

1. Maintenance Manual

1. On completion of project, submit to Architect two (2) copies of Operations Data and Maintenance Manual in English, made up as follows:

    .1 Bind data in vinyl hard covered, 3 ring loose leaf binder for 8½" x 11" size paper.
    .2 Enclose title sheet, labeled "Operation Data and Maintenance Manual", project name, date and list of contents.
    .3 Organize contents into applicable sections of work to parallel project specification break-down. Mark each section by labeled tabs protected with celluloid covers fastened to hard paper dividing sheets.
    .4 A digital copy of all documents in the operations and manuals must be provided on a CD or memory stick format to be PDF.

2. Include following information, plus data specified.

    .1 Maintenance instructions for finished surface and materials.
    .2 Copy of hardware and paint schedules.
    .3 Description, operation and maintenance instructions for equipment and systems, including complete list of equipment and parts list. Indicate nameplate information such as make, size, capacity, serial number.
    .4 Names, addresses and phone numbers of sub-contractors and suppliers.
    .5 Guarantees, Warranties and bonds showing:
        .1 Name and address of project.
        .2 Guarantee commencement date (date of Final Certificate of Completion).
        .3 Duration of guarantee.
        .4 Clear indication of what is being guaranteed and what remedial action will be taken under guarantee.
        .5 Signature and seal of Contractor.
        .6 Additional material used in project listed under various Sections showing name of manufacturer and source of supply.

3. Neatly type lists and notes. Use clear drawings, diagrams or manufacturers' literature.

4. Include in the Manuals a complete set of final shop drawings indicating corrections and changes made during fabrication and installation.

End of Section

1. General

1. **Bonds:** Refer to Standard Contract Document CCDC No. 2, 2008 for bonding requirements for this project, both at the time of tender submission and throughout the duration of the construction period.

2. Standard Warranty

1. Refer to Standard Contract Document CCDC No. 2, 2008 for warranty requirements and conditions for the standard warranty which is required for the work of this contract.

3. Extended Warranties

1. Refer to individual specifications sections for requirements of extended warranties required for particular sections or items of work.

2. Extended warranties are required to be issued by manufacturers, fabricators, suppliers and/or installers, sometimes jointly, due to their unique position in the construction process and their ability to guarantee a particular section of work. Refer to individual requirements of extended warranties requested.

3. Unless specifically noted otherwise, all extended warranties shall commence on the date of Substantial Performance of the Work as certified by the Consultant.

4. Listed below is a summary of extended warranties required for individual Sections. This list, if inconsistent with the specified requirements of individual extended warranties, shall be deemed correct with respect to length of extended warranties. Extended warranties required shall include, but not be limited to, the following:

   Extended warranties (total warranty period listed, including entire building warranty)

Millwork (Section 06400)	2 years
Sealants (Section 07900)	2 years
Steel Doors and Frames (Section 08100)	as noted
Wood Doors (Section 08211)	3 years
Aluminum Windows (Section 08520)	10 years
Glazing (Section 08800)	5 years
Acoustic grids and tiles (09510)	2 years
Carpet Tile (Section 09670)	manufacturer
Painting (Section 09900)	2 years
Asphalt shingles (Section 07310)	15 years

End of Section

PART 1 - GENERAL

1.1 Related Work Specified Elsewhere

1. Not applicable.

1.2 Existing Conditions

1. Take over structures to be demolished based on their conditions (on date that tender is accepted).

1.3 Demolition Drawings

1. Where required by authorities having jurisdiction, submit for approval drawings, diagrams or details clearly showing sequence of disassembly work or supporting structures.

1.4 Protection

1. Prevent movement, settlement or damage of adjacent grades. Provide bracing, shoring as required.

2. Prevent debris from blocking surface drainage inlets which must remain in operation.

3. Protect existing items designated to remain and materials designated for salvage. In the event of damage to such items, immediately replace or make repairs to approval of Owner and at not cost to Owner.

PART 2 - PRODUCTS

1. Not applicable.

PART 3 - EXECUTION

3.1 Work

1. Dispose of demolished materials except where noted otherwise.

3.2 Safety Code

1. Unless otherwise specified, carry out demolition work in accordance with Canadian Construction Safety Code 1980.

2. Should material resembling spray or trowel-applied asbestos be encountered, notify Architect. Any asbestos encountered will be removed by the Owner's Contractor.

3.3 Preparation

1. Disconnect electrical and telephone service lines entering areas to be demolished as per rules and regulations of authorities having jurisdiction. Post warning signs on electrical lines and equipment which must remain energized to serve other areas during period of demolition.

2. Inspect site and rectify with Architect items designated for removal and items to remain.

3. Disconnect and cap mechanical services in accordance with requirements of local authority having jurisdiction.

4. Natural gas supply lines to be removed by gas company or by qualified tradesman in accordance with gas company instructions.

3.4 Demolition & Field Work

1. Demolish areas as indicated on the drawings.

2. Remove existing equipment, services and obstacles, where required, for refinishing or making good of existing surfaces, and replace same as work progresses.

3. 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).

4. Demolish in a manner to minimize dusting. Keep dusty materials wetted.

5. Demolish masonry and concrete walls in small sections. Carefully remove and lower structural framing and other heavy or large objects.

6. Burning materials on site is not permitted.

7. Remove contaminated or dangerous materials from site and dispose of in safe manner.

8. Employ rodent and vermin exterminators to comply with health regulations.

3.5 Salvage

1. Carefully dismantle items containing materials for salvage and stock pile salvaged materials at locations as directed by Architect. Refer to drawings for salvaged materials.

3.6 Restoration

1. Upon completion of work, remove debris, trim services and leave work site clean.

2. Restore all finished material where partial wall partitions have been removed.

3. Reinstall areas and existing works outside areas of demolition to match condition of adjacent, undisturbed areas.

3.7 Scheduling

1. Demolition of areas adjacent to occupied spaces may not occur during occupancy of these spaces. Contractor to schedule the demolition of these areas to occur after school hours or weekends.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. The General Conditions and Supplementary General Conditions, and all other requirements of Division 00 and 01, shall apply to this Section of the Work.

2. Section 03200 - Concrete Reinforcement.

3. Supply of Sleeves for Mechanical and Electrical Works, Division 15 - Mechanical, Division 16 - Electrical.

1.2 References

1. CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

2. CAN/CSA-A5-93, Portland Cement.

3. CAN3-A362-93, Blended Hydraulic Cements.

4. CSA-A23.1-94, Concrete Materials and Methods of Concrete Construction.

5. CSA-A23.2-94, Methods of Test for Concrete.

6. CAN/CSA-A23.5-M86(R1992), Supplementary Cementing Materials.

7. CAN3-A266.1-78, Air-Entraining Admixtures for Concrete.

8. CAN3-A266.2-78, Chemical Admixtures for Concrete.

9. CAN3-A266.4-78, Guidelines for the Use of Admixtures in Concrete.

10. CAN3-A-266.6-85, Superplasticizing Admixture for Concrete.

11. CAN/CSA A363-M88 (R1996), Cementitious Hydraulic Slag.

12. ASTM C309, Curing Compound.

13. ASTM D1751, Asphalt - Impregnated Fibre Board.

1.3 Samples

1. Submit samples in accordance with Section 01340 - Submittals.

2. At least 4 weeks prior to commencing work, inform Consultant of proposed source of aggregates and provide samples.

3. At least 4 weeks prior to commencing work, submit to Consultant samples of following materials proposed for use:
   .1 2 kg of each type of Portland cement.
   .2 1 kg of each type of supplementary cementing material.
   .3 2 kg of each type of blended hydraulic cement.
   .4 1 L of each admixture.
   .5 1 L of curing compound.
   .6 1 m length of each type of joint filler such as expansion joint and water stop.

1.4 Certificates

1. Minimum 4 weeks prior to starting concrete work submit to Consultant manufacturer's test data and certification by qualified independent inspection and testing laboratory that following materials will meet specified requirements:
   .1 Portland cement.
   .2 Blended hydraulic cement.
   .3 Supplementary cementing materials.
   .4 Grout.
   .5 Admixtures.
   .6 Aggregates.
   .7 Water.
   .8 Waterstops.
   .9 Waterstop joints.
   .10 Joint filler.
   .11 Expansion joints.

2. Provide certification that mix proportions selected will produce concrete of quality, yield and strength as specified in concrete mixes, and will comply with CSA-A23.1-94. Provide superplasticizer and retarder if required as approved by Consultant. Adding water on site will not be permitted.

3. Provide certification that plant, equipment, and materials to be used in concrete comply with requirements of CSA-A23.1-94.

4. Submit detail drawings for anchor bolt setting.

1.5 Quality Assurance

1. Minimum 4 weeks prior to starting concrete work, submit proposed quality control procedures for Consultant's approval for following items:
   .1 Hot weather concrete.
   .2 Cold weather concrete.
   .3 Sealing.
   .4 Curing.
   .5 Finishes.
   .6 Formwork removal.
   .7 Joints.

1.6 Preconstruction Meeting

1. Prior to start of work, arrange for project Site meeting for all parties associated with work of this Section. Presided by Owner□s Designee, meeting shall include the Contractor, Sub-Contractor performing work of the Section and Testing Company's Representative.

2. Meeting shall review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials to be used, installation of materials, sequence and quality control, project staffing, restrictions on areas of concrete placement and other matters affecting construction, to permit compliance with intent of this Section.

PART 2 - PRODUCTS

2.1 Materials

1. Portland cement: to CAN/CSA-A5-93.

2. Blended hydraulic cement: to CAN3-A362-93 Type M.

3. Supplementary cementing materials: to CAN/CSA-A23.5-M86 (R1992).

4. Cementitious hydraulic slag: to CAN/CSA-A363-M88 (R1996).

5. Water: to CSA-A23.1-94.

6. Aggregates: to CSA-A23.1-94. Coarse aggregates to be normal density.

7. Air entraining admixture: to CAN3-A266.1-78.

8. Chemical admixtures: to CAN3-A266.2-78. Consultant to approve accelerating or set retarding admixtures during cold and hot weather placing.

9. Non shrink premix grout: Sealtight V-1 Non Metallic Grout by W.R. Meadows, compressive strength 30 MPa or approved equal.

10. Curing compound: to CSA-A23.1-94 white and to ASTM C309, Type Sealtight 1100 clear All Resin Concrete Curing Compound by W.R. Meadows or approved equal.

11. Cushion pads: tough, resilient, weather, moisture, and oil resistant material that will not corrode or cause corrosion, consisting of either layers of approved cotton duck saturated and bound together by approved rubber or synthetic compounds, or made from specially compounded synthetic materials.

12. Premoulded joint fillers:
    .1 Asphalt impregnated fiber board: to ASTM D1751. Sealtight fibre joint filler by W.R. Meadows or approved equal.

13. Dovetail anchor slots: minimum 0.6 mm thick galvanized steel with insulation filled slots.

14. Polyethylene film: 0.25 mm thickness (10 mils) to CAN/CGSB-51.34-M86

15. Water Stop: 102 mm, Type 6380 PVC. Water stop Sealtight by W.R. Meadows or approved equal.

2.2 Concrete Mixes

1. Proportion normal density concrete in accordance with CSA-A23.1-94
   - .1 Mix design for footings:
     - .1 Cement: Type 10 Portland cement.
     - .2 Minimum compressive strength at 28 days: 25 MPa.
     - .3 Water Cement Ratio: 0.55 (Maximum)
     - .4 Class of exposure: N.
     - .5 Air content: 0%
     - .6 Nominal size of course aggregate: 20 mm
     - .7 Slump at time and point of discharge: 80 mm ± 30 mm.
   - .2 Mix design for foundation walls, retaining walls and piers.
     - .1 Cement: Type 10 Portland
     - .2 Minimum compressive strength at 28 days: 30 MPa
     - .3 Water/Cement Ratio: 0.50
     - .4 Class of exposure: F1
     - .5 Air Content: 5% – 8%
     - .6 Nominal size of course aggregate: 20 mm
     - .7 Slump at time and point of discharge: 80 mm ± 30 mm
   - .3 Mix design for interior slabs on grade:
     - .1 Cement: Type 10 Portland
     - .2 Minimum compressive strength at 28 days: 30 MPa
     - .3 Water/Cement Ratio: 0.55 (Maximum)
     - .4 Class of exposure: N
     - .5 Air Content: N/A
     - .6 Nominal size of course aggregate: 20 mm
     - .7 Slump at time and point of discharge: 80 mm ± 30 mm
   - .4 Mix design for exterior slabs on grade:
     - .1 Cement: Type 10 Portland
     - .2 Minimum compressive strength at 28 days: 35 MPa
     - .3 Water/Cement Ratio: 0.40 (Maximum)
     - .4 Class of exposure: C-1
     - .5 Air Content: 5% - 8%
     - .6 Nominal size of course aggregate: 20 mm
     - .7 Slump at time and point of discharge: 80 mm ± 30 mm
   - .5 Mix design for bond beams reinforced block cells and concrete topping.
     - .1 Cement: Type 10 Portland

.2 Minimum compressive strength at 28 days: 20 MPa
.3 Water/Cement Ratio: 0.55 (Maximum)
.4 Class of Exposure: N
.5 Air Content: 0
.6 Nominal size of course aggregate: 10 mm.

PART 3 - EXECUTION

3.1 Preparation

1. Obtain Owner's approval before placing concrete. Provide 24 hr. notice prior to placing of concrete.

2. Pumping of concrete is permitted only after approval of equipment and mix.

3. Ensure reinforcement and inserts are not disturbed during concrete placement.

4. Prior to placing of concrete submit procedure and obtain Consultant's approval of proposed method for protection of concrete during placing and curing in adverse weather. Any concrete not backfilled to a minimum depth of 1200 mm must be protected against the possibility of freezing.

5. While curing concrete the maximum permissible temperature differential between the concrete surface and ambient must be maintained as per CSA A23.1-94.

6. Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.

7. Do not place load upon new concrete until authorized by Consultant.

3.2 Construction

1. Do cast-in-place concrete work in accordance with CSA-A23.1-94.

2. Cold and Hot Weather Concreting:
   .1 Place, cure and protect all concrete as per CAN/CSA-A23.1-94.

3. Sleeves and inserts:
   .1 No sleeves, ducts, pipes or other openings shall pass through joists, beams, column capitals or columns, except where indicated or approved by Consultant.
   .2 Where approved by Consultant, set sleeves, ties, pipe hangers and other inserts and openings as indicated or specified elsewhere. Sleeves and openings greater than 100 x 100 mm not indicated, must be approved by Consultant.
   .3 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain approval of modifications from Consultant before placing of concrete.
   .4 Check locations and sizes of sleeves and openings shown on drawings and co-ordinate with Mechanical and Electrical work.

4. Anchor bolts, Ladder Rungs and Embedded Steel Plates:
   .1 Set anchor bolts to templates under supervision of appropriate trade prior to placing concrete.
   .2 With approval of Consultant, grout anchor bolts in preformed holes or holes drilled after concrete has set. Formed holes to be minimum 100 mm diameter. Drilled holes to be minimum 25 mm larger in diameter than bolts used to manufacturer's recommendations.
   .3 Protect anchor bolt holes from water accumulations, snow and ice build-ups.
   .4 Set bolts and fill holes with shrinkage compensating grout.
   .5 Locate anchor bolts used in connection with expansion shoes, rollers and rockers with due regard to ambient temperature at time of erection.
   .6 Set ladder rungs in side sump pits.
   .7 Set all steel plates, curb angles and any other miscellaneous embedded structural steel items prior to placing concrete.

5. Drainage holes and weep holes:
   .1 Form weep holes and drainage holes in accordance with Section 03100 - Concrete Formwork and Falsework. If wood forms are used, remove them after concrete has set.
   .2 Install weep hole tubes and drains as indicated.

6. Grout under base plates using procedures in accordance with manufacturer's recommendations which result in 100% contact over grouted area.

7. Finishing:
   .1 Finish concrete in accordance with CSA-A23.1-94.
   .2 Use procedures acceptable to Consultant or those noted in CSA-A23.1-94 to remove excess bleed water. Ensure surface is not damaged.
   .3 Use curing compounds compatible with applied finish on concrete surfaces.
   .4 Provide screed float swirl-troweled finish unless otherwise indicated.
   .5 Rub exposed sharp edges of concrete with Carborundum to produce 3 mm radius edges unless otherwise indicated.
   .6 Finished top surface of floor slabs, to be smooth and level, ready to receive architectural floor finish directly to the slab top.
8. Joint fillers:
   .1 Furnish filler for each joint in single piece for depth and width required for joint, unless otherwise authorized by Consultant. When more than one piece is required for a joint, fasten abutting ends and hold securely to shape by stapling or other positive fastening.
   .2 Locate and form construction joints as indicated. Install joint filler.

9. Install weep tile where shown on architectural drawings.

3.3 Site Tolerance

1. Concrete tolerance including all embedded item setting tolerances in accordance with CSA-A23.1-94.

3.4 Field Quality Control

1. Inspection and testing of concrete materials will be carried out by a Testing Laboratory designated by Owner.

2. Owner will pay for costs of tests.

3. Inspection or testing by Owner will not augment or replace Contractor quality control nor relieve him of his contractual responsibility. The Contractor is responsible for all test needed to certify strength of concrete prior to removal of formwork.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. See also related notes on Structural Drawings

1.2 Reference Standards

1.	CSA-S304.1-04	Design of Masonry Structures
2.	CSA- A370-04 (R2009)	Connectors to Masonry.
3.	CAN/CSA-A371-04 (R2009)	Masonry Construction for Buildings.
4.	CSA A179-04 (R2009)	Mortar and Grout for Unit Masonry
5.	CSA-A82-06	Fired Masonry Brick From Clay or Shale
6.	CSA A165 Series-04	CSA Standards for Concrete Masonry Units.
7.	CSA G30.18-09	Carbon Steel Bars for Concrete Reinforcement
8.	CAN/CSA-A3000-08	Cementitious Materials Compendium
9.	ASTM A951/A951M-06	Standard Specification for Steel Wire for Masonry Joint Reinforcement
10.	ASTM C216-07a	Standard Specification for Facing Brick (Solid Masonry Units Made from Clay of Shale)
11.	ASTM C568-08a	Standard Specification for Limestone Dimension Stone
12.	ASTM A1064/A1064	Standard Specification for Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
13.	ASTM C331-05	Standard Specification for Lightweight Aggregates for Concrete Masonry Units
14.	ASTM A153/A153M-09	Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

1.3 Source Quality Control

1. Submit laboratory test reports certifying compliance of masonry units (and mortar ingredients) with specification requirements.

2. All masonry: mortar and grout is to be tested in accordance with CSA-S304.

1.4 Product Delivery, Storage and Handling

1. Ensure that materials are delivered to job site in dry condition.

2. Except where wetting of bricks is specified, keep materials dry until use.

3. Store under waterproof cover on pallets or plank platforms held off ground by means of plank or timber skids.

4. Store cement under cover. Keep dry and unfrozen.

5. Pile sand on platforms. Exclude foreign matter.

6. Materials stacked on floors of building shall not exceed structural design loads.

1.5 Cold Weather Requirements

1. Comply with Clause 6.7.2 of CSA-A371.

1.6 Hot Weather Requirements

1. Protect freshly laid masonry from drying too rapidly, by means of waterproof, non-staining coverings.

1.7 Protection

1. Until completed and protected by flashings or other permanent construction, keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain.

2. Protect masonry and other work from marking and other damage. Protect completed work from mortar droppings. Use non-staining coverings.

3. Provide temporary bracing of masonry work during and after erection until permanent lateral support is in place.

4. When air temperature has dropped below 0 degrees C (eg. Overnight), ensure that materials are above freezing and free from ice when installed.

5. Prevent work from freezing for at least 48 hours by enclosure, artificial heat, or other acceptable method.

6. Provide adequate bracing to walls during erection to prevent damage due to winds or other lateral loads.

7. Make good any damage to masonry work until completion of the work.

8. Build masonry in enclosures heated by approved smokeless means, when temperature remains below 0 degrees C. All materials shall be above 4 degrees when installed.

9. Demolish and replace masonry work damaged by freezing.

10. Supplement CSA-A371 as follows:

    .1 Maintain temperature of mortar between 5 degrees Celsius and 50 degrees Celsius until used.

PART 2 - PRODUCTS

2.1 Materials

1. **Clay Masonry Units:**
   Match existing brick units size and colour for main field and accent banding.
   Allow for the following units:
   1. Main Field – Williamsburg Mark II – Meridian Brick
   2. Accent Banding – Sundance Matt – Meridian Brick
   3. Precast accent corner – 8”x8”x4” stone – Arriscraft or Approved equal by Shouldice Designer Stone

   Note: Reclaim existing brick at new openings for windows. Reuse existing brick for saw-tooth patching at window openings.

   .2 Refer to drawings for locations.

2. **Portland Cement:**

   .1 Type 10, in accordance with CSA A3001.

3. **Masonry Cement:**

   .1 Type “S” and shall comply with CSA A3002.

4. **Hydrated Lime**:

   .1 Type “S” in accordance with CSA A179.

5. **Aggregate:**

   .1 Fine grain aggregate, grading in accordance with CSA A179. When 6mm joints are specified, grain shall pass through a 1.18 mm sieve.

6. **Water:**

   .1 Ensure that water contains no salts which may cause efflorescence.

7. **Horizontal Masonry Reinforcing:**

   .1 Welded truss type or ladder type, as specified from wire to ASTM A951, hot dipped galvanized after fabrication to ASTM A153-05, Class B2, minimum coating 457 G/m2, wire size 4.76 mm diameter. Reinforcing as per the following:
   - Single wythe walls Dur-O-Wal DW 100;
   - Double wythe walls (up to 390 in width) Dur-O-Wal DW 120;
   - Double wythe walls (greater than 390) Dur-O-Wal DW 220;
   - Cavity Walls Blok-Lok- Blok truss II - BL37 to accommodate 95 mm cavity with 64 mm thick insulation.
   - Use Blok-truss BL 30- or DW 100 if using Ferro slotted block ties.

   .2 Similar reinforcing by Dur-O-Wal, Blok-Lok, and Hohmann & Barnard Inc. is acceptable.

8. **Reinforcing Bars:** billet steel to grade 400, deformed bars to CSA-G30.18.

9. **Bolts and Anchors:** To CSA-A370.

10. **Natural Mortar:**

   .1 **Generally:** Use materials only as specified in CSA A179. Ensure that weather and aggregate used in mortar, other than in walls buried in earth, will not cause efflorescence.

   .2 **Mixes:** Mix mortars as specified in CSA A179 using the Proportion Specification.

   .3 **Mortar Types:**

      .1 For masonry walls in contact with earth and bedding forbearing plates and lintels: Mortar Type “S”.

      .2 For load-bearing walls: Mortar Type “S”.

      .3 For brick: Mortar Type “N” (1:1:6) premixed “Betomix 1-1-6”, portland cement, “S” type, hydrated lime as supplied by Daubois Inc., Jiffy Mortar Systems or approved equivalent. Mix on site with sand, water, and colour pigment.

      .4 For all other masonry walls, use regular Type “N” mortar.

   .4 **Grout:** To CSA A179 Table 5.

11. **Colour Pigments:** Pigments constituted of ground colored natural aggregates or metallic oxide pigments, color by architect, the ratio of coloring agent/density of portland/lime shall not exceed 10%.

12. **Mortar Dropping Control Device**: “Mor-Control” manufactured by DUR-O-WAL or Mortar-Net.

PART 3 - EXECUTION

3.1 Workmanship

1. Build masonry plumb, level, and true to line, with joints in proper alignment.

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

3. Set out and build masonry work to the respective dimensions called for on the drawings. Build and lay the block true to line, and level, align vertical joints. Keep angles, reveals, etc. square and plumb.

4. Assume complete responsibility for dimensions of this work.

5. Construct masonry fire rated assemblies in accordance with tested design specifications.

6. Make all joints uniform, in line, square and plumb, with mortar compressed to form joints as specified.

7. Course units to bring wall to required elevations using even, uniform, horizontal and vertical joints of maximum 10mm thickness. Horizontal joints brick soldier coursing to suit adjacent running bond.

8. Check and co-ordinate location of all anchors, connections and built-in items.

9. Bond units at intersection of walls by horizontal prefabricated “tee” or corner reinforcing units.

10. Lay each solid unit in full bed or mortar. Fill vertical joints. Slushing of joints not permitted.

11. Base course to be solid concrete masonry units laid in full mortar bed.

12. Lay each hollow unit in full bed or mortar for face shells. Butter vertical joints full. When laying closure units, butter vertical units already in place instead of units being placed.

13. Lay exposed masonry units using blocks having square, unbroken edges and corners.

14. Tolerances:

    .1 Variation from mean plane: 6 mm when measured with 3000 mm straight edge.
    .2 Variation from plumb: 6 mm on any vertical line up to 6000 mm high.
    .3 Variation in wall opening sizes: 6 mm maximum.
    .4 Variation of building lines from plan: in any bay or 6000 mm maximum – 12 mm or in 1200 mm or more, 20 mm.

15. Lay out masonry units carefully so as to run as often as possible in full and half unit dimensions. All exposed ends shall match the finish of the faces.

16. All units cut around pipes, ducts, openings, etc. shall be accurately and neatly cut with a power carborundum wheel, and remaining voids shall be slushed full with mortar.

17. Make joints flush and smooth on both sides excepts where they are to be exposed to view. When exposed to view, tool the joints concave, unless otherwise noted.

18. Lay and set up all units carefully so that both faces of the walls are true and even. Do not use chipped or cracked units where exposed to view, even where the defect would not impair strength or durability.

19. Take particular care to keep cavities, weep holes, vents and exposed faces of all units free of mortar.

3.2 Tolerances

1. Clause 6.2 of CAN3-A371 applies except as follows: Walls to receive thinset ceramic tile: plumb within 1:600.

3.3 Exposed Masonry

1. Remove chipped, cracked, and otherwise damaged units in exposed masonry and replace with undamaged units.

3.4 Jointing

1. Concave joints, allow joints to set just enough to remove excess water, then tool with round jointer to provide smooth, compressed, uniformly concave joints.

2. Raked joints, where split rib blocks are used, allow joints to set just enough to remove excess water, then rake joints uniformly to depth of rib and compress with square tool to provide smooth, compressed, raked joints of uniform depth.

3. Where joints are concealed in walls and where walls are to receive plaster, tile insulation, or other applied material, except paint or similar thin finish coating, strike flush.

3.5 Joining of Work

1. Where necessary to temporarily stop horizontal runs of masonry, and in building corner, Step-back masonry diagonally to lowest course previously laid. Do not "tooth" new masonry. Fill in adjacent course before heights of stepped masonry reach 1200 mm.

3.6 Cutting

1. Cut out neatly for electrical switches, outlet boxes, and other recessed or built-in objects.

2. Make cuts straight, clean, and free from uneven edges. Use masonry saw where necessary.

3.7 Building-In

1. Build in items required to be built into masonry by other trades.

2. Prevent displacement of built-in items during construction. Check for plumbness, alignment, and correctness of position, as work progresses.

3. Brace door jambs to maintain plumbness. Fill door frame with concrete.

3.8 Wetting of Bricks

1. Except during winter, wet clay brick having an initial rate of absorption exceeding 1g/min/100mm^2; wet to uniform degree of saturation, to 24 hours before laying, and do not lay until surface is dry.

2. Similarly, wet tops of walls built of bricks qualifying for wetting, when recommencing work on such walls.

3.9 Support of Loads

1. Where concrete fill is used in lieu of solid units, use 20 MPa concrete to Section 03300.

2. Install building paper below voids to be filled with concrete; keep paper 25 mm back from faces of units.

3.10 Provision for Movement

1. Leave 5 mm space below shelf angles.

2. Leave 6 mm space and do not use wedges between tops of non-load bearing walls and partitions and structural elements.

3.11 Loose Steel Lintels

1. Install loose steel lintels. Centre over opening width.

3.12 Control Joints

1. Except as noted following, control joints required at maximum of 6000 mm o.c. in continuous walls having no openings, intersections or column locations. Refer to elevations for locations on exterior walls and advise Consultant of variances prior to executing the work. Control joints are not shown for clarity on the drawings for interior walls. If in doubt, request assistance from the Consultant.

2. At doorway locations, unless indicated otherwise on elevation drawings, use one side of doorway beyond lintel. Use building paper to prevent that end of lintel to bond.

3. Use standard block with concrete filled end core to form key. Line one side of core with building paper before filling core to prevent bonding. Complete vertical separation, full height and thickness of wall are required.

4. Stop masonry reinforcing at each side of the joints. Caulking specified in Section 07900.

5. At expansion joints in brick and veneer, install Rapid Expansion joint DA 2015, to leave vertical joint free of mortar to allow for horizontal expansion.

3.13 Horizontal Reinforcing

1. Horizontal reinforcing at 400 mm o.c. (every 2nd course), except solid walls greater than, or equal to 340 mm in width. At 340 mm, or greater, horizontal reinforcing at 200 mm o.c. (every course). Use prefabricated corners and tees at all intersecting load bearing walls.

3.14 Vertical Reinforcing

1. Install vertical reinforcing to size and spacing as shown on Drawings. Fill voids with 20MPa concrete.

3.15 Bonding

1. Walls of two or more widths: bond using metal ties in accordance with subsection 9.4 of CSA-A371.

2. Procedure approval by Architect.

3. In cavity walls, keep all cavity spaces free of mortar and debris by placing a wood strip on the ties. Retain strip on a wire line and pull up level and clean off droppings prior to placing next course of ties. Install mortar control device at 300 mm o.c. horizontally, in a staggered pattern so as to overlap each other on each side. Install in every 2nd course above foundation and shelf angles.

3.16 Sound and Fire Separation

1. All load bearing and non-load bearing partitions shall carry to the underside of structure above, except for allowing for deflection of structure.

2. All openings in partitions, even above ceilings shall be patched to maintain sound and fire separation.

3. In fire separations and sound separations, spaces between partition and structures to be firestopped or sound sealed under Section 07270.

4. Use U.L.C. labeled mortar for all patching in fire separations.

3.17 Testing

1. Masonry units to be tested in accordance with S304.1, Clause 15.1, for engineered masonry design, and in conformance with clause 15.1.2

2. Mortar testing to be in accordance with S304.1, clause 15.2

3. Grout testing to be in accordance with S304.1, clause 15.3

3.18 Blockwork - General

1. Do not wet concrete block before laying.

2. Lay block with thicker end of face shell upward.

3. Lay interior block in running board, concave tooled joints.

4. Use solid block or hollow block filled with concrete for top 2 courses under point bearing loads extending minimum 200 mm each side of bearing and where indicated.

5. Install special shaped units where indicated.

6. In block walls install continuous trussed wire reinforcement, as noted.

7. Where resilient base is indicated, tool the joints to within 100 mm of the floor. Cut joints flush behind the base.

8. Extend all walls/partitions to underside of steel/concrete deck unless shown otherwise on drawings and as required. Co-ordinate wall locations with structure above and prior to commencing work, advise Consultant of interference.

9. When masonry walls are not built at once, the ends of the walls are to be raked back at an angle, or terminated at a control joint. Toothing will not be permitted.

3.19 Mortar

1. Measure loose damp ingredients accurately by volume. Place water in mixer, add half volume of sand, add cement, add remainder of sand, add water for plasticity. Mix for at least four minutes. Keep mixer clean.

2. Incorporate colour into mixes in accordance with manufacturer's instructions.

3. Use clean mixer for coloured mortar.

4. Prehydrate pointing mortar by mixing ingredients dry, then mix again adding just enough water to produce damp unworkable mix that will retain its form when pressed into a ball. Allow to stand for not less than 1 hour nor more than 2 hours then remix with sufficient to produce mortar of proper consistency for pointing.

3.20 Concrete Core Fill

1. All concrete block walls shall have vertical grout core fill each side of openings and where shown and as detailed on the drawings.

2. Core fill in walls shall extend from bottom bearing surface to underside of bond beams or structure.

3. Grout core fill shall be placed with a trunk or chute in maximum lifts 2000 mm. Compaction shall be by interior mechanical vibrator. All fill shall be placed in accordance with CSA A23.1.

4. Fill minimum ½ block core each side of frame from foundation to underside of lintels of all door openings over 1 metre wide.

5. Provide inspection openings in base of walls to be grouted. Make good to match adjacent block work after inspection and approval by Engineer.

3.21 Reinforced Block Lintels

1. Install reinforced concrete block lintels at all openings where steel lintels are not indicated in accordance with structural details.

2. Install shoring and bracing as required to openings prior to placing lintel units and concrete fill.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. Commercial Steel Doors and Frames Section 08100

1.2 Source Quality Control

1. Identify lumber by grade stamp of an agency certified by Canadian Lumber Standards Administration Board.

PART 2 - PRODUCTS

2.1 Materials

1. **Wood Materials:** Material, straight, sawn square, true, dressed four (4) sides properly sized, shaped to correct dimensions from nominal sizes indicated or specified.

2. **Lumber: Use only grade marked lumber. Where left exposed, use best brand of lumber available.** Lumber and moisture content to conform to official grading rules of NLGA, for particular lumber and grade, and structurally conform to latest requirements of Ontario Building Code. Conform to Grading Standards, CSA Standard Softwood Lumber 2005. Moist content not greater than 19% at time of installation.

3. **Blocking, Cants, Bucks, Grounds and Nailing Strips:** Douglas fir Graded 122-C, construction or No. 2 Pine, pressure treated in accordance with CSA 080 Series - 08.

4. **Plywood:** Douglas fir plywood to CSA 0121-08, good one side with waterproof adhesive.

5. **Rough Hardware:** Nails, screws, bolts, lag screws, anchors, special fastening devices and supports required for erection of all carpentry components. Use galvanized components where exposed to exterior atmosphere.

PART 3 - EXECUTION

3.1 General

1. Do all wood framing in accordance with the Ontario Building Code, CSA 086-01 and Engineering Design in Wood.

2. Machine dressed work shall be slow fed using sharp cutters and finished members shall be free from drag, feathers, slivers or roughness of any kind.

3. Frame materials with tight joints rigidly held in place.

4. Design construction methods for expansion and contraction of the materials.

5. Erect work plumb, level, square and to required lines.

6. Be responsible for methods of construction for ensuring that materials are rigidly and securely attached and will not be loosened by the work of other trades.

3.2 Furring and Blocking

1. Supply and install furring and blocking, required.

2. Align and plumb faces of furring and blocking to tolerance of 1:600.

3.3 Rough Bucks, Nailers

1. Install wood bucks and nailers, as indicated, including wood bucks and linings around frames for doors and windows.

2. Except where indicated, otherwise, use material at least 1½" thick secured with 3/8" bolts located within 12" from ends of members and uniformly spaced at 48" between.

3. Countersink bolts where necessary to provide clearance for other work.

3.4 Pressure Treated Wood

1. Use wood pressure treated in accordance with CSA 080 for all wood members in contact with exterior walls and roofs.

2. Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.

3.5 Installation of Hollow Metal Frames

1. Set frames plumb and square in their exact location and at correct elevation. Firmly block and brace to prevent shifting. Shim up where required to ensure proper alignment dimensions from finished floor to head of frame. Install temporary wood spreaders at mid-height.

2. Where pressed steel frames are installed in concrete walls, secure frames to concrete using lead expansion shields and anchor bolts through pipe sleeves. Perform drilling of concrete as required. Fill recessed bolt heads flush to frame face with approved metal filler and sand smooth.

3. Install fire rated doorframes in accordance with requirements of National Fire Code Volume 4, produced by The National Fire Protection Association (NFPA 80).

3.6 Wood blocking for steel stud partitions

1. Supply and install ¾" plywood fastened to 2" x 4" wood studs (fastened to steel studs) to provide solid backing for fastening of toilet partitions, grab bars, millwork etc.

3.7 General

1. Supply and install all other carpentry shown on drawings or as required for completion of work. Cooperate with other trades in installing items supplied by other sections, cut openings in woodwork when so required and make good disturbed surfaces.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. Rough Carpentry: Section 06100
2. Painting: Section 09900

1.2 Reference Standards

1. Do millwork to Millwork Standards of the Architectural Woodwork Manufacturers' Association of Canada (AWMAC) Premium Grade.

1.3 Samples

1. Submit duplicate 300 x 300 mm samples of each type of paneling laminate, melamine and each type of solid wood or plywood to receive stain or natural finish.
2. Submit sample of each type of hardware specified in accordance with Section 01340.
3. Submit a typical prototype unit representative of the work of this section.

1.4 Shop Drawings

1. Submit shop drawings in accordance with Section 01340.
2. Clearly indicate details of construction, profiles, jointing, fastening and other related details.

1.5 Qualification

1. Millwork manufacturer to have not less than 5 years proven first class experience in institutional millwork and shall be a member of AWMAC.

1.6 Warranty

1. Submit a 2 year warranty for the work of this section against defects in material and workmanship.

PART 2 - PRODUCTS

2.1 Materials

1. Softwood lumber: to CSA 0121-M1978 and National Lumber Grades Authority (NLGA) requirements, with maximum moisture content of 10% for interior work. Yard lumber select for natural finish of species, indicated to AWMAC premium grade.

2. Hardwood lumber: to National Hardwood Lumber Association (NHLA) requirements, moisture content of maximum 10% for interior work, of species indicated to AWMAC premium grade.
    .1 Species: Maple, unless otherwise noted.

3. Hardwood plywood: to CSA 0115-1967 of thickness indicated, rotary cut face veneer, birch plywood, veneer core. Select veneers to provide book match veneer strips to be 240 mm wide minimum. Grade: Select White.

4. Nails and staples: to CSA B111-1974 galvanized for exterior work, interior high-humidity areas and for treated lumber; plain finish elsewhere. Use spiral thread nails except where specified elsewhere.

5. Book Match Veneer: strips to be 240 mm wide minimum, grade: Birch Select White.

6. Particle Board core: to CAN3-0188.1-M, Grade R, 720 kg/m3 density in thicknesses indicated.

2.2 Plastic Laminate Countertop

1. Conforming to CAN3-A172, General Purpose - standard grade (GP-S), 1.25 mm thick for tops, Post Forming - standard grade (PF-S) 1.25 mm thick for post forming. Balance all panels with 0.5 mm backing sheet (BK) by same manufacturer as face panel. Use waterproof adhesive capable of holding materials together without failure. Provide acid resistant grade where shown. Finish shall be “Velvatex” or “Suede” by Arborite, or equivalent manufactured by Formica, Durolam Ltd., “Wilson Art” as distributed by Meteor Plywoods Ltd., “Micarta” distributed by Montego Forest Products Ltd., “Nevamar” distributed by Ceratec Inc., or approved equivalent by Octopus Products Limited. Allow for one (1) colour chosen by Consultant from standard line.

2.3 Melamine Faced Lamination Grade Combination Panel

1. To CAN3-0.188.1-M78, Grade “R” Fibreboard sanded faces, 13 mm, 16 mm, and 19 mm thickness, faced with laminated plastic. Melamine resin impregnated cover sheet with coloured and/or pattern paper inner layer. Thermally fuse to rigid OSB core with outer plys of hardwood veneer cross bands substrate. Melamine faces shall be 8 mil thickness. Pattern to be chosen by Consultant from manufacturer’s full range. Allow for one colour from full range of manuf. selection.
    NOTE: interior of all millwork cabinets MUST match exterior Melamine colour. WHITE interiors will not be accepted.

    .1 Acceptable Material: Melamine as manufactured by Eldorado, Flakeboard, Formica or Arborite Division of Domtar Construction Materials Ltd., are of acceptable quality but colour/pattern requires approval prior to confirmation of full acceptance.

2.3 Edge Banding

1. Solid polyvinyl chloride (PVC), 3 mm thickness x full width of panel edge, colour/pattern to match finished face of melamine panel or as selected by Consultant. All exposed edges of banding to be radiused to 2 mm radius after installation on panels. Submit sample of edge-banded panel with radiused edges to Consultant for approval prior to fabrication of architectural woodwork.

    .1 Acceptable Material: Solid PVC edging as manufactured by "Woodtape" Edge-Banding.
    .2 Acceptable Material: Solid PVC edging as manufactured by "Complast Inc."

2.4 Cabinet Hardware

1. Furnish and install all hardware to custom casework as follows:

    .1 Cupboard Doors - 19 mm thick:

Hinges	200 Series 110° Salice
Roller Catches	807N 2G(SgDr) Onward
Elbow Catches	T03222 C15 (DhDr)
Door Pulls	CBH235-3 1/2" C32D
Cupboard Locks	8703/8704 14a National

    .2 Drawers - 19 mm thick.:

Drawer Slides	KV1300X length to suit
Drawer Pulls	CBH235-3 1/2" C32D
Drawer Locks	8703 - 14a National

    .3 Shelving:

Plaster strips	KV255 Zinc Knape & Vogt
Shelf Clips	KV256 Zinc Knape & Vogt

    .4 Cupboard Doors - 35 mm thick.:

Hinges	F179 76x76 Stanley C15
Roller Catches	504N Onward C26
Surface bolt	043-4 X Angle Strike C15
Door Pulls	CBH245-4 1/2" C32D
Cupboard Locks	44F73-44FS3-626 Best Lock

2.5 Plastic Laminate and Melamine Clad Cabinetwork

1. All cabinet frames whether for base, wall or tall floor standing cases, shall be fabricated so each is a self-contained module. Front side top and bottom, exterior and interior surfaces shall be finished allowing future relocation of any module, into any bench arrangement, without need of any additional finishing.

2. Gables and panels shall be fabricated from 19 mm thick plastic laminate surfaced panels with a P.V.C. edging applied to exposed edges.

3. Bottoms shall be fabricated utilizing the same materials and edge finish as gables. Front edge will be edged with P.V.C. edging. All other edges will be thoroughly sealed and moisture proofed prior to attachment to gables.

4. Rails shall be fabricated and machined to join the gables and form a rigid cabinet frame.

5. Tops (applies to wall and tall units only) shall be fabricated utilizing the same material and edge finish as gables. Front edge will be edged with P.V.C. edging.

6. Toe kick rail shall have a 100 mm x 19 mm section, machined to receive four screw nails for attachment to bottom front edge of gables. Cabinet base shall be plywood attached to plastic laminate cabinet separately, insuring the melamine plywood core gables do not come in contact with the floor.

7. Backs in base, wall and tall cabinets shall be fabricated from 13 mm thick hardwood veneer plywood core panels securely glued and screw nailed into the check out provided in the backs of gables, tops, and bottoms.

8. Shelves shall be fabricated from 19 mm thick oriented strand board centre core with outer plys of hardwood veneer cross bands and with solid hardwood edge. All shelves shall be adjustable at 13 mm increments and each will be supported by a shelf support resting in four pilaster strips set flush and attached to the gables.

9. Cabinet Doors shall be fabricated from 19 mm thick oriented strand board centre core with outer plys of hardwood veneer cross bands and with solid hardwood edge.

10. Drawer fronts shall be fabricated utilizing the same material and edge finish as doors. All four edges shall be solid hardwood edging. Fronts will be secured to drawer bodies with five screw nails through the front of the drawer body into the core of the drawer front.

11. Drawer bodies shall consist of box construction fabricated from 13 mm hardwood plywood with solid hardwood edge, front, sides and back with a 6 mm hardboard bottom dadoed and glued into box members. Joint front, sides and back with carefully fitted glued and tenoned joints.

12. Provide filer panels at side all fronts, sides and tops of lower and upper cabinets. Filler panels to match main cabinet finish.

13. Underside of all upper cabinets to have the same finish and colour as main field cabinets.

14. **Finish:**

    .1 Melamine interior surfaced panels shall be finished both sides in the same colours, patterns, and grain as selected by the Consultant. Allow for **one** colour.

    .2 Plastic laminate exterior surfaced panels shall be finished both sides in the same colours, patterns, and grain as selected by the Consultant. Allow for one colour.

2.6 Shop Fabrication

1. Shop install cabinet hardware.

2. Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.

3. Shop assemble work for delivery to site in size easily handled and to insure passage through building openings.

2.7 Plastic Laminated Tops

1. 19 mm thick particleboard core with post-forming grade plastic laminate finish bonded with resorginal formaldehyde resin glue to a particleboard core. All countertop front face to return vertically 35 mm ± . All front and backsplash edges to be rounded.

2. Underside to receive a backing sheet, sanded one side and bonded same as surfacing material.

3. Exposed edges to be finished with same material as used for the top.

4. Drip grooves to be cut into underside of the top where exposed edges occur.

5. Splash backs, curbs and curb shelves are to be of similar construction as the tops.

6. Use acid resistant post-forming grade laminate, where indicated on drawings. Colour: black.

7. At all wall termination, provide backsplash return.

2.8 Moulding and Trims

1. Fabricate mouldings in maximum practical lengths to profile shown. Solid birch to receive varnish finish unless noted otherwise. Install with concealed fasteners. Refer to drawings.

PART 3 - EXECUTION

3.1 Installation

1. Set and secure all material and components in place, rigid, plumb and square.

2. Provide heavy duty fixture attachments for wall mounted cabinets.

3. Use draw bolts in countertop joints.

4. At junction of plastic laminate counter back splash and adjacent wall finish, apply small bead of sealant.

5. Apply water resistant building paper over wood framing members in contract with masonry or cementitious construction.

6. After installation, fit and adjust operating hardware for wood and laminated plastic cabinet doors, drawers and shelves.

End of Section

PART 1 - GENERAL

1.1 Section Includes

1. Materials and installation methods of the primary air/vapour barrier membrane system.

2. Materials and installation methods of dampproof coursing and through-wall flashing membranes.

3. Materials and installation methods for the adhesion of rigid and semi-rigid insulating materials.

1.2 Related Sections

1. Masonry: Section 04200

2. Building Insulation: Section 07212

3. Sealants: Section 07900

1.3 Submittals

1. Prior to commencing the Work, submit documentation from an approved independent testing laboratory certifying that the air leakage and vapour permeance rates of the air/ vapour barrier membranes, including primary membrane and transition sheets, exceed the requirements of the National Building Code.

2. Prior to commencing the Work submit copies of manufacturers' current ISO certification.
   Membrane, primers, sealants, adhesives and associated auxiliary materials shall be included.

3. Prior to commencing the Work submit references clearly indicating that the membrane manufacturer has successfully completed projects on an annual basis of similar scope and nature for a minimum of fifteen years. Submit references for a minimum of ten projects.

4. Prior to commencing the Work submit manufacturers' complete set of standard details for the air/vapour barrier membrane systems showing a continuous plane of air tightness throughout the building envelope.

1.4 Quality Assurance

1. Submit in writing, a document stating that the applicator of the primary air/vapour barrier membranes specified in this section is recognized by the manufacturer as suitable for the execution of the Work.

2. Perform Work in accordance with the manufacturer's written instructions of the air/vapour barrier membrane and this specification.

3. Maintain one copy of manufacturer's written instructions on site.

4. At the beginning of the Work and always during the execution of the Work, allow access to Work site by the air/vapour barrier membrane manufacturers' representative.

5. Components used in this section shall be sourced from one manufacturer, including sheet membrane, air/vapour barrier sealants, primers, mastics and adhesives.

1.5 Mock-Up

1. Construct mock-up in accordance with Section 01340 - Shop Drawings, Product Data & Samples.

2. Provide mock-up of air/vapour barrier materials under provisions of Division 1.

3. Where directed by consultant, construct typical exterior wall panel, 2 m long by 2 m wide, incorporating substrate, window frame, attachment of insulation, and; showing air/vapour barrier membrane application details.

4. Allow 24 h for inspection of mock-up by consultant before proceeding with air/vapour barrier work. Mock-up may remain as part of the Work.

1.6 Pre-Installation Conference

1. Convene one week prior to commencing work of this section, under provisions of Division

1.7 Delivery, Storage and Handling

1. Deliver materials to the job site in undamaged and original packaging indicating the name of the manufacturer and product.

2. Store role materials on end in original packaging.

3. Store liquid air/vapour barrier material, adhesives, and primers at temperatures of 5°C and above to facilitate handling.

4. Keep solvent away from open flame or excessive heat.

5. Protect rolls from direct sunlight until ready for use.

1.8 Co-ordination

1. Ensure continuity of the air/vapour barrier membrane system throughout the scope of this section.

1.9 Alternates

1. Submit requests for alternates in accordance with Division 1.

2. Alternate submission format to include:

    .1 Submit evidence that alternate materials meet or exceed performance characteristics of Product requirements and documentation from an approved independent testing laboratory certifying that the air leakage and vapour permeance rates of the air/ vapour barrier membranes, including primary membrane and transition sheets, exceed the requirements of the National Building Code.
    .2 Submit copies of manufacturers' current ISO certification.
    .3 Submit references clearly indicating that the membrane manufacturer has successfully completed projects on an annual basis of similar scope and nature for a minimum of fifteen years.
    .4 Submit manufacturers' complete set of standard details for air/vapour barrier membrane systems showing a continuous plane of air tightness throughout the building envelope.

3. Submit requests for alternates to this specification a minimum of ten (10) working days prior to tender closing for evaluation. Include a list of ten projects executed over the past ten years.

4. Acceptable alternates will be confirmed by addendum. Substitute materials not approved in writing prior to tender closing shall not be permitted for use on this project.

PART 2 - PRODUCTS

2.1 Membranes

1. Tyvek – Dupont breathable air barrier applied to exterior wall sheathing. Tape all edge with tuck tape with min. 6-inch overlap.

2. Vapour Barrier – interior 6.mil poly heavy duty plastic sheet with min. 6-inch overlap and tuck tape at all edges.

3. Through-wall flashing membrane and dampproof course (Self-Adhering): Blueskin® TWF as manufactured by Henry, a SBS modified bitumen, self-adhering sheet membrane complete with a cross-laminated polyethylene film, having the following physical properties:
    .1 Film Thickness: 0.225mm (9.0 mils);
    .2 Puncture Resistance (film); 180N minimum;
    .3 Tear Resistance (film); 58N MD;
    .4 Air leakage: <0.005 L/s•m² @ 75 Pa to ASTM E283-91;
    .5 Water vapour permeance: 2.8 ng/Pa.m².s (0.05 perms) to ASTM E96;
    .6 Low temperature flexibility: -30°C to CGSB 37-GP-56M.

Approved Equal: Air-Shield Thru-Wall Flashing by W.R. Meadows of Canada

2.2 Primers

1. Primer for self-adhering membranes: For all temperatures, Blueskin® Primer as manufactured by Bakor, a synthetic rubber based adhesive type, quick setting, having the following physical properties:

    .1 Colour: Blue;
    .2 Weight: 0.8 kg/l;
    .3 Solids by weight: 35%;
    .4 Drying time (initial set): 30 minutes.

2. Primer for self-adhering membranes: For temperatures above -4°C, Aquatac™ Primer as manufactured by Bakor, a polymer emulsion based adhesive type, quick setting, having the following physical properties:

    .1 Colour: Aqua;
    .2 Weight: 1.0 kg/l;
    .3 Solids by weight: 53%;
    .4 Water based, no solvent odours
    .5 Drying time (initial set): 30 minutes at 50%RH and 20°C.

PART 3 - EXECUTION

3.1 Examination

1. Verify that surfaces and conditions are ready to accept the Work of this section. Notify in writing of any discrepancies. Commencement of the work or any parts thereof shall mean acceptance of the prepared substrate.

3.2 Preparation

1. All surfaces must be sound, dry, clean and free of oil, grease, dirt, excess mortar or other contaminants. Fill spawled areas in substrate to provide an even plane. Strike masonry joints flush.

2. New concrete should be cured for a minimum of 14 days and must be dry before air/vapour barrier membranes are applied.

3. Where curing compounds are used they must be clear resin based without oil, wax or pigments.

3.3 Primer for Transition and Through-wall Flashing Membrane (Self-Adhering Type only)

1. Apply primer to poured concrete, metal and glass-faced wallboard substrates at rate recommended by manufacturer. Primer not required on concrete block.

2. Allow primer to dry prior to application of the membrane.

3.4 Transition Membrane (Self-Adhering Type)

1. Align and position air-vapour membrane self-adhering transition membrane, remove protective film and press firmly into place. Ensure minimum 50 mm overlap at all end and side laps.

2. Tie-in to window frames, aluminium screens, hollow metal doorframes, spandrel panels, roofing system and at the interface of dissimilar materials as indicated in drawings.

3. Promptly roll all laps and membrane with a counter top roller to effect seal.

3.5 Through-wall Flashing Membrane (Self-Adhering Type)

1. Align and position the leading edge of air-vapour membrane TWF self-adhering through-wall flashing membrane with the front horizontal edge of the foundation walls or self angles, partially remove protective film and roll membrane over surface and up vertically.

2. Press firmly into place. Ensure minimum 50mm overlap at all end and side laps.

3. Promptly roll all laps and membrane to effect the seal.

4. Ensure all preparatory work is complete prior to applying Blueskin® TWF.

5. Ensure through-wall flashing membrane extends fully to the exterior face of the exterior masonry veneer. Trim off excess as directed by the consultant.

6. Apply through-wall flashing membrane along the base of masonry veneer walls, over windows, doors and all other wall openings. Membrane shall form continuous flashing and shall extend up a minimum of 200 mm up the back-up wall.

3.6 Inspection

1. Notify consultant when sections of work are complete so as to allow for review prior to installing insulation.

3.7 Protection of Finished Work

1. The air-vapour membrane is not designed for exposure. Good practice requires covering as soon as possible.

End of Section

PART 1 - GENERAL

1.1 Related Work Specified Elsewhere

1. Metal Stud System: Section 09111

1.2 Samples

1. Submit duplicate 300 x 300 mm size representative samples of insulation materials in accordance with Section 01340.

PART 2 - PRODUCTS

2.1 Insulation

1. Mineral Fibre: to CSA A101-M83, Roxul AFB Stud Sound Insulation - thickness as indicated on drawings.

2. Approved Equal: Dow Corning sound batt.

2.2 Vapour Barrier Film

1. Polyethylene film to CAN2-51.33-M77, 6 mil thick. Tape for sealing as recommended by manufacturer.

2.3 Accessories

1. Sealant: to CGSB 19-GP-21M.

2. Adhesive: compatible with Vapour Barrier Film.

PART 3 - EXECUTION

3.1 Insulation Installation

1. Install insulation to maintain continuity of thermal protection to building elements and spaces.

2. Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.

3. Do not compress insulation to fit into spaces.

3.2 Vapour Barrier Installation

1. Place polyethylene on warm side of insulation and tight to insulation.

2. Glue vapour barrier to framing members. Lap joints 150 mm minimum and tape seal. Ensure joints occur over framing members.

3. Tape seal areas where nails or staples penetrate vapour barrier.

4. Extend vapour barrier tight to perimeter of windows, door frames and other items interrupting continuity of membrane. Tape seal and seal with sealant.

5. Seal vapour barrier at points of penetration.

6. Vapour barrier to be continuous and pass in front of shear walls and precast concrete slabs.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. Rough Carpentry: Section 06100
2. Gypsum Board: Section 09250
3. Firestopping and Smoke Seals for Mechanical and Electrical Work: refer to drawings

1.2 Reference

1. ASTM E814 - Test Method of fire tests of through-penetration firestops, factory mutual.
2. CAN4-S101M - Standard Methods of Fire Endurance Tests of Building Construction and Materials.
3. CAN4-S115M - Standard Method of Fire Tests of Firestop Systems.
4. ULC - List of Equipment and Materials.

1.3 System Description

1. Firestopping Materials: CAN4-S115M ASTM E814 to achieve a fire protection rating as noted on Drawings.
2. It is the intent of this Section that in conjunction with Mechanical and Electrical scopes a competent, single source be responsible for the firestopping and smoke seals of the entire project.

1.4 Submittals

1. Submit a product data to requirements of Section 01340.
2. Submit manufacturer's product data for materials and prefabricated devices, providing descriptions are sufficient for identification at job site. Include manufacturer's printed instructions for installation, ULC design references.
3. Submit proposed type of fireproofing system for each location for approval by Architect. Fireproofing System must be appropriate to achieve expected appearance and finish.

1.5 Quality Assurance

1. Manufacturer: Company specializing in manufacturing products of this Section with minimum five years documented experience.
2. Applicator: Approved, licensed and supervised by the manufacturer of firestopping materials. Company with minimum five years documented experience.

3. Product: Manufactured under ULC Follow-up Program. Each container or package shall bear ULC label.

1.6 Regulatory Requirements

1. Conform to applicable code for fire protection ratings.

2. Provide certificate of compliance for authority having jurisdiction indicating approval.

1.7 Delivery, Storage & Handling

1. Deliver and store materials in a dry, protected area, off ground in original, undamaged, sealed containers with manufacturer's labels and seals intact.

1.8 Project & Site Conditions

1. Application temperature and ventilation as per Manufacturer's instructions.

1.9 Sequencing & Scheduling

1. Sequence work to permit installation of firestopping and smoke seal materials to be installed after adjacent work is complete and before closure of spaces.

PART 2 - PRODUCTS

2.1 Materials

1. A/D Fire-barrier Firestop Systems, by A/D Fire Protection Systems Inc., capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of CAN4-S115 and not to exceed opening sizes for which they are intended.

2. Mineral Wool Backing Insulation: ULC labeled, preformed non-combustible material (A/D Fire-barrier Mineral Wool) by A/D Fire Protection Systems Inc.

3. Retainers: Clips to support mineral wool.

4. Firestopping Sealant: ULC labelled, single component silicone bases, A/D Silicone Firebarrier Sealant by A/D Fire Protection Systems Inc.

5. Firestopping Seal: ULC labelled, single component water-bases seal, A/D Firebarrier Seal by A/D Fire Protection Systems Inc.

6. Firestopping Foam: ULC labelled, two components silicone foam, A/D Firebarrier RTV Foam by A/D Fire Protection Systems Inc.

7. Firestopping Mortar: ULC labelled, non-combustible fibre reinforced, foamed cement mortar, A/D Firebarrier Mortar by A/D Fire Protection Systems Inc.

8. Damming Material: In accordance with tested assembly being installed as acceptable to authorities having jurisdiction.

PART 3 – EXECUTION

3.1 Examination

1. Examine surfaces to receive work of this Section and report any defects which may affect the Work of this Section.

2. Verify that openings are ready to receive the Work of this Section.

3. Confirm compatibility of surfaces to receive firestopping and smoke seal materials.

4. Beginning of installation means acceptance of existing surfaces and substrate.

3.2 Preparation

1. Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials. Ensure that substrates and surfaces are clean, dry and frost free.

2. Prepare surfaces in contact with firestopping materials and smoke seals to manufacturer's instruction.

3.3 Application

1. Install firestopping and smoke seal material and components in accordance with ULC listing and manufacturer's instructions.

2. Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.

3. Apply in sufficient thickness to achieve rating to uniform density and texture.

4. Provide temporary forming if required.

5. Tool or trowel exposed surfaces to a neat finish where required.

6. Remove excess material promptly as work progresses and upon completion.

7. Protect installed material until cured or set.

3.4 Cleaning

1. Clean adjacent surfaces of firestopping and smoke seal materials.

3.5 Field Quality Control

1. Notify Consultant when ready for inspection and prior to concealing or enclosing firestopping materials and service penetration assemblies.

3.6 Scheduling

1. Firestop and smoke seal at:

    .1 Penetrations through fire-separations: masonry, concrete, and gypsum board partitions and walls.

    .2 Top of fire-separations: masonry and gypsum board partitions.

    .3 Intersection of fire-separations: masonry and gypsum board partitions.

    .4 Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls.

    .5 Penetrations through fire-separations: floor slabs, ceilings and roofs.

    .6 Openings and sleeves installed for future use through fire separations.

    .7 Refer to drawings for locations of fire-rated separations.

End of Section

PART 1 GENERAL

1.1 RELATED SECTIONS

A. Section 06100 - Rough Carpentry.

1.2 REFERENCES

A. AC438-1011-R1 - New Acceptance Criteria for Alternative Asphalt Roofing Shingles

B. Asphalt Roofing Manufacturers Association (ARMA).

C. ASTM International (ASTM):
1. ASTM D 3018 - Standard Specification for Class A Asphalt Shingles Surfaced with Mineral Granules.
2. ASTM D 3161 - Standard Test Method for Wind-Resistance of Asphalt Shingles (Fan-Induced Method).
3. ASTM D 3462 - Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules.
4. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
5. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
6. ASTM B 370 - Standard Specification for Copper Sheet and Strip for Building Construction.
7. ASTM C 1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
8. ASTM D 4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
9. ASTM E 903 - Standard Test Method for Solar Absorption, Reflectance and Transmission of Materials Using Integrating Spheres.

D. Cool Roof Rating Council (CRRC).

E. ENERGYSTAR.

F. National Roofing Contractors Association (NRCA).

G. Sheet Metal and Air Conditioning Contractors National Association, 1nc. (SMACNA) - Architectural Sheet Metal Manual.

H. Underwriters Laboratory (UL)
1. UL 790 - Tests for Fire Resistance of Roof Covering Materials.
2. UL 997 - Wind Resistance of Prepared Roof Covering Materials.

1.3 DEFINITIONS

A. Roofing Terminology: Refer to ASTM D1079 and the glossary of the National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual for definitions of roofing terms related to this section.

1.4 SUBMITTALS

A. Submit under provisions of Section 01340 – Shop Drawings, Product Data & Samples.

B. Product Data: Manufacturer's data sheets on each product to be used, showing compliance with requirements.

C. Installation Instructions: Manufacturer's installation instructions, showing required preparation and installation procedures.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Provide all primary roofing products, including shingles, underlayment, leak barrier, and ventilation, by a single manufacturer.

B. Installer Qualifications: Installer must be approved by manufacturer for installation of all roofing products to be installed under this section.

1.6 REGULATORY REQUIREMENTS

A. Provide a roofing system achieving an Underwriters Laboratories (UL) Class A fire classification.

B. Provide a roofing system achieving an ENERGYSTAR rating.

C. Install all roofing products in accordance with all local building codes.

D. All work shall be performed in a manner consistent with current OSHA guidelines.

1.7 DELIVERY, STORAGE, AND HANDLING

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

B. Store products in a covered, ventilated area, at temperature not more than 110 degrees F (43 degrees C); do not store near steam pipes, radiators, or in sunlight.

C. Store bundles on flat surface to maximum height recommended by manufacturer; store rolls on end.

D. Store and dispose of solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.8 WEATHER CONDITIONS

A. Proceed with work only when existing and forecasted weather conditions will permit work to be performed in accordance with roofing shingle manufacturer's recommendations.

1.9 WARRANTY

A. Provide manufacturer's standard limited warranty:
   1. Provide to the Owner a GAF Shingle & Accessory Ltd. Warranty.
   2. Warranty.
      a. Warranty Duration: 15 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: GAF, Residential Roofing Products.

B. Substitutions: Acceptable equal by IKO.

2.2 VENTILATED ROOF INSULATION PANELS

A. Not applicable

2.3 SHINGLES

A. Glenwood Lifetime Designer Shingles, by GAF or equal by IKO.
   1. Triple layer granule surfaced, self-sealing asphalt shingle with a strong fiberglass reinforced Micro Weave core and StainGuard protection, which prevents pronounced discoloration from blue-green algae through formulation/unique blends of granules.
   2. Ultra-dimensional and bold profile provide a bold unique appearance with a 4.5in. exposure.
   3. UL 790 Class A rated with UL 997 Wind Resistance Label; ASTM D 7158, Class H; ASTM D 3161, Type 1; ASTM D 3018, Type 1; ASTM D 3462; Passes UL 2218, Class 4 Impact Test ;
   4. **MATCH SHINGLES WITH EXISTING ROOF SHINGLE PROFILE AND COLOUR.**

2.4 HIP AND RIDGE SHINGLES

A. Distinctive impact resistant self-sealing hip and ridge cap shingle complementing the color of selected roof shingle. Each bundle covers approx. 25 lineal feet (7.62m) with a 6 2/3 inch (169mm) exposure. Seal-A-Ridge ArmorShield Ridge Cap Shingles by GAF or IKO

B. Ridge cap shingle field fabricated from the same color and type of field shingle. Each bundle covers approx. 33 lineal feet (10.15m).

2.5 STARTER STRIPS

A. Pre-cut, color coordinated starter strip shingle designed as a second starter course for shingles with large cut-outs. Each bundle covers approx. 60 lineal feet (18.29 m) StarterMatch Starter Strip by GAF or IKO.

2.6 LEAK BARRIER

A. Self-adhering, self-sealing, bituminous leak barrier surfaced with fine, skid-resistant granules. Each roll contains approx. 150 sq ft (13.9 sq.m.), 36 inches X 50 feet (0.9m x 20.3m) or 200 sq ft (18.6 sq.m.), 36 inches X 66.7 feet (0.9m x 20.3m). WeatherWatch Leak Barrier, by GAF or equal by IKO.

2.7 UNDERLAYMENT

A. #15 Roofing Underlayment: Water repellent breather type cellulose fiber building paper. Meets or exceeds the requirements of ASTM D 4869 Type I.

2.8 ROOFING CEMENT

A. Asphalt Plastic Roofing Cement meeting the requirements of ASTM D 4586, Type I or II.

2.9 ROOF ACCESSORIES

A. Paint: Exterior acrylic rust resistant aerosol roof accessory paint. Each 6 oz can is available in boxes of 6 and in color to compliment the roof. Shingle-Match Roof Accessory Paint by GAF or IKO.

2.10 NAILS

A. Nails: Standard round wire, zinc-coated steel or aluminum; 10 to 12 gauge, smooth, barbed or deformed shank, with heads 3/8 inch (9mm) to 7/16 inch (11mm) in diameter. Length must be sufficient to penetrate into solid wood at least 3/4 inch (19mm) or through plywood or oriented strand board by at least 1/8 inch (3.18mm).

2.11 METAL FLASHING

A. Galvanized Steel: 24 gauge hot-dip galvanized steel sheet, complying with ASTM A 653/A 653M, G90/Z275. Colour to match existing.

B. Aluminum: 0.032-inch (0.8mm) aluminum sheet, complying with ASTM B 209.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until roof deck has been properly prepared.

B. If roof deck preparation is the responsibility of another installer, notify Architect or building owner of unsatisfactory preparation before proceeding.

3.2 REMOVAL OF EXISTING ROOFING

A. Remove all existing roofing down to the roof deck.

B. Verify that deck is dry, sound, clean and smooth, free of depressions, waves and projections.

C. Cover with sheet metal all holes over 1 inch (25 mm) diameter, cracks over 1/2 inch (12 mm) in width, loose knots and excessively resinous areas.

D. Replace damaged deck with new materials.

E. Clean deck surfaces thoroughly prior to installation of eaves protection membrane and underlayment.

3.3 PREPARATION OF SUBSTRATE

A. Clean deck surfaces thoroughly prior to installation of leak barrier and roof deck protection.

B. At areas to receive leak barrier, fill knot holes and cracks with latex filler.

3.4 INSTALLATION OF UNDERLAYMENT

A. Install using methods recommended by manufacturer in accordance with local building code. When local codes and application instructions are in conflict, the more stringent requirements shall take precedence.

B. Eaves:
   1. Place eave edge metal flashing tight with fascia boards; lap joints 2 inches (50 mm) and seal with plastic cement; nail at top of flange.
   2. On roofs with slope between 2:12 and 4:12, and on all roofs in the north, install leak barrier up the slope from eave edge to 36 inches from the edge or at least 24 inches (610 mm) beyond the interior face of the warm exterior wall, whichever is greater; lap ends 6 inches (150 mm) and bond.

C. Hips and Ridges:
   1. Install GAF leak barrier along entire lengths. If ridge vents are to be installed, position the GAF leak barrier so that the ridge slots will not be covered.

D. Roof Deck:
   1. Install one layer of roof deck protection over entire area not protected by eave or valley membrane; run sheets horizontally lapped so water sheds; nail in place.
   2. On roofs sloped at more than 4 in 12, lap horizontal edges at least 2 inches (50 mm) and at least 2 inches (50 mm) over eave protection membrane.
   3. On roofs sloped between 2 in 12 and 4 in 12, lap horizontal edges at least 19 inches (480 mm) and at least 19 inches (485 mm) over eave protection membrane.
   4. Lap ends at least 4 inches (100 mm); stagger end laps of each layer at least 36 inches (915 mm).
   5. Lap roof deck protection over valley protection at least 6 inches (152 mm).

E. Penetrations:
   1. At vent pipes, install a 24 inch (610 mm) square piece of leak barrier lapping over roof deck protection; seal tightly to pipe.
   2. At vertical walls, install leak barrier extending at least 6 inches (150 mm) up the wall and 12 inches (305 mm) on to the roof surface lapping over roof deck protection.
   3. At skylights and roof hatches, install leak barrier up the sides of the frame and 12 inches (305 mm) on to the roof surface on all sides, lapping over roof deck protection.
   4. At chimneys, install leak barrier around entire chimney extending at least 6 inches (152 mm) up the wall and 12 inches (305 mm) on to the roof surface lapping over roof deck protection.
   5. At rake edges, install metal edge flashing over leak barrier and roof deck protection; set tight to rake boards; lap joints at least 2 inches (50 mm) and seal with plastic cement; secure with nails.
   6. At hips and ridges, install leak barrier along entire lengths. If ridge vents are to be installed, position the leak barrier so that the ridge slots are not covered.

3.5 INSTALLATION OF SHINGLES

A. Install in accordance with manufacturer's instructions and requirements of local building code.
   1. Avoid breakage of shingles by avoiding dropping bundles on edge, by separating shingles carefully (not by "breaking" over ridge or bundles), and by taking extra precautions in temperatures below 40 degrees F (4 degrees C).
   2. Handle carefully in hot weather to avoid damaging shingle edges.
   3. Secure with 4 to 6 nails per shingle; use number of nails required by manufacturer or by code, whichever is greater. Nails must be long enough to penetrate through plywood or OSB, or 3/4 inch (19 mm) into dimensional lumber.

B. Install hip and ridge shingles as required by the manufacturer. At ridges, install hip and ridge shingles over ridge or ridge vent material.

C. Make valleys using "open valley" technique:
   1. Snap diverging chalk lines on metal flashing, starting at 3 inches (75 mm) each side of top of valley, spreading at 1/8 inch per foot (9 mm per meter) to eave.
   2. Run shingles to chalk line.
   3. Trim last shingle in each course to match chalk line; do not trim shingles to less than 12 inches (305 mm) width.
   4. Apply 2 inches (50 mm) wide strip of plastic cement under ends of shingles, sealing to metal flashing.

D. Make valleys using "closed cut valley" technique:
   1. Run the first, and only the first, course of shingles from the higher roof slope across the valley at least 12 inches (305 mm).
   2. Run all courses of shingles from the lower roof slope across the valley at least 12 inches (305 mm) and nail not closer than 6 inches (150 mm) to center of valley.
   3. Run shingles from the upper roof slope into valley and trim 2 inches (50 mm) from center of valley.

E. Make valleys using "woven valley" technique.
   1. Run shingles from both roof slopes at least 12 inches (305 mm) across center of valley, lapping alternate sides in a woven pattern.
   2. Nail not closer than 6 inches (150 mm) to center of valley.

F. All penetrations are to be flashed according to manufacturer’s requirements and, ARMA and NRCA application instructions and construction details.

G. For skylights, consult the manufacturer of the skylight or roof hatch for specific installation recommendations. Skylights and roof hatches shall be installed with pre-fabricated metal flashings specifically designed for the application of the unit.

3.6 INSTALLATION OF VENTILATION

A. Code Requirements: Ventilation shall meet or exceed current OBC and local code requirements.

B. Hip Vents and Rooftop Vents:
   1. Install according to manufacturer's instructions.
   2. Install vents in sufficient quantity to equal or exceed the exhaust vent area, calculated as specified by manufacturer.

3.7 INSTALLATION OF VENTILATION ACCESSORIES

A. Foundation Vents: Install per manufacturer recommendations

3.8 PROTECTION

A. Stage work progress so that traffic is minimized over completed roofing.

B. Protect installed products until completion of project.

END OF SECTION

PART 1 - GENERAL

1.1 Related Work Specified Elsewhere

1. Not applicable.

1.2 Environmental Conditions

1. Sealant and substrata materials to be minimum 5 deg. C.

2. Should it become necessary to apply sealants below 5 deg. C, consult sealant manufacturer and follow their recommendations.

1.3 Warranty

1. Contractor hereby warrants that caulking work will not leak, crack, crumble, melt, shrink, run lose adhesion or stain adjacent surfaces in accordance with General Conditions, but for two (2) years total.

PART 2 - PRODUCTS

2.1 Materials

1. Primers: type recommended by sealant manufacturer.
2. Joint Fillers:
3. General: compatible with primers and sealants outsized 30 to 50%.
4. Polyethylene, urethane, neoprene or vinyl: extruded closed cell foam, Shore A hardness 20, tensile strength 140 to 200 kPa.
5. Neoprene or butyl rubber: round solid rod, Shore A hardness 70.
6. Polyvinyl chloride or neoprene: extruded tubing with 6 mm minimum thick walls.
7. Bond breaker: pressure sensitive plastic tape, which will not bond to sealants.
8. Sealant Type A: One component, chemical curing, conforming to CAN2-19.13-M82, Class C-2-25-B-N; multi-component, chemical curing, conforming to CAN2-19.24-M80, Type 2, Class B.
9. Sealant Type B: Multi-component, chemical curing mildew resistant conforming to CGSB 19-GP-22M.
10. Sealant type C: Multi-component, acrylic emulsion base, conforming to CGSB 19-GP-17M.
11. Acceptable Manufacturers: Tremco or Dow Corning.
12. Joint cleaner: xylol, methylethyl-ketone or non-corrosive type recommended by sealant manufacturer and compatible with joint forming materials.

PART 3 - EXECUTION

3.1 New Work

1. Caulk where specified and everywhere required.

2. Remove dust, paint, loose mortar and other foreign matter. Dry joint surfaces.

3. Remove rust, mill scale and coatings from ferrous metals by wire brush, grinding or sandblasting.

4. Remove oil, grease and other coatings from non-ferrous metals with joint cleaner.

5. Prepare concrete, masonry, glazed and vitreous surfaces to sealant manufacturer's instructions.

6. Examine joint sizes and correct to achieve depth ratio 1/2 of joint width with minimum width and depth of ¼", maximum width 1".

7. Install joint filler to achieve correct joint depth.

8. Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

9. Apply bond breaker tape where required to manufacturer's instructions.

10. Prime sides of joints to sealant manufacturer's instructions immediately prior to caulking.

3.2 Application

1. Apply sealants, primers, joint fillers, bond breakers, to manufacturer's instructions. Apply sealant, using gun with proper size nozzle. Use sufficient pressure to fill voids and joints solid. Superficial pointing with skin bead is not acceptable.

2. Form surface of sealant with full bead, smooth, and free from ridges, wrinkles, sags, air pockets, and embedded impurities. Neatly tool surface to a slight concave joint.

3. Clean adjacent surfaces immediately and leave work neat and clean. Remove excess sealant and droppings using recommended cleaners as work progresses. Remove masking after tooling of joints.

4. Use sealants specified in the following locations:

   Type A: Joints between windows or door frames and adjacent building components; control and expansion joints and all other locations where sealing is required, except in locations designated for Type B, C and D. Ensure that sealant chosen (from the several specified under "MATERIALS") for each location is recommended by manufacturer for use on surfaces encountered.

   Type B: Joints between backsplash and walls.

   Type C: Joints between interior metal doorframes and partitions.

3.3 Work Included

1. Work shall include but not limited to the following areas:

   .1 Interior hollow metal frames; both sides;

.2 Exposed control and expansion joints in masonry walls, masonry corners, joints in front of steel lintels bearing on exterior brick jambs;
.3 Joints between masonry and concrete surfaces.
.4 Joints between gypsum board and masonry, or other materials. At all other locations on drawings, except as noted below.

2. Sealing of joints to the underside of exposed precast slab to be by precast installer.

3. Sealing of all joints at top of walls meeting exposed flat or sloped precast ceilings to be included in this section.

End of Section

PART 1 - GENERAL

1.1 General Notes

1. Door Schedule heading “DC” refer to “Door Contacts” used in the security system. Refer to Electrical Drawings and Specifications for locations, zoning and description of system.

2. Refer to drawings for door and frame types.

1.2 Door Schedule

1. Refer to door schedule shown on drawings.

End of Section

PART 1 - GENERAL

1.1 Work Included

1. A single manufacturer shall fabricate products included within the scope of this Section.

2. Manufacturer shall be a member in good standing of the Canadian Steel Door Manufacturers Association (CSDMA).

3. Supply only of steel frame products including frames, transom frames, sidelight and window assemblies with provision for glazed, paneled or louvered openings, fire labeled and non-labeled, as scheduled or detailed by the Architect.

4. Supply only of flush steel doors with provision for glazed, paneled or louvered openings, insulated and un-insulated, fire labeled, with or without temperature rise ratings and non-labeled, as scheduled or detailed by the Architect.

5. Supply only of steel panels, similar in construction to steel doors, with flush or abetted bottoms for steel frames, transom frames, sidelight and window assemblies, fire labeled and non-labeled, as scheduled or detailed by the Architect.

6. Doors and frames shall be prepared for, but not limited to, preparation for continuous hinges, heavy weight hinges, cylindrical locks, rim and concealed vertical rod/ mortise lock case exit devices, surface door closers and concealed overhead stops.

1.2 Related Work

1. Building-in of frame product into unit masonry, previously placed concrete, structural or steel or wood stud walls.

2. Supply and installation of wood, plastic or composite core doors.

3. Supply and installation of builders' hardware except as specified for acoustic assemblies.

4. Drilling and tapping for surface mounted or non-templated builders' hardware.

5. Caulking of joints between frame product and other building components.

6. Supply and installation of gaskets or weather-strip.

7. Supply and installation of louvers or vents.

8. Supply and installation of glazing materials.

9. Site touch-up and painting.

10. Wiring for electronic or electric hardware.

11. Field measurements.

12. Fasteners for frame product in previously placed concrete, masonry or structural steel.

13. Steel lintels, posts, columns or other load-bearing elements.

14. Field welding.

1.3 Requirements of regulatory agencies

1. Install fire labeled steel door and frame product in accordance with NFPA-80, current edition, unless specified otherwise.

1.4 References

1.	ANSI A115.IG-1994	Installation Guide for Doors and Hardware
2.	ANSI A250.4-1994	Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors and Hardware Reinforcings.
3.	ASTM A653-M97	Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
4.	ASTM A924-M97	Standard Specification for General Requirements for Sheet, Metallic-Coated by the Hot-Dip Process.
5.	ASTM B117-95	Method of Salt Spray (Fog) Testing.
6.	ASTM C177-97	Test Method for Steady-State heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
7.	ASTM C518-91	Test method for Steady State Heat Flux Measurements and Thermal Transmission properties by means of the heat Flow Meter Apparatus.
8.	ASTM C578-95	Specification for Rigid, Cellular polystyrene Thermal Insulation
9.	ASTM C665-95	Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
10.	ASTM D1735-92	Practice for Testing Water Resistance of Coating Using Water Fog Apparatus
11.	CAN4-S104-M80	Fire Tests of Door Assemblies

12. CAN4-S105-M85	Standard Specification for Fire Door Frames Meeting the performance required by CAN4-S104
13. CAN4-S106-M80	Standard Method for Fire Tests of Window and Glass Block Assemblies
14. CGSB 41-Gp-19Ma	Rigid Vinyl Extrusions for Windows and Doors
15. CGSB 82.5-M88	Insulated Steel Doors
16. CSA A101-M83	Mineral Fiber Thermal insulation for Buildings
17. CSA W59-M89	Welded Steel Construction (Metal Arc Welding)
18. ISO 9001:1994	Quality Systems – Model for Quality Assurance
19. NFPA-80, 1999	Fire Doors and Windows
20. CSDMA	Dimensional Standards for Commercial Steel Doors and Frames

21. Manufacturers Standard and Galvanized Sheet Gauges

22. Fleming Fire Labeling Specifications

23. ULC List of Equipment and Materials, Volume 2

1.5 Testing and Performance

1. Door constructions covered by this specification shall be certified as meeting Level “A” (1,000,000 cycles) and Twist Test Acceptance Criteria (deflection not to exceed 6.4 mm /13.6kg force, total deflection at 136.1kg force not to exceed 63.5 mm and permanent deflection not to exceed 3.2 mm) when tested in strict conformance with ANSI-A250.4-1994. Test shall be conducted by an independent nationally recognized accredited laboratory.

2. Fire labeled product shall be provided for those openings requiring fire protection and temperature rise ratings, as determined and scheduled by the Architect. Doors, frames, transom frames and sidelight assemblies shall be tested in strict accordance with CAN4-S106. Product shall be listed by Underwriters Laboratories of Canada under an active Factory Inspection Program and shall be constructed as detailed in Follow-Up Service procedures issued to the manufacturer.

3. Should any door or frame specified by the Architect to be fire rated, not qualify for labeling due to design, hardware, glazing or any other reason, the Architect shall be so advised before manufacturing commences.

4. Core materials for exterior doors shall attain a thermal resistance rating of RSI 1.06 (R6.0) when tested in accordance with ASTM C177 or ASTM C518.

5. Product shall be manufactured by a firm experienced in the design and production of standard and custom commercial steel door and frame assemblies, the integration of builders' or electronic hardware and glazing materials and their impact on the scope of work.

6. Manufacturer shall be assessed and registered as meeting the requirements of Quality Systems under ISO 9001.

7. Product quality shall meet standards set by the Canadian Steel Door Manufacturers Association.

1.6 Test Reports

1. All alternates to this specification shall be submitted to the Architect for acceptance ten (10) days prior to bid date, complete with test reports from independent, nationally recognized testing authorities, certifying that:

    .1 Steel door and frame assemblies furnished under this section meet the acceptance criteria of ANSI-A250.4-1994, Level "A".
    .2 Insulated door cores furnished in exterior doors under this Section meet the specified thermal resistance rating.

2. All reports shall include name of testing authority, date of test, location of test facility, descriptions of test specimens, procedures used in testing and indicate compliance with acceptance criteria of the test.

1.7 Submittals

1. Submit shop drawings in accordance with the General Conditions of the Contract.

2. Indicate each type of door, frame, steel, core, material thickness, mortises, reinforcements, anchorages, locations of exposed fasteners, openings (glazed, paneled or louvered) and arrangement of standard builders' hardware.

3. Include a schedule identifying each unit, with door marks or numbers referencing the numbering in Architect's schedules or drawings.

4. Provide confirmation in writing that all aspects to reinforcing, construction, and gauge of metal are met as written in this section.

1.8 Warranty

1. All steel door and frame product shall be warranted from defects in workmanship for a period of two (2) years from date of shipment.

2. All steel door and frame product shall be warranted against rust perforation for a period of five (5) years when the installed and finish painted with a commercial quality paint to the manufacturers recommendations.

3. Finish paint adhesion on all door and frame product shall be warranted for a period of five (5) years when the product has been properly cleaned and finish painted with a commercial quality paint applied as recommended by the paint manufacturer. This warranty shall not exceed that provided by the paint manufacturer.

PART 2 - PRODUCTS

2.1 Doors

1. **Materials**

.1 Doors shall be fabricated from tension leveled steel to ASTM A924-M97, galvanized to ASTM A653-M97, Commercial Steel (CS), Type B, coating designation ZF75, known commercially as paintable Galvanneal.

.2 Door Cores:
Honeycomb:
Structural small cell (25.4 mm maximum) kraft paper "honeycomb". Weight: 36.3 kg per ream (minimum), density: 16.5 kg/m^3 (minimum), sanded to the required thickness.
.1 Polystyrene:
Rigid extruded, fire retardant, closed cell board, density 16kg/m^2, thermal values: RSI 1.06 minimum, conforming to ASTM C578.
.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 30 or 60 minutes, as required by governing building code requirements and determined and scheduled by the Architect.

.3 Adhesives:
.1 Honeycomb Cores and Steel Components:
Heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement or ULC approved equivalent.
.2 Interlocking Edge Seams:
Resin reinforced polychloroprene (RRPC), fire resistant, high viscosity, sealant/adhesive or UL approved equivalent.
.3 Polystyrene Cores:
Heat resistant, epoxy based, low viscosity, contact cement.

.4 Primer:
Rust inhibitive touch-up only.

.5 Exterior Top Caps:
Rigid polyvinylchloride (PVC) extrusion.

2. **Construction**

.1 General:

.1 This section is based on doors and frames as manufactured by Fleming. Doors and frames by other manufacturers are acceptable subject to be similar to the one specified and meeting the terms of this section.

.2 Doors shall be swinging, 44.4 mm thick of the types and sizes indicated on the Architect's schedules or drawings.

.3 Exterior doors shall be lock seam, flush.

.4 Face sheets for exterior doors shall be fabricated from (16) gauge steel.

.5 Longitudinal edges of exterior doors shall be mechanically interlocked, fully welded, ground smooth with no visible seams. Do not fill seams.

.6 Face sheets of interior doors shall be fabricated from 18 gauge steel, except for heavy traffic doors (noted **HT** in Door Schedule) face sheet to be 16 gauge.

.7 Longitudinal edge of heavy traffic doors (noted **HT** in Door Schedule) shall be mechanically interlocked, fully welded, ground smooth with no visible seams. Do not fill seams.

.8 Interior doors shall be stiffened, insulated and sound deadened with honeycomb core laminated under pressure to each face sheet.

.9 Stiffened, insulated and sound deadened with Fleming's propriety core where Temperature Rise Rated (TRR) fire labeled doors are specified on the Architect's schedules.

.10 Longitudinal edges of interior doors shall be mechanically interlocked, adhesive assisted with edge seams visible.

.11 Door faces of all steel doors shall be fabricated without visible seams, free of scale, pitting, coil brakes, buckles and waves.

.12 Formed edges shall be true and straight with a minimum radius for the thickness of steel used.

.13 Lock and hinge edges shall be beveled 3 mm in 50 mm unless builders' hardware or door swing dictates otherwise.

.14 Top and bottom of doors shall be provided with inverted, recessed, 16 gauge steel end channels, welded to each face sheet at 150 mm on center maximum.

.15 Exterior doors shall be provided with factory installed flush PVC top caps. Fire labeled exterior doors shall be provided with factory installed flush steel top caps.

.16 Unless ineligible due to design, size, hardware or glazing specified on the Architects' or hardware Suppliers' schedules or details, fire labeled doors shall be provided for those openings requiring fire protection ratings and temperature rise ratings, as determined and scheduled by the Architect.

.17 Exterior doors shall be internally reinforced with 20 gauge continuous; interlocking steel stiffeners at 150mm O.C. max, with voids between stiffeners filled and insulated with 24kg/m3 density loose batt type fiberglass material to suit fully welded design.

.2 Hardware Preparations:

.1 Doors shall be factory blanked, reinforced, drilled and tapped for fully templated mortised hardware only, in accordance with the final approved schedule and templates provided by the hardware supplier.

.2 Doors shall be factory blanked and reinforced only for mortised hardware that is not fully templated.

.3 Doors shall be factory reinforced only for surface mounted hardware.

.4 Templated holes 12.7mm diameter and larger shall be factory prepared, except mounting and through bolt holes, which shall be by the contractor responsible for installation on site, at the time of application. Templated holes less than 12.7mm diameter shall be factory prepared only when required for the function of the device (for knobs, levers, cylinders, thumb or turn pieces) or when these holes over-lap function holes.

.5 Drilling and tapping for surface mounted hardware or mortised hardware that is not fully templated shall be by the contractor responsible for installation on site, at the time of application.

.6 Hinge and pivot reinforcements shall be 10 gauge steel minimum high frequency type reinforcing.

.7 Hinge reinforcements for acoustic doors and doors in excess of 2450mm rabbet height shall be 10 gauge minimum with each cutout provided with 114.3mm heavy weight (4.6mm) high frequency type.

.8 Lock, strike and flush bolt reinforcements shall be 12 gauge steel minimum.

.9 Reinforcements for concealed closers and holders shall be 12 gauge steel minimum.

.10 For surface mounted hardware, reinforcements shall be 16 gauge steel minimum.

.11 All pairs of fire labeled doors shall be provided with 12 gauge steel surface mounted flat bar astragal, shipped loose for application on site, by the contractor responsible for installation.

.12 Pairs of doors up to 2450mm x 2450mm, to 1½ hour fire rating maximum shall be provided without astragals. Lock edge seam of such doors shall be tacked-welded and ground smooth. All other fire labeled pairs shall be provided with 12 gauge steel surface mounted flat bar astragal, shipped loose for application on site, by the contractor responsible for installation.

.13 Where electrically or electronically operated hardware is specified on the Architects' schedules or details of the final approved schedule and templates provided by the hardware supplier, hardware enclosures and/or junction boxes, where indicated on the templates, shall be provided and interconnected with CSA Approved 12.7mm diameter conduit and connectors.

.14 Prepare doors to receive security door contacts – refer to electrical drawings for locations. Door contacts to be installed at 100 mm from the latch side door edge.

.15 Doors and Frames shall be prepared for, but not limited to preparations for heavy weight Butt Hinges, Continuous Hinges, Cylindrical Locksets, Rim or Concealed Vertical Rod and Mortise Lock Case Exit Devices, Surface Door Closer and Concealed Overhead Stops.

.3 Glazing:
- .1 Where 6mm thick glazing materials are specified on the Architects schedules or details, doors shall be provided with 20 gauge steel glazing trim and snap-in glazing stops.
- .2 Where other that 6mm glazing is specified on the Architect's schedules or details, doors shall receive 20 gauge steel trim and screw fixed glazing stops. Screws shall be #6 x 32mm oval head scrulox (self-drilling) type at 300mm on center maximum.
- .3 Glazing trim and stops shall be accurately fitted, butted at corners, with removable glazing stops located on the 'push' side of the door.

.4 Louver Preparations:
- .1 Where specified on the Architect's schedules or details, non-labeled doors shall be prepared on accordance with the louver manufacturer's details.
- .2 Where specified on the Architect's schedules or details, fire labeled doors shall be prepared for UL listed sight-proof fusible link louvers in accordance with the louver manufacturer's details.
- .3 Louvers shall be supplied and installed by others.

.5 Finishing:
- .1 Remove weld slag and splatter from exposed surfaces.
- .2 All tool marks, abrasions and surface blemishes shall be filled and sanded to present smooth uniform surfaces.
- .3 On exposed surfaces where zinc coating has been removed during fabrication, doors shall receive a factory applied touch-up primer.
- .4 Primer shall be fully cured prior to shipment.

2.2 Panels

1. Panels shall be fabricated form the same materials, construction and finished in the same manner as doors as specified in Section 2.1.

2.3 Frame Product

1. **Materials**

.1 Steel:
Frame product shall be fabricated from tension leveled steel to ASTM A924-M97, galvanized to ASTM A653-M97, Commercial Steel (CS), Type B, coating designated ZF75, known commercially as paintable Galvanneal.

.2 Primer:
Rust inhibitive touch up only.

.3 Miscellaneous:
- .1 Door Silencers:
  GJ-64, Single Stud rubber/neoprene type
- .2 Thermal Breaks:
  Rigid polyvinylchloride (PVC) extrusion

.3 Fiberglass:
Loose batt type, density: 24kg/m^3 (minimum), conforming to ASTM C665

2. **Construction**

.1 General:
- .1 All steel frame product shall be as manufactured by Fleming of the types, sizes and profiles indicated on the Architects' schedules or details.
- .2 Exterior frames shall be thermally broken, Fleming *Therma-Frame* Series, fabricated from 16 gauge steel.
- .3 Exterior frame product shall be supplied profile welded (PW)
- .4 Interior and exterior sections of thermally broken frames shall be separated by a continuous PVC thermal break.
  - .1 Thermally broken sections shall not be assembled by means of screws, grommets or other fasteners and welds shall not cause thermal transfers between interior and exterior surfaces of the frame sections.
  - .2 Closed sections (mullions and center rails) of thermally broken frames shall be factory insulated with 24kg/m^3 loose batt type fiberglass material.
- .5 Insulation of open sections (jambs, heads and sills) on exterior frame product shall be provided and installed by the contractor responsible for installation.
- .6 Interior frames shall be Fleming F-Series, fabricated from 16 gauge steel.
- .7 Interior frame product shall be supplied profile welded (PW)
- .8 Knocked-down and knocked-down drywall frames shall not be acceptable.
- .9 Jambs, heads, mullions, sills and center rails shall be straight and uniform throughout their lengths.
- .10 Frame product shall be square, free of defects, wraps or buckles.
- .11 Corner joints shall be profile welded (PW) (continuously welded on the inside of the profiles' faces, rabbets, returns and soffit intersections with exposed faces filled and ground to a smooth, uniform, seamless surface)"
- .12 Joints at mullions, transom bars, sills or center rails shall be coped accurately, butted and tightly fitted, with faces securely welded, matching corner joint faces.
- .13 All steel mullions will be fabricated from the same materials as specified for the steel frames. Steel mullions will be fabricated as a fully assembled three piece unit consisting of a front, back and full height one piece attachment clip as per Fleming F Series. The attachment clip will completely fill the stop area of the mullion on both sides and span the void between each side forming a grid channel like structure. Mullions used as hinge mullions or strike mullions between doors will be filled with grout by the general contractor either prior to or following installation of the frame. The head of the frame shall have an opening sufficient for the grout to be poured in to the mullion.
- .14 Mullions shall be fabricated with continuous 20 gauge galvanneal steel internal reinforcing clips.
- .15 Frame product shall be fabricated with integral door stops having a minimum height of 16mm.

.16 Glazing stops shall be formed 20 gauge steel, 16mm height channel, accurately fitted, butted at corners and fastened to frame sections with #6 x 32mm oval head scrulox (self-drilling) type screws at 300mm on center maximum.

.17 Where required due to site access, as indicated on the Architects' schedules or details, when advised by the contractor responsible for co-ordination or installation, or when shipping limitations so dictate, frame product shall be fabricated in sections for splicing in the field.

.1 Field spliced jambs, heads and sills shall be provided with 16 gauge steel splice plates securely welded into one section, extending 100mm minimum each side of splice joint.

.2 Field splices at closed sections (mullions or center rails) shall be 16 gauge steel splice angles securely welded to the abutting member. Face of splice angle shall extend 100mm minimum into closed sections when assembled.

.3 Field splice joints shall be welded, filled and ground to present a smooth uniform surface by the contractor responsible for installation after assembly.

.18 Each door opening shall be provided with two (2) temporary steel jamb spreaders welded to the base of the jambs or mullions to maintain proper alignment during shipping and handling. Spreaders shall be removed by the contractor responsible for installation prior to anchoring of frame to floor.

.19 Each door opening shall be prepared for GJ-64 or equivalent, single stud door silencers, three (3) for single door openings, two (2) for double door openings. Silencers shall be shipped loose for installation by the contractor after finish painting.

.20 Unless ineligible due to design, size, hardware or glazing specified on the Architects' or Hardware Suppliers' schedules or details, fire labeled frame product shall be provided for those openings required fire protection ratings as determined and scheduled by the Architect.

.2 <u>Hardware Preparations</u>

.1 Frame product shall be blanked, reinforced, drilled and tapped for fully templated mortised hardware only, in accordance with the final approved schedule and templated provided by the hardware supplier.

.2 Frame product shall be factory blanked and reinforced only for mortised hardware that is not fully templated.

.3 Frame product shall be reinforced only for surface mounted hardware.

.4 Drilling and tapping for surface mounted hardware or mortised hardware that is not fully templated shall be by the contractor responsible for installation on site, at the time of application.

.5 Frames shall be prepared for 114.3mm standard weight hinges (minimum).

.6 Hinge and pivot reinforcements shall be 10 gauge steel minimum reinforcing, high frequency type shall be provided.

.7 Hinge reinforcements for acoustic frames and frames in excess of 2450mm rabbet height shall be 10 gauge minimum with each cutout provided with 114.3mm heavy weight (4.6mm) high frequency type.

.8 Strike reinforcements shall be 16 gauge steel minimum.

.9 Reinforcements for surface mounted hardware, concealed closers and holders and flush bolts shall be 12 gauge steel minimum.

.10 Mortised cutouts shall be protected with 22 gauge steel minimum guard boxes.

.11 Where electrically or electronically operated hardware is specified on the Architects schedules or details or the final approved schedule and templates provided by the hardware supplier, hardware enclosures and/or junction boxes, where indicated on templates, shall be provided and inter-connected with CSA Approved 12.7mm diameter conduit and connectors.

.12 Prepare frames to receive security door contacts – refer to electrical drawings for locations. Door contacts to be installed at 100 mm from the latch side door edge.

.3 Anchorage:

.1 Frame product shall be provided with anchorage appropriate to floor, wall and frame construction.

.2 Each wall anchor shall be located immediately above or below each hinge reinforcement on the hinge jamb and directly opposite on the strike jamb, except as indicated below.

.3 Frame product installed in unit masonry partitions shall be provided with 4.0mm diameter steel wire anchors, 18 gauge steel adjustable stirrup and strap or “T” type anchors as conditions dictate.

.4 Where frame product is installed prior to construction of the adjacent wall, each jamb shall be provided with 16 gauge steel floor anchors. Each anchor shall be provided with two (2) holes for mounting to the floor and shall be securely welded to the inside of the jamb.

.5 Floor anchors for thermally broken exterior frames shall be designed so as not to permit thermal transfers from exterior to interior surfaces of the frame sections.

.6 Frame product installed in drywall partitions shall be provided with 20 gauge steel snap-in or “Z” type stud type anchor.

.7 Jambs of frames in previously placed concrete, masonry or structural steel shall be punched and dimpled to accept machine bolt anchors, 6.4mm diameter, located not more than 150mm from the top and bottom of each jamb. Anchor preparations and guides shall also be located immediately above or below the intermediate hinge reinforcings and directly opposite on the strike jamb. Each preparation shall be provided with 16 gauge anchor bolt guides.

.8 Anchor bolts and expansion shell anchors for the above preparations shall be provided by the contractor responsible for installation.

.9 After sufficient tightening of the anchor bolts, the heads shall be welded do as to provide a non-removable application. Welded bolt head and dimple shall be filled and ground to present a smooth uniform surface by the contractor responsible for installation, prior to finish painting.

.10 Where indicated on the Architects’ schedules or details, channel extensions shall be provided from the top of the frame assembly to the underside of the structure above. Extensions shall be fabricated from 12 gauge steel formed channel, mounting angles welded to inside of frame head and adjusting brackets. Formed channels, adjusting brackets and fasteners shall be

shipped loose. Channels shall be mechanically connected to mounting angles and adjusting brackets with supplied fasteners, on site, by contractor responsible for installation.

.4 Finishing:
- .1 Remove weld slag and spatter from exposed surfaces.
- .2 All tool marks, abrasions and surface blemishes shall be filled and sanded to present smooth and uniform surfaces.
- .3 On exposed surfaces where zinc has been removed during fabrication, frame product shall receive a factory applied touch-up primer.
- .4 Primer shall be fully cured prior to shipment.

2.4 Sizes and Tolerances

1. All sizes and tolerances shall be in accordance with the Canadian Steel Door Manufacturers Association "Recommended Dimensional Standards for Commercial Steel Doors and Frames" as follows:

   .1 Widths of door openings shall be measured from inside of frame jamb rabbet with a tolerance of +1.6mm, -0.8mm.
   .2 Heights of door openings shall be measured from the finished floor (exclusive of floor coverings) to the head rabbet of the frame with a tolerance of ± 1.2mm.
   .3 Unless builders' hardware dictates otherwise, doors shall be sized so as to fit the above openings and allow a 3mm clearance at jambs and head. A clearance of 19mm between the bottom of the door and the finished floor (exclusive of floor coverings) shall be provided. Tolerances on door sizes shall be ± 1.2mm.
   .4 Manufacturing tolerances on formed frame profiles shall be ± 0.8mm for faces, door stop heights and jamb depths. Tolerances for throat openings and door rabbet shall be ± 1.6mm and ± 0.4mm respectively. Hardware cutout dimensions shall be as per template dimensions, +0.4mm, -0.

2.5 Hardware Locations

1. Hardware preparations in frame product shall be as noted below and locations on doors shall be adjusted for clearances specified in 2.4.

2. Top of upper hinge preparation for 114.3mm hinges shall be located 180mm down from head, transom mullion or panel as appropriate. The top of the bottom hinge preparation for 114.3mm hinges shall be located 310mm from finished floor as defined in 2.4.3. Intermediate hinge preparations shall be spaced equally between top and bottom cutouts. For dutch door frames, top and bottom hinge locations shall be as above, with the tops of intermediate hinges located at 930mm and 1403mm from finished floor.

3. Strike preparations for unit, integral, cylindrical and mortise locks and roller latches shall be centered 1033mm from finished floor. Strikes for deadlocks shall be centered at 1200mm from finished floor. Strikes for panic or fire exit hardware shall be located as per device manufacturer's templates.

4. Push and/or pulls on doors shall be centered 10701mm from finished floor.

5. Preparations not noted above shall be as per hardware manufacturer's templates.

6. Hardware preparation tolerances shall comply with the ANSI A115 series standards.

PART 3 - EXECUTION

3.1 Site and Protection of Materials

1. The contractor responsible for installation shall remove wraps or covers from door and frame product upon delivery at building site.

2. All materials shall be thoroughly inspected upon receipt and all discrepancies, deficiencies and/or damages shall be immediately reported in writing to the supplier. All damage shall be noted on the carriers' Bill of Landing.

3. Contractor responsible for installation shall ensure all materials are properly stored on planks or dunnage in a dry location. Product shall be stored in a vertical position, spaced with blocking to permit air circulation between them. Materials shall be covered to protect them from damage from any cause.

4. Contractor shall notify the supplier in writing of any errors or deficiencies in the product itself before initiating any corrective work.

3.2 Installation

1. Install doors and frames in accordance with the Door and Hardware Institute "Installation guide for doors and hardware".

2. Set frame product plumb, square, aligned, without twist at correct elevation.

3. Frame Product Installation Tolerances:

    .1 Plumbness tolerance, measured through a line from the intersecting corner of vertical members and the head to the floor, shall be $\pm$ 1.6mm.
    .2 Squareness tolerance, measured through a line 90^0 from one jamb at the upper corner of the product, to the opposite jamb, shall be $\pm$ 1.6mm.
    .3 Alignment tolerance, measured on jambs, through a horizontal line parallel to the plane of the wall, shall be $\pm$ 1.6mm.
    .4 Twist tolerance, measured at face corners of jambs, on parallel lines perpendicular to the plane of the wall, shall be $\pm$ 1.6mm.

4. Fire labeled product shall be installed in accordance with NFPA-80.

5. Secure anchorages and connections to adjacent construction.

6. Brace frame product rigidly in position while building-in. Remove temporary steel shipping jamb spreaders. Install wood spreaders at mid points of frame rabbet height and at floor level to maintain frame widths. Provide vertical support at center of head for openings exceeding 1250mm in width. Remove wood spreaders after product has been built-in.

7. Frame product in unit masonry shall be fully grouted in place.

8. Install doors maintaining clearances outlined in Section 2.4.

9. Install louvers and vents.

10. Adjust operable parts for correct clearances and function.

11. Steel surfaces shall be kept free of grout, tar or other bonding materials or sealers.

12. Any grout or other bonding material shall be cleaned from products immediately following installation.

13. Exposed field welds shall be finished to present a smooth uniform surface and shall be touched-up with a rust inhibitive primer.

14. Exposed surfaces that have been scratched or otherwise marred during shipment, installation or handling shall be touched-up with a rust inhibitive primer.

15. Finish paint in accordance with Section 09900.

16. Install glazing materials and door silencers.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. Commercial Steel Doors and Frames: Section 08100
2. Glazing: Section 08800
3. Painting: Section 09900

1.2 Samples

1. Submit one (1) 300 x 300 mm corner cutaway sample of each type of wood door and each colour of door facing material.

2. Show door construction, core, glazing detail and faces.

1.3 Shop Drawings

1. Submit shop drawings in accordance with Section 01340.

2. Clearly indicate door types and cutouts for lights.

1.4 Warranty

1. Contractor hereby warrants that wood doors will not warp, twist, show core lines, split, delaminate or sag in accordance with General Conditions, but for three (3) years.

PART 2 - PRODUCTS

2.1 Manufacturers

1. Manufacturers of architectural wood doors having Product acceptable for use:
   .1 Baillargeon.
   .2 Cambridge Door Co.
   .3 Door-Lam.
   .4 Algoma Hardwoods.
   .5 Weyerhaueser.
   .6 Harrison Doors Limited.

2.2 Materials

1. Solid Core Flush Doors – Non-Rated: to CAN/CSA-O132.2; 44 mm thick; constructed as follows:
   .1 Core: AWMAC Particleboard Core Type; 448 kg/m^3 solid lumber stiles and rails bonded to core.
   .2 Face Assembly Adhesive: Type 1 – Waterproof
   .3 Core Assembly Adhesive: Type 11 – Water-resistant.
   .4 Door Faces: Standard decorative laminate to ANSI / NEMA LD 3, Grade VGS;

0.7 mm thick; colours and patterns as selected by Consultant from manufacturer's complete range. Finish to be suede finish by Wilsonart, Formica, Nevemar Arborite or Equivalent.

2. Solid Core Flush Doors – Fire Rated: to CAN/CSA-O132.2; 44 mm thick; fire rated as indicated; constructed as follows:

.1 Core: homogeneous incombustible mineral core; ULC labeled; solid lumber stiles and rails bonded to core with reinforced inner blocking for hardware mounting 140 mm top and bottom, 250 mm at center.
.2 Face Assembly Adhesive: Type 1 – Waterproof
.3 Core Assembly Adhesive: Type 11 – Water-resistant.
.4 Door Faces: Standard decorative laminate to ANSI / NEMA LD 3, Grade VGS; 0.7 mm thick; colours and patterns as selected by Consultant from manufacturer's complete range. Finish to be suede finish by Wilsonart, Formica, Nevemar Arborite or approved Equivalent.

2.3 Fabrication

1. Fabricate doors and panels to CSA 0132.2.

2. Provide 19 mm minimum thick edge strips of wood factory painted or stained and varnished to match plastic laminate.

3. Prepare doors for glass. Provide glazing stops factory painted or stained and varnished to match plastic laminate. Glazing stops to project min 3mm beyond face of laminate finish with 45 degree corners with rounded inside edge.

4. Prepare doors to receive hardware. Provide sufficient blocking and reinforcing to accommodate heavy weight oversize butt hinges, cylindrical locksets, rim and concealed vertical rod / mortise lock case exit devices, magnetic locks, surface door closers and concealed overhead stops. Coordinate with Finish Hardware.

5. Doors to be undercut to accommodate continuous hinges where required.

6. Apply laminate facings in accordance with AWMAC Quality Standards and as specified in Section 06400.

PART 3 - EXECUTION

3.1 Installation

1. Install doors and hardware in accordance with manufacturer's instructions and AWMAC standards.

2. Adjust hardware for correct function.

3.2

3.3 Adjustment

1. Re-adjust doors and hardware just prior to completion of building to function freely and properly.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. Final cleaning: Section 01710
2. Sealants: Section 07900
3. Glazing: Section 08800

1.2 Design Requirements

1. This specification section is based on following aluminum glazing types:

   We have specified window units that closely resemble the existing fixed frame and operable units.

   .1 Bullnose fixed window - typical unit:
      .1 Fixed Units - Alumicor ShadowLine 970 Series.
      .2 Typical for punched openings fixed windows.

   .2 Operators: Kawneer - 518 Isoport Awning at W4 unit with lockset.
   Alumicor - UniVent 1350 – thermally broken 25.4mm insulating glass IGU
   Kawneer or approved equal by Alumicor.

2. Design all framing and glazing to withstand design loads as per the Ontario Building Code and regulations of authorities having jurisdiction.

3. Work of this Section must be designed by a Professional Engineer licensed to design structures in the Province of Ontario.

4. Design and locate all sealants, gaskets, air/vapour seals, thermal barriers and separations, drainage slots and holes, as shown or specified or as required to obtain design requirements. Ensure all components and assemblies exterior to air barrier drain to building exterior.

5. Provide aluminum closer angles and trims to suit.

1.3 Shop Drawings

1. Submit shop drawings in accordance with Section 01340.

2. Clearly indicate materials and large scale details for head, jamb and sill, profiles of components, elevations of unit, fully dimensioned layouts positioning brackets and anchorage details, glazing details, and location of isolation coating, description of related components and exposed finishes and fasteners.

1.4 Certificates

1. Submit manufacturer's certificate, certifying compliance with specification requirements, for:

.1 windows.
.2 finishes.
.3 insect screens.
.4 infiltration/exfiltration rates.
.5 thermal transfer resistance of frames.
.6 locking hardware.

1.5 Performance

1. In addition to all requirements of these specifications, the design of glazing shall take into consideration the characteristics of the mullions and effects of the connection and sealants at the frame junctions. Provide thermal breaks between exterior and interior components and sufficient metal on interior side of glass.

2. Fenestration shall meet CAN/CSA – A440 windows:

   .1 Air Leakage: A3
   .2 Water Leakage: B7
   .3 Wind Load Resistance: C5
   .4 Condensation Resistance: fixed frame: 53 minimum
   glass: 53 minimum
   .5 Window shall also meet the requirements for blocked operation, ease of operation, sash strength, stiffness and resistance to forced entry.

3. Submit manufacturer's certificate, certifying compliance with the above-noted requirements.

1.6 Quality Assurance

1. All design, fabrication and installation of this work to be carried out by qualified workers and trades experienced in the application and erection of the products, systems and assemblies specified.

2. Make provisions to drain to the exterior face any water entering in at joints and any condensation occurring within curtain wall construction while maintaining air seal between interior and exterior. Drain holes shall adequately drain all water.

3. At design conditions, no water penetration to interior side of assembly shall occur.

4. Curtain wall systems shall be designed, fabricated, and installed under deign conditions to be watertight in combination with movements occurring due to wind loads imposed on the system.

5. Formed aluminum components shall be sheet of alloy and temper suitable for their purpose and finish.

1.7 Warranty

1. Provide written warranty stating that aluminum windows are guaranteed against leakage, defects and malfunction under normal usage for a period of ten (10) years from the date of completion.

1.8 Maintenance Material

1. Provide data for maintenance and cleaning in accordance with general conditions.

PART 2 – PRODUCTS

2.1 Manufacturers

1. Equivalent Manufacturers for the work of this sections:

    .1 Kawneer Company Canada
    .2 Alumicor Limited
    .3 Oldcastle Glass
    .4 Sherwood Windows Ltd.

2.2 Materials

1. Extrusions shall be 6063 T54 alloy and temper.

2. Formed aluminum components shall be sheet of alloy and temper suitable for their purpose and finish.

3. Fasteners shall be 300 series stainless steel or 400 series stainless steel cadmium plated and of sufficient size and quantity to perform their intended function.

4. Weathering and glazing gaskets shall be extruded, black, closed cell or dense elastomer of durometer appropriate to the function.

5. Glazing tapes shall be macro-polyisobutylene, highly adhesive and elastic with built in shim.

6. Exterior Sills: extruded aluminum, minimum 3 mm thick, complete with joint covers, jamb drip deflectors, chairs, anchors, anchoring devices. All lower level sills to have exterior corners rounded to 6mm radius.

7. Sealants: in accordance with Section 07900, paragraph 2.1.3. Color to match window frame.

8. Foam Sealants: Urethane expanding foam sealant.

9. Bedding Compound: to CGSB 19-GP-14M.

10. Isolation Coating: alkali resistant bituminous paint.

2.3 Finish

1. Exposed aluminum sections shall be given an anodic oxide treatment in accordance with Aluminum Association specification AA-M12C22A31.

2. Colour - Match existing window frames (light green)

2.4 Fabrication

1. Fabricate framing from extrusions of size and shape shown on shop drawings. Interior and exterior extruded aluminum framing sections shall be integrated with a glass reinforced nylon thermal break to form a rigid composite assembly without the use of fasteners or other thermal bridging elements.

2. Composite frame assembly shall have a minimum of 1100 lbf/4 in. (4815N/ 100 mm) resistance to shear between the aluminum and the thermal break materials.

3. Dry shrinkage of the thermal break shall not exceed 0.10% of the framing member length.

4. Fixed framing shall be designed for screw spline corner construction. Frameless vent operating sash extrusions shall be tubular with mitred, clip, adhesive, stake joint construction.

5. All framing joints shall be accurately machined, assembled, and sealed to provide neat weathertight connections. Coupling mullions shall be designed to provide a functional split to permit modular construction and allow for thermal expansion. Glass stops shall be lock-in screwless type.

6. All glazing pockets shall be vented, pressure equalized and drained to the exterior.

7. Elastomeric air seal gasket shall be installed around the full perimeter of glass and sealed at corners wit silicone sealant. Air seal gasket must provide adhesion with silicone sealant.

2.5 Isolation Coating

1. Isolate aluminum from following components, by means of isolation coating:

    .1 Dissimilar metals except stainless steel, zinc, or white bronze or small area.
    .2 Concrete, mortar and masonry.
    .3 Wood.

2.6 Glazing

1. Prepare windows to receive 25 mm thick double glazed insulating glass specified under Section 08800.

PART 3 - EXECUTION

3.1 Preparation

1. Protect adjacent surfaces from damage resulting from work under this specification.

3.2 Installation

1. Install the windows in accordance with the manufacturer's instructions. Install the windows plumb, level and true relative to building structure. Do not exceed 3mm in 3050 mm (1/8" in

10'0") variation from plumb and level. Foam insulate between the frame members and the window opening using a single component polyurethane foam, insulating sealant. Install blue skin tight around new opening on all sides and caulk tight to new aluminum frames and blue skin for continuous air seal.

3.3 Sill Installation

1. Install metal sills with uniform wash to exterior, level in length, straight in alignment with plumb upstands and faces.

3.4 Caulking

1. Seal joints between frame members and other non-operating components with sealant to provide weathertight seal at outside.

2. Seal joints between windows and windowsills with sealant. Bed sill expansion joint cover plates and drip reflectors in bedding compound. Caulk between sill upstand and window-frame. Caulk butt joints in continuous sills.

3.5 Clean Up

1. Clean glass at the factory. Final cleaning of glass to remove job site soiling shall be the responsibility of the owner. Leave all surfaces reasonably clean, free from sealants, caulking or other foreign material. Remove all surplus materials and debris resulting from the work of this Trade.

3.6 Protection and Cleaning

1. Aluminum shall be isolated from concrete, mortar, plaster or dissimilar metals with bituminous paint or epoxy solution. Framing shall be protected from other building materials during and after installation until acceptance.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. Final Cleaning: Section 01710
2. Commercial Steel Doors and Frames Section 08100
3. Wood Doors Section 08211

1.2 Submittals

1. Submit a 12” x 12” sample of all glass products in accordance with Section 01340.

1.3 Warranty

1. Contractor hereby warrants glass against defects and failure, including leakage, under normal conditions of use, in accordance with Division 1, but for five (5) years total

PART 2 - PRODUCTS

2.1 Material

1. Exterior Tempered Safety Glass: All exterior Vision Glass to exterior doors, windows and screens to be sealed insulating units conforming to CAN/CGSB-12.8. Exterior lite ¼” tempered dark grey float glass to match **existing**, ½” air filled space, inner lite ¼” clear tempered float glass conforming to CAN/CGSB-12.3. All units to receive Low Emissivity coating on inner pane (3rd surface).

2. Interior Tempered Safety Glass: ¼” tempered clear float glass complete with etched tempered glass designation visible.

3. Polished Plate or Float Glass: To CAN/CGSB-12.3 clear.

4. Fire Rated Glass (FG): Technical Glass Products - 6mm thick fire-rated glazing by FireLite. Model: FireLite NT – rated for 60 minutes. Each piece to be permanently labelled with logo and UL logo and fire rating. Approved equal by Pyran Platinum as manufactured by SCHOTT and SAFTI FIRST model SuperLite II-XL 60.

5. Setting blocks: neoprene, 80 durometer hardness, 4” x ¼” width to suit glass.

6. Glazing tape: preformed butyl with continuous spacer, 10-15 durometer, hardness, paper release, black color, 1/8” x 3/8”.

7. Gasket: black neoprene "U" cavity type with lock strip.

PART 3 - EXECUTION

3.1 Installation

1. Double Sealed Units
   .1 Install glass as per aluminum window manufacturer's instruction to provide complete rain screen and air/ water barrier.

2. Other Glass
   .1 Clean and dry surfaces.
   .2 Apply glazing tape to fixed stops. Place setting blocks at 1/3 points.
   .3 Set glass on setting blocks against tape.
   .4 Apply glazing tape to glass.
   .5 Install stops.
   .6 Install glass in doors and screens with neoprene gasket.
   .7 Clean glass prior to building occupancy in accordance with Section 01710.

End of Section

PART 1 - GENERAL

1.1 General Finish Notes

1. The Material and Colour Schedule will be issued by the Consultant after tender. It shall be read in conjunction with the Drawings, Specifications, Room Schedule and Door Schedule. Colour and material references named will be based on one manufacturer, as carried by the Contractor or, in the case that no specific manufacturer is carried, based on the Consultant's choice.

2. Approved alternative manufacturers will be acceptable only as indicated in the specifications. However, approved alternate products submitted must match the products named in the Specification to the Consultant's selection. Alternate products other than those named in the specifications will not be allowed unless previously approved by the Consultant.

3. Consult Architect prior to painting any surface not included in the formulae as listed.

4. Final colour for exterior painted surfaces and prominent interior areas shall be approved on the job site by the Architect.

5. Paint samples: Contractor to submit paint samples for all areas required to "Match Adjacent Finish".

6. All similar paint formulations are to be identical when dry. Variations in tone, texture or sheen shall not be accepted.

7. Submit two 12" x 12" paint samples of each colour required for approval by the Architect.

8. Exact locations of accent paint called for in the Material and Colour Schedule, to be issued after Contract award, not specifically identified on the drawings are to verified on site with the Architect.

1.2 Exterior Finish Notes

1. All exposed metal (doors, frames, lintels, stairs, handrails, mechanical equipment, etc.) to be painted except for prefinished metal louvres, stainless steel, and aluminum. Mechanical equipment is to be painted whether delivered to the site prepainted or not (exhaust fans, goosenecks, exhaust stacks, supports, HVAC units, HRU units, etc.). Colours to match adjacent material-generally either to match brick or tan to match flashing or siding material. Do not paint exposed white PVC pipe covers on interior. Architect will advise on jobsite which other items mentioned above, if any, do not require painting.

1.3 Interior Finish Notes:

1. All heating units, recessed convectors, grilles, pipes, access panels, hangers and miscellaneous exposed metal work (except stainless steel or anodized aluminum) to be painted to match the surfaces on which they occur unless noted otherwise on the colour schedule, prefinished in suitable colour or directed by the Architect. If prefinished equipment is damaged, it shall be re-painted. Painting to be by formulations specified in Section 09900.

2. All interior fitments, casework, millwork, etc. to be birch unless otherwise noted. Refer to Sections for specific requirements regarding materials, construction, finishes and hardware. Note that drawer and cupboard interiors are to be considered as exposed surfaces and will therefore be finished.

3. Do not paint over nameplates, identification tags, etc.

4. Make good all existing surfaces and finishes that are damaged during construction.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. Gypsum Board: Section 09250
2. Rough Carpentry Section 06100

1.2 Reference Standards

1. Do work to CSA A82.31-1977, except where specified otherwise.

PART 2 - PRODUCTS

2.1 Materials

1. Metal Studs: non-load bearing channel stud framing to ASTM C645-09a, roll formed from 0.59 mm thickness electro-galvanized steel sheet for screw attachment of gypsum lath and metal lath, and with service access holes.

2. Structural Metal Studs: CSA-S13-01 and hot-dipped galvanized to ASTM A525M-87, minimum 1.22 (18ga.) use thicker materials where required to suit structural requirements. Framing shall be designed by a licensed professional engineer registered in the province of Ontario. Follow fabrication standards ASTM C955.

3. Floor and ceiling tracks: to ASTM C645-09a in width to suit stud sizes, 30 mm legs for floor track, 50 mm for ceiling track.

4. Metal channel stiffener: 38 mm size, 2 mm thick cold rolled galvanized steel.

5. Furring channels (channels, hangers, tie wire, insert, anchor): CGSB 7.1-98-CAN/CGSB.

6. Touch-up Zinc Rich Paint: CAN/CGSB-1.181-92.

PART 3 - EXECUTION

3.1 Stud Partitions

1. Align partition tracks at floor and underside of structure above and secure at 24” o.c. maximum. All partitions to extend to underside of structure above.

2. Place studs vertically at 16” o.c. and not more than 2” from abutting walls and at each side of openings and corners. Position studs in tracks at floor and ceiling. Cross brace steel studs, as required, to provide rigid installation to manufacturer's instructions.

3. Erect metal studding to tolerance 1:1000.

4. Attach studs to bottom track using screws.

5. Coordinate simultaneous erection of studs with installation of service lines. When erecting studs, ensure web openings are aligned.

6. Install steel frames and anchor frames securely to studs using minimum of three (3) anchors per jamb for jambs up to 84” high and a minimum of four (4) anchors per jambs for jambs over 84” high.

7. Provide two (2) studs at each side of openings wider than stud centre specified.

8. Install, cut to length, piece of runner horizontally over door frames.

9. Provide 38 mm x 89 mm vertical and horizontal wood studs secured between metal studs for attachments of bathroom fixtures, accessories, cabinet work, and other fixtures, including grab bars, towel rails, attached to steel stud partitions.

10. Install steel stud or furring channel between studs for attaching electrical and other boxes.

11. Extend all partitions to underside of structure above for sound and fire separation, unless otherwise noted on drawings.

12. Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs.

3.2 Ceiling Furring

1. Install runners level to tolerance of 1/8” over 11’-8”. Provide runners at interruptions of continuity and change in direction.

2. Frame with furring channels, perimeter of openings to accommodate access panels, light fixtures, diffusers, grilles, etc.

3. Furring for bulkheads within or at termination or ceilings.

4. Install furring channels at 16” o.c. maximum.

3.3 Wall Furring

1. Install steel furring, as indicated.

2. Frame opening and around built-in equipment on four (4) sides with channels.

3. Box-in beads, columns, pipes, and around exposed services.

3.4 Fire-rated Assemblies

1. Where required, install Metal Stud System and Furring in accordance with appropriate ULC Design and with supplement to the National Building Code of Canada 2015.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. Masonry — Section 04200
2. Rough Carpentry — Section 06100
3. Metal Stud System — Section 09111
4. Painting — Section 09900
5. Access Doors: — refer to related mechanical and electrical

1.2 Reference Standards

1. Do work to CSA A82.31-1977, except where specified otherwise.

PART 2 - PRODUCTS

2.1 Gypsum Board

1. Plain: to CSA A82.27-M1977 standard, 5/8" thick or as indicated, tapered edges.
2. Plain: to CSA A82.27-M1977, Fire-rated Type X, 5/8" thick or as indicated, tapered edges.
3. Plain: to CSA A82.27-M1977, Washroom walls 5/8" dens-shield or as indicated, tapered edges.

2.2 Fastenings and Adhesives

1. Screws: to CSA A82.31-1977.
2. Adhesive: to CGSB 71 GP 25M.
3. Laminating Compound: to CSA A82.31-1077.
4. Concrete Anchors: Phillips Red Head TW-614 or equivalent. Do not use powder activated fasteners for ceiling support.
5. Tie Wire: #16 ga. galvanized soft annealed steel wire.

2.3 Accessories

1. Casing Beads and Corner Beads: 0.5 mm base thickness commercial sheet steel with G90 zinc finish to ASTM A 525-78 A.
2. Joint compound: to CSA A82.31-1977, asbestos-free.
3. Caulking: Acoustical sealant.

PART 3 - EXECUTION

3.1 Gypsum Board Application

1. Do not apply gypsum board until bucks, anchors, blocking, electrical and mechanical work are approved.

2. Apply single and double layers gypsum board to metal furring or framing, using screw fasteners and laminating adhesive. Maximum spacing of screw 12" oc.

3. Apply gypsum board to concrete block surfaces, where indicated, using laminating adhesive.

4. Apply type X fire code gypsum board where indicated, in accordance with U.L.C. requirements and with supplement to the National Building Code of Canada to obtain the required fire protection, fire rating and fire separation.

3.2 Accessories

1. Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces, where practical. Make joints tight, accurately aligned and rigidly secure. Mitre and fit corners accurately, free from rough edges.

2. Install casing beads around perimeter of suspended ceilings.

3. Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated.

4. Install metal resilient channel sound transition by PrimeWall or equal. Locations where indicated on drawings. Spacing as per manufacturer recommendations.

3.3 Access Doors

1. Install access doors to electrical and mechanical fixtures specified in respective Sections.

2. Rigidly secure frames to furring or framing systems.

3.4 Taping and Filling and Sound Seal

1. Seal with acoustical sealant at ceilings, floors, wall intersections and all penetrations such as electrical outlets.

2. Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.

3. Finish corner beads, control joints and trim as required with two (2) coats of joint compound and one (1) coat of taping compound, feathered out onto panel faces.

4. Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after painting is completed.

5. Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

6. Completed installation to be smooth, level or plumb, free from waves and other defects and ready for painting.

End of Section

PART 1 - GENERAL

1.1 Reference Standards

1. Fabrication: to ASTM 365-78 and CAN/GSB-92.1-M77.

2. Installation: to ASTM C636-76, except where specified otherwise.

1.2 Design Criteria

1. Maximum deflection 1/360 of span to ASTM 365-78 deflection test.

1.3 Samples

1. Submit two each 12" x 12" samples of each individual tile and grid type in accordance with Section 01340.

1.4 Warranty

1. Submit an extended warranty covering materials and labour and the repair or replacement of defective work but for two (2) years total.

PART 2 - PRODUCTS

2.1 Materials

1. **Acoustic Panel Type (ACT-1) typical ceiling tile:**
   .1 24" x 48" x 3/4" – Sereno Fine Fissured square lay-in. By CertainTeed
   NRC – 75 SFF-497 HNRC / HCAC
   .2 Acceptable equal as manufactured by Armstrong, Celotex and Certainteed.

2. **Suspension system:**
   .1 15/16" exposed tee by USG.
   .2 Acceptable equal as manufactured by Armstrong, CGC and Celotex

3. **Exposed Tee Bar Grid Components:** Cold rolled steel, zinc coated, shop painted, satin sheen, white, interlocking, main and cross tee of double web with rectangular bulb, depth governed by span, 1" exposed face.

4. **Hangers:** 1/8" galvanized soft annealed steel wire. Maximum spacing 12.0 feet.

5. **Accessories:** splices, clips, retainers and other accessories to complement suspension system components.

2.2 Installation

1. Co-ordinate suspension system with related components.

2. Install acoustic units parallel to building lines with edge unit not less than 50% or unit width.

3. Scribe acoustic units to fit adjacent work. Butt joints tight, terminate edges with moulding.

4. Support suspension system main runners at 48” oc maximum with hangers from structure. Assembly shall support super-imposed loads. Maximum permissible deflection, 1/360 of span.

5. Attach cross member to main runner to provide rigid assembly.

6. Install suspension assembly to manufacturer's written instructions.

7. Install flush edge moulding at junction of acoustic unit ceiling and other materials around entire length of joint. Secure to construction. Butt joints neatly, square and true in alignment.

8. Set acoustic units in place.

9. Set all ceiling levels by the use of transit or laser level.

10. Provide for Owner one (1) complete carton of each type of ceiling tile.

End of Section

PART 1 - GENERAL

1.1 Related Work

Carpeting Section 09680

1.2 Maintenance Data

1. Provide data for maintenance of resilient flooring for incorporation into Maintenance Manual.

1.3 Environmental Requirements

1. Maintain minimum 20 deg. C air temperature at flooring installation area for three (3) days before, during and for seven (7) days after installation.

PART 2 - PRODUCTS

2.1 Materials

1. **Vinyl Composition Tile (VCT):** Not applicable

2. **Resilient Rubber Base (RB):** top set coved, 3 mm thick, rubber, 100 mm high minimum 1200 mm long, including premoulded end stops and external corners. Acceptable materials: non-shrink Rubber Wall Base with toe as manufactured by Johnsonite. Colours: From full Johnsonite "Coloright" colour line.

3. **Primers and adhesives:** waterproof, recommended by flooring manufacturer for specific material on applicable substrate, above, at or below grade. Use Johnsonite 990 Solvent Free Environmentally Safe White Acrylic Cove Base Adhesive for rubber base.

4. **Sub-floor filler:** white premix latex requiring water only to produce cementitious paste.

5. **Sealer:** not required

6. **Wax:** not required

7. **Polyethylene sheet:** to CAN2 51.33-M77, Type 2, for protection.

8. **Nose filler:** Epoxy caulking compound Johnsonite 930.

9. **Metal Edge Strip:** Smooth aluminum alloy, with lip extending under tile and shoulder flush to top of resilient tile flooring.

PART 3 - EXECUTION

3.1 Inspection

1. Ensure concrete floors are dry, by using test methods recommended by tile manufacturer, and inspect for negative alkalinity, carbonization or dusting.

2. Commencement of work indicates acceptance of conditions by flooring installer.

3.2 Subfloor Treatment

1. Remove subfloor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with subfloor filler.

2. Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured.

3.3 Tile

1. Apply adhesive uniformly using recommended notched trowel in accordance with Flooring Manufacturer's instructions. Do not spread more adhesive than can be covered by flooring before initial set takes place.

2. Lay flooring with joints parallel to building lines to produce symmetrical tile pattern. Border tiles - minimum half tile width or as indicated by drawings and Finish Schedule.

3. Cut tile and fit neatly around fixed or excessively heavy objects.

4. Install flooring in pan type floor access covers and all clean out covers, where applicable. Maintain floor pattern.

5. Terminate flooring at center line of door in openings where adjacent floor finish or color is dissimilar.

6. Install metal edge strips at unprotected or exposed edges where flooring terminates.

7. At doorways to incrapack units, extend tile and base fully into door opening to incrapak classroom.

3.4 Base Application

1. Set base in adhesive tightly against wall and floor surfaces. Use lengths as long as practicable and not less than minimum 500 mm long.

2. **Remove all existing surface defects from concrete pour floors at existing spaces. Install must allow for minimal repairs and priming of existing concrete floors to accept new floor finishes.**

3. Install straight and level to variation of 1:1000.

4. Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.

5. Miter internal corners. Use premoulded corner pieces at all external corners and ensure full adhesion through to ends of corner pieces. See detail for termination at door frames.

6. Leave in the building one (1) complete carton of each of two (2) colours of floor tile and twelve (12) tiles of each of the remaining colours. Colours of extra tile to be specified by Architect.

3.5 Initial Maintenance after Installation

1. Broom sweep or vacuum thoroughly.

2. Do not wet mop, wash, scrub, or strip the floor. These procedures will be done by the Owner.

3.6 Protection of Work

1. Following broom sweeping, protect new floors with 0.15 mm thick Polyethylene cover and lay planking in all necessary traffic areas to minimize damage by other trades. Maintain until just before final inspection.

3.7 Preparation for Inspection

1. Only if so notified by Architect, and in the presence of the Owner, scrub the floor using a neutral detergent and a floor machine of 170-250 rpm capability equipped with a scrub brush or a scrubbing pad (3M blue or equal).

2. Lightly rinse and allow to dry. Note: Do not flood the floor with rinse water, scrubbing, or stripping solutions. Final re-washing, if required, and waxing will be done by owner.

End of Section

PART 1 – GENERAL

1.1 Related Work

1. Resilient Tile Flooring and Rubber Base Section 09660

1.2 Samples

1. Submit duplicate 1 m square pieces of each type of carpet specified, duplicate 125 x 75 mm pieces for each color selected, 150 mm lengths of binder bars, in accordance with Section 01340.

1.3 Maintenance Data

1. Provide maintenance data for carpet maintenance for incorporation into Maintenance Manual specified in Section 01730.

1.4 Warranty

1. Carpet manufacturer lifetime warranties: wear, static protection, delamination, tuftbind failure, edge ravel and zippering and dimensional stability. Provide one full box of carpet tile of each colour to Owner.

PART 2 – MATERIALS

2.1 Modular Carpet (CAR. Tile)

1. Fibre: 100% solution dyed nylon.
2. Construction: textured dense pattern loop
3. Standard Backing System: PVC modular – containing recycled content.
4. Pile Density: 5300 FHA minimum.
5. Gauge: 1/12; 47.2 rows/10 cm, minimum.
6. Stitches: 11.2 spi; 45.3 stitches/10 cm, minimum.
7. Flammability: Radiant Panel ASTM E648 – Class I
8. Protections: anti-microbial, anti-zippering, anti-static and stain protection
9. Modular Size: 610 x 610
10. Manufacturers: Mohawk Group Carpet Tile = Caliber Series - BT282
    Size: 600mm x 600mm P with T3 Back
    Colours: Marble – 7568

2.2 Binder Bars

1. As recommended by carpet manufacturer. Color to match carpet.

2. Use binder bars at exposed carpet edges. Install binder bars at doorways centered under doors.

2.3 Adhesive

1. Full spread premium pressure sensitive adhesive as recommended by carpet manufacturer to suit carpet and subfloor conditions, and allow repositioning.

PART 3 - EXECUTION

3.1 Examination

1. New concrete must be fully cured and free of moisture. New concrete requires a curing period of approximately 90 days. Tests for moisture and alkalinity must be performed as detailed under moisture testing.

2. Work of others in areas where carpet is installed has been completed.

3.2 Preparation

1. Dust, dirt, debris, and noncompatible adhesive must be removed before installation begins. Surfaces must be smooth and level with all holes and cracks filled with latex based Portland cement patching compound.

3.3 Installation

1. Establish measurement and layout per manufacturer's recommendations. Follow manufacturer's pallet and box sequencing.

2. Install starting in the corner of one quadrant and in a pyramid fashion. Install by butting edges together evenly and do not compress modules compress modules. Fit carpet neatly around architectural, mechanical, electrical and furniture fitments.

3. Cut carpet modules at perimeters, floor electrical outlets, and door openings. Apply adhesive whenever modules are cut. Loop pile modules may require trimming or clipping of tufts.

4. Finish seams level, flat and inconspicuous.

3.4 Protection of Finished Work

1. Vacuum carpets clean. Protect traffic areas of carpeted floor with polyethylene drop sheets. Tape joints to prevent shifting.

2. After installation, and until project completion, coordinate work to ensure that carpeting is not damaged by traffic or by subsequent work.

End of Section

PART 1 - GENERAL

1.1 Related Work

1.	Door Schedule	refer to Drawings
2.	Commercial Steel Doors and Frames	Section 08100
3.	Room Finish Schedule	refer to Drawings
4.	Masonry	Section 04200

1.2 Reference Standard

1. Ontario Painting Contractors Association (OPCA) Architectural Specification Manual - referenced as OPCA Manual, latest Edition. Paint formulations and methods referred to herein refer to this Manual. If contractor is unfamiliar with this reference standard, contact the OPCA.

1.3 Product Data

1. Submit to Architect, for review, product data for all formulas, including manufacturer's trade names.

2. Paint Manufacturer will provide periodic reviews and reports to Architect regarding work in this Section and if Contractor is adhering to manufacturer’s product specifications.

1.4 Environmental Requirements

1. Do not apply paint finish in areas where dust is being generated.

2. Conform to requirements of OPCA Manual.

3. Comply with the requirements of Section 01570 - Health and Environmental Specifications.

1.5 Extent of Painting

1. For new construction, for rooms shown in room finish schedule to have painted walls, paint all non prefinished surfaces unless indicated otherwise, and repaint prefinished surfaces where indicated.

2. For existing construction, for rooms shown in room finish schedule to have repainted walls:
   - Paint all non prefinished new surfaces unless indicated otherwise.
   - Repaint prefinished surfaces where indicated.
   - Repaint all previously painted surfaces unless indicated otherwise.

1.6 Environmental Requirements

1. Do not apply paint finish in areas where dust is being generated.

2. Conform to requirements of OPCA Manual.

3. Comply with the requirements of Section 01570 Health and Environmental.

1.7 Finishes and Colours

1. Review the requirements outlined in Section 09000, Finish and Colour Notes. A separate colour schedule will be issued after contract award.

1.8 Warranty

1. Provide a 2 year warranty on completion stating that the work has been performed with respect to the standards and requirements incorporated in the OPCA specification manual latest edition.

PART 2 - PRODUCTS

2.1 Materials

1. Acceptable products: Per Chapter 5 OPCA Manual as listed.

2. Paint materials for each paint system to be products of a single manufacturer.

3. Use low-VOC and low-odour paints only.

PART 3 - EXECUTION

3.1 Preparation of Surfaces in new Construction

1. Prepare surfaces to receive paint per Chapter 3 OPCA Manual.

2. Prepare wood surfaces to CGSB 85-GP-1M.
   .1 Use CGSB 1-GP-126M vinyl sealer over knots resinous areas.
   .2 Apply wood paste filler to nail holes and cracks.
.3 Tint filler to match stains for stained woodwork.

3. Touch up shop paint primer on steel with CGSB 1-GP-40M to CGSB 85-GP-14M.

4. Prepare galvanized steel and zinc coated surface to CGSB 85-GP-16.

5. Prepare wallboard surfaces to CGSB 85-GP-33M. Fill minor cracks with plaster patching compound.

3.2 Preparation of Previously Painted Surfaces

1. Remove screws, bolts, nails, etc. from all surfaces to be painted

2. Remove all peeling and scaling paint by scraping and sanding.

3. Remove loose and broken pieces. Fill all holes, cracks and crevices with appropriate patching compound and match surrounding texture. Touch-up with appropriate primer.

4. Remove all dirt, grease, oil, wax and other contaminants by scrubbing with a detergent solution such as trisodium phosphate. Rinse with clean water.

5. All metal surfaces must be washed with mineral sprits. Change solvent and rags frequently. Remove all rust by sanding. Prime with rust inhibitive paint.

6. Dull all glossy surfaces by sanding.

7. Wash with solvent surfaces that have been subject to writing with marking pens, crayons, or lipsticks. Prime to stop bleeding.

8. For joints within or adjacent to exterior areas to be painted or cleaned, remove old cracked and loose caulking and replace with a high quality caulking compound.

3.3 Application

1. Sand and dust between each coat to remove defects visible from distance up to 60”.

2. Finish closets and alcoves as specified for adjoining rooms.

3. Apply each coat at the proper consistency. Each coat of finish should be fully dry and hard before applying the next coat, unless the manufacturer’s instructions state otherwise.

3.4 Mechanical and Electrical Equipment

1. Paint exposed conduits, pipes, hangers and other mechanical and electrical equipment occurring in finished areas as well as inside cupboards and cabinet work. Colour and texture to match adjacent surfaces, except as noted otherwise. Coordinate with mechanical trades applying banding and labeling after pipes have been painted. Do not paint white PVC covers on exposed mechanical water, drain and other lines

2. Paint gas piping standard yellow where visible on roof or in service spaces.

3. Paint surfaces inside of ductwork and elsewhere behind grilles where visible using primer and one coat of matte black paint.

4. Paint both sides and edges of plywood backboards for equipment before installation.

5. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

3.5 Paint Systems

1. System references listed are based on Chapters 4A and 4B of OPCA Manual and are OPCA Premium Grade, unless noted otherwise.

3.6 Interior Finishes

1. Wood, where applicable: INT. 1-A, Alkyd Semi-Gloss Finish, Premium Grade.

2. Gypsum board - Ceilings and bulkheads - INT. 4-A, Alkyd Flat Finish, Premium Grade.

3. Gypsum board – walls: JNT4A, Alkyd eggshell, Premium Grade.

4. Concrete Block: INT. 8-B, Alkyd Semi-Gloss Finish, Premium Grade.

5. Galvanized metal: INT. 13-A, Alkyd Semi-Gloss Finish, Premium Grade.

3.7 Refinishing of Previously Painted Surfaces

1. Apply two (2) finishing coats of paint materials listed in Section 3.5 and 3.6 for the type of surface considered.

2. When satisfactory coverage can be achieved by only one (1) coat, the second coat is not required.

3. Apply additional coats if necessary to cover accent colours, graphics, etc.

End of Section

PART 1 - GENERAL

1. Not applicable.

PART 2 - PRODUCTS

2.1 Fixtures

1. **Corner Guards**

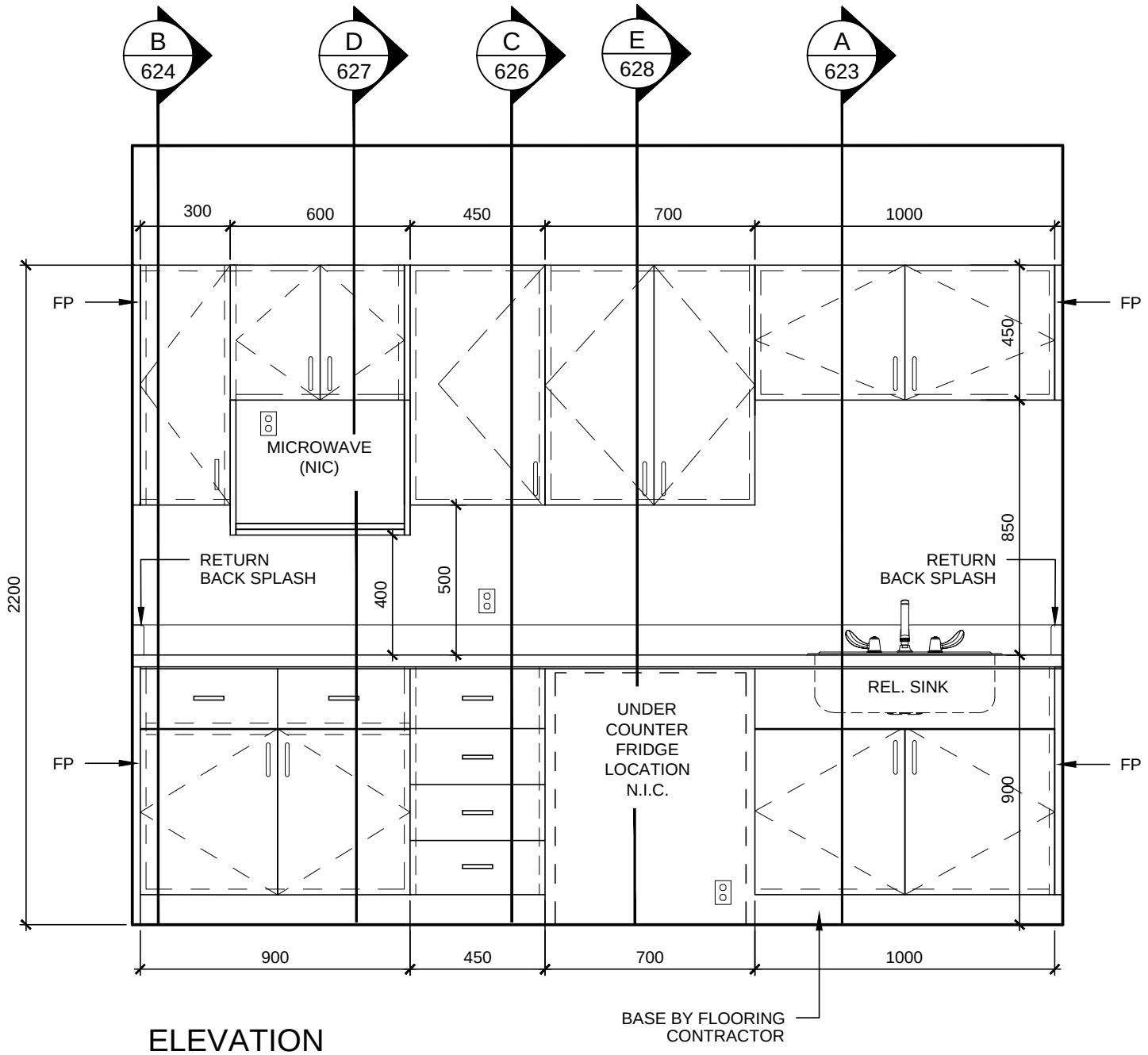
.1 Surface-Mounted, Metal Corner Guards: Fabricated from 1-piece, formed or extruded metal with formed edges; with 90- or 135-degree turn to match wall condition.
- .1 Available Manufacturers:
  - .1 ARDEN Architectural Specialties, Inc.
  - .2 Construction Specialties, Inc.
  - .3 Pawling Corporation.
- .2 Material: Stainless steel, Type 304.
  - .1 Thickness: Minimum 0.0500 inch.
  - .2 Finish: Directional satin, No. 4.
- .3 Wing Size: Nominal 3-1/2 by 3-1/2 inches x 48 inches high.
- .4 Corner Radius: 1/8 inch.
- .5 Mounting: Flat-head, countersunk screws through factory-drilled mounting holes.

PART 3 – EXECUTION

3.1 Installation

1. Install where indicated on drawings and as per manufacturer’s instructions.

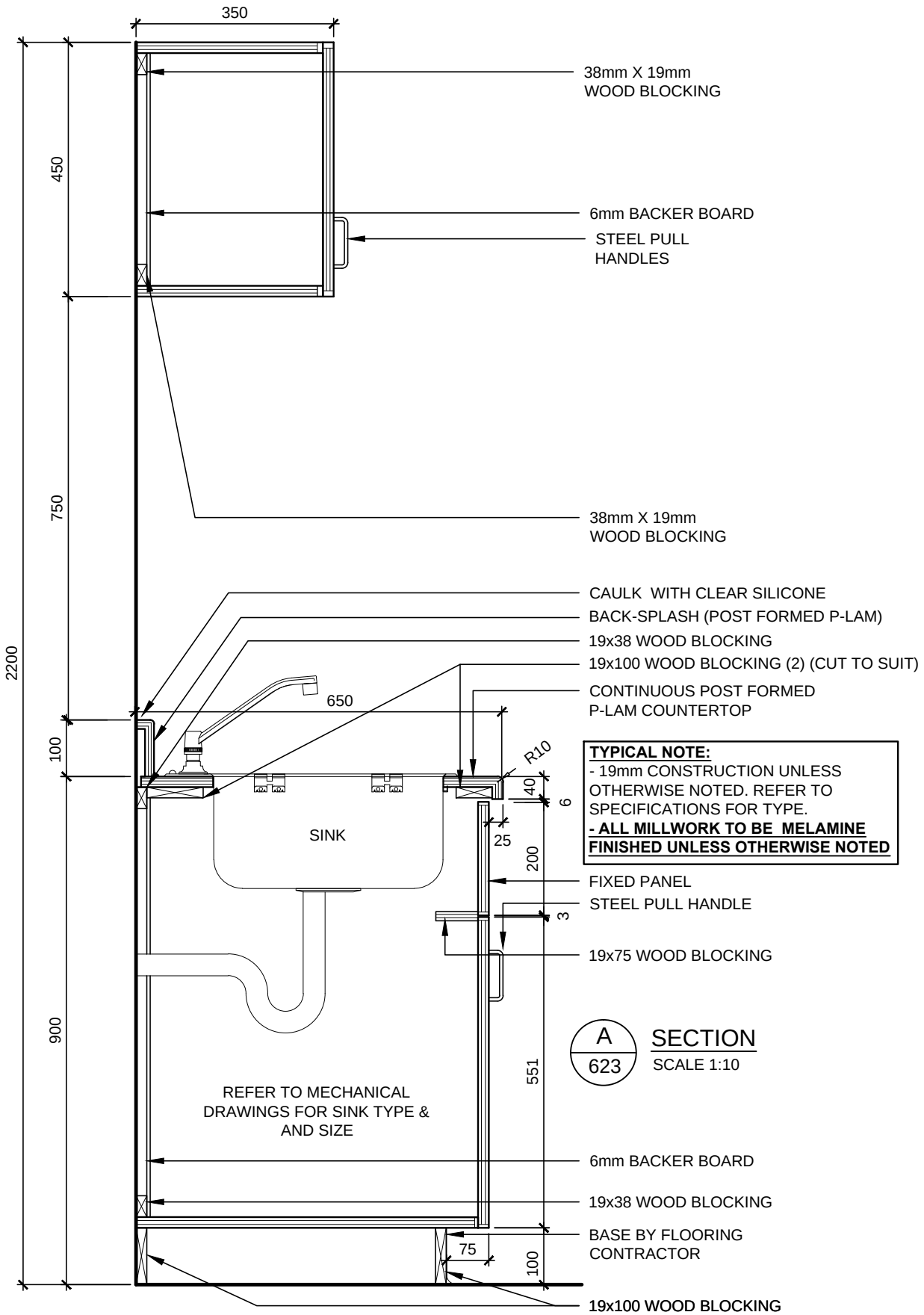
End of Section



ELEVATION

SCALE 1:20

TOWNSHIP OF WEST LINCOLN RENOVATIONS 318 CANBOROUGH ST. SMITHVILLE, ON. L0R 2A0 MILLWORK ITEM: MM1 REFERENCE: A2.00	PROJ: 2020-18 SCALE: AS NOTED DRAWN: R.P. DATE: 2020-06-18
GRGURIC ARCHITECTS INCORPORATED Web: www.2gai.com	AD 622



TYPICAL NOTE:
- 19mm CONSTRUCTION UNLESS OTHERWISE NOTED. REFER TO SPECIFICATIONS FOR TYPE.
- ALL MILLWORK TO BE MELAMINE FINISHED UNLESS OTHERWISE NOTED

A/623 SECTION
SCALE 1:10

TOWNSHIP OF WEST LINCOLN RENOVATIONS

318 CANBOROUGH ST. SMITHVILLE, ON. L0R 2A0

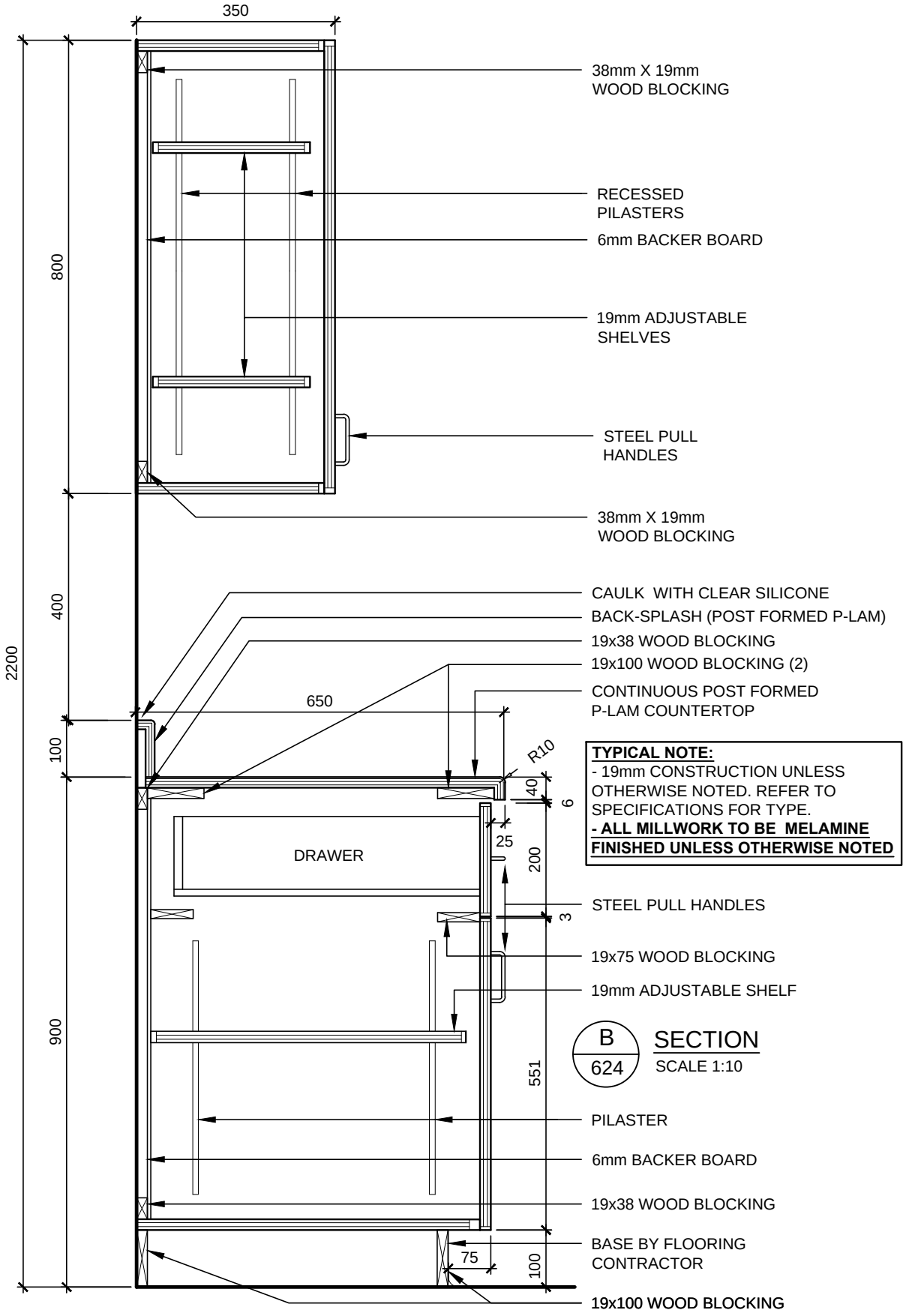
MILLWORK SECTION DETAIL

TYPICAL SECTION A

PROJ:	2020-18
SCALE:	AS NOTED
DRAWN:	R.P.
DATE:	2020-08-25

GRGURIC ARCHITECTS INCORPORATED
Web: www.2gai.com

AD 623



TYPICAL NOTE:
- 19mm CONSTRUCTION UNLESS OTHERWISE NOTED. REFER TO SPECIFICATIONS FOR TYPE.
- ALL MILLWORK TO BE MELAMINE FINISHED UNLESS OTHERWISE NOTED

B / 624 SECTION
SCALE 1:10

TOWNSHIP OF WEST LINCOLN RENOVATIONS

318 CANBOROUGH ST. SMITHVILLE, ON. L0R 2A0

MILLWORK SECTION DETAIL

TYPICAL SECTION B

PROJ:	2020-18
SCALE:	AS NOTED
DRAWN:	R.P.
DATE:	2020-06-18

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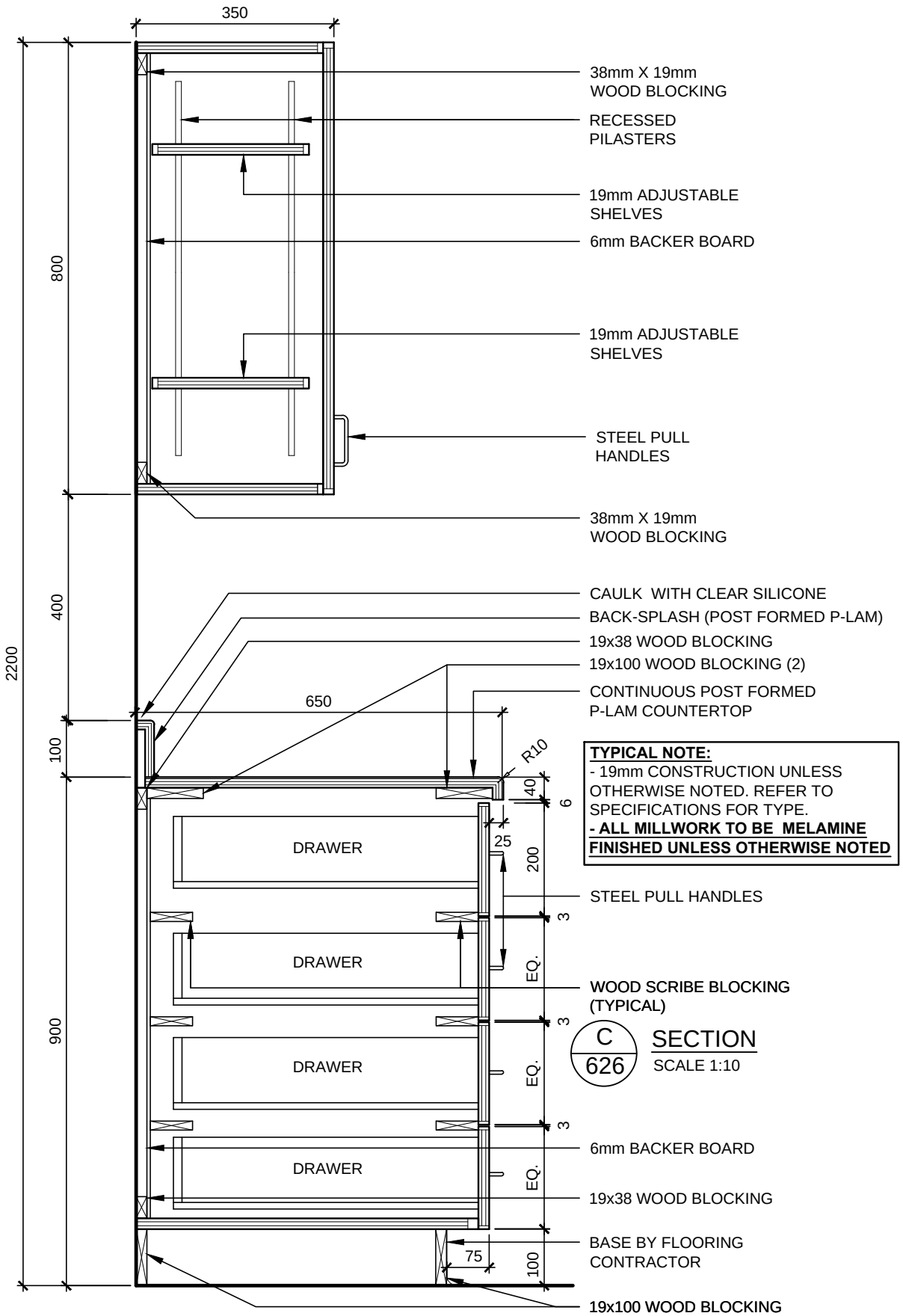
AD 624



TOWNSHIP OF WEST LINCOLN
RENOVATIONS
318 CANBOROUGH ST. SMITHVILLE, ON. L0R 2A0
MILLWORK SECTION DETAIL
TYPICAL SECTION C

PROJ:	2020-18
SCALE:	AS NOTED
DRAWN:	R.P.
DATE:	2020-06-18

GRGURIC
ARCHITECTS
INCORPORATED
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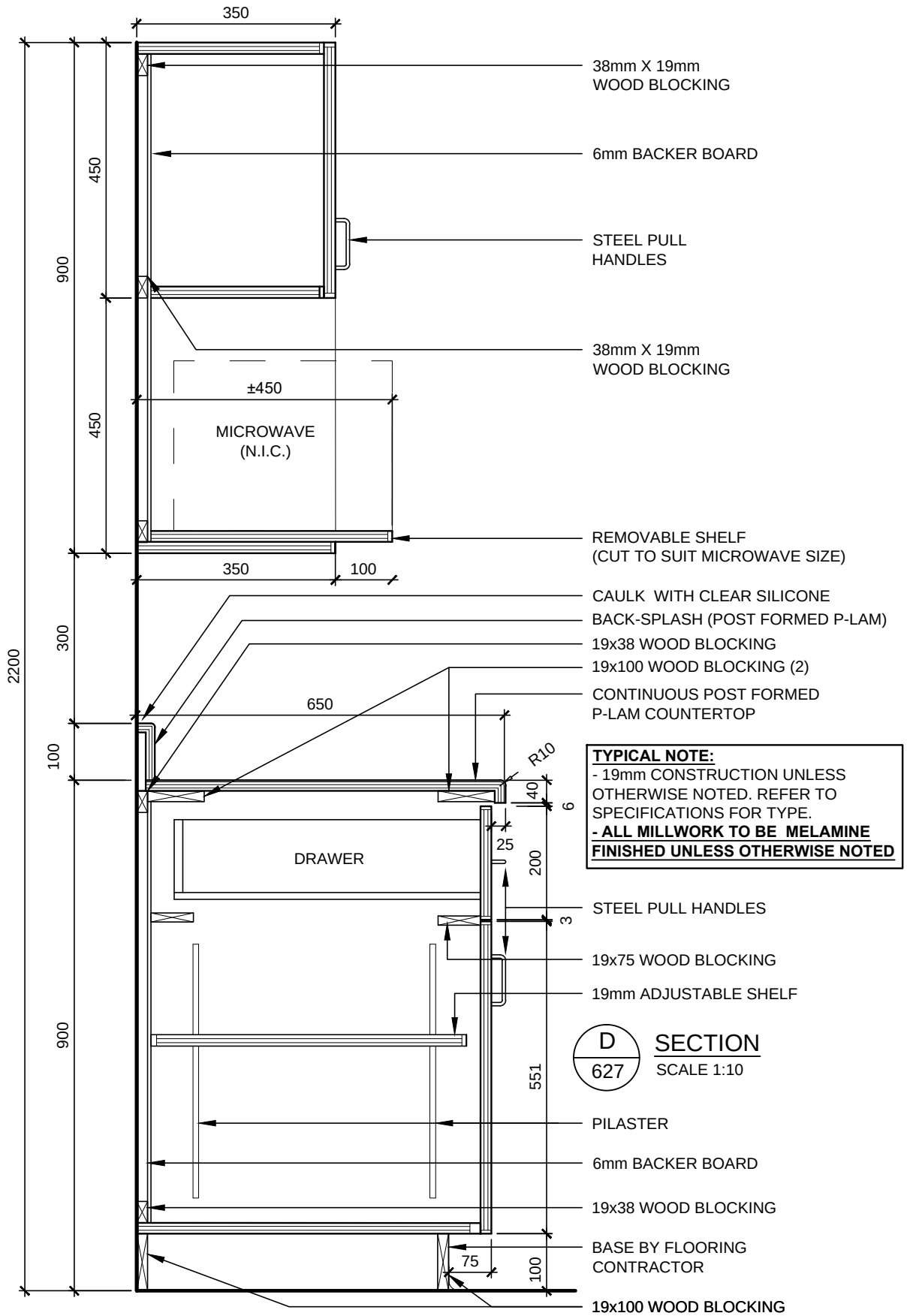
AD
626



TYPICAL NOTE:
- 19mm CONSTRUCTION UNLESS OTHERWISE NOTED. REFER TO SPECIFICATIONS FOR TYPE.
- ALL MILLWORK TO BE MELAMINE FINISHED UNLESS OTHERWISE NOTED

D / 627 SECTION
SCALE 1:10

TOWNSHIP OF WEST LINCOLN
RENOVATIONS
318 CANBOROUGH ST. SMITHVILLE, ON. L0R 2A0
MILLWORK SECTION DETAIL
TYPICAL SECTION D

PROJ:	2020-18
SCALE:	AS NOTED
DRAWN:	R.P.
DATE:	2020-06-18

GRGURIC
ARCHITECTS
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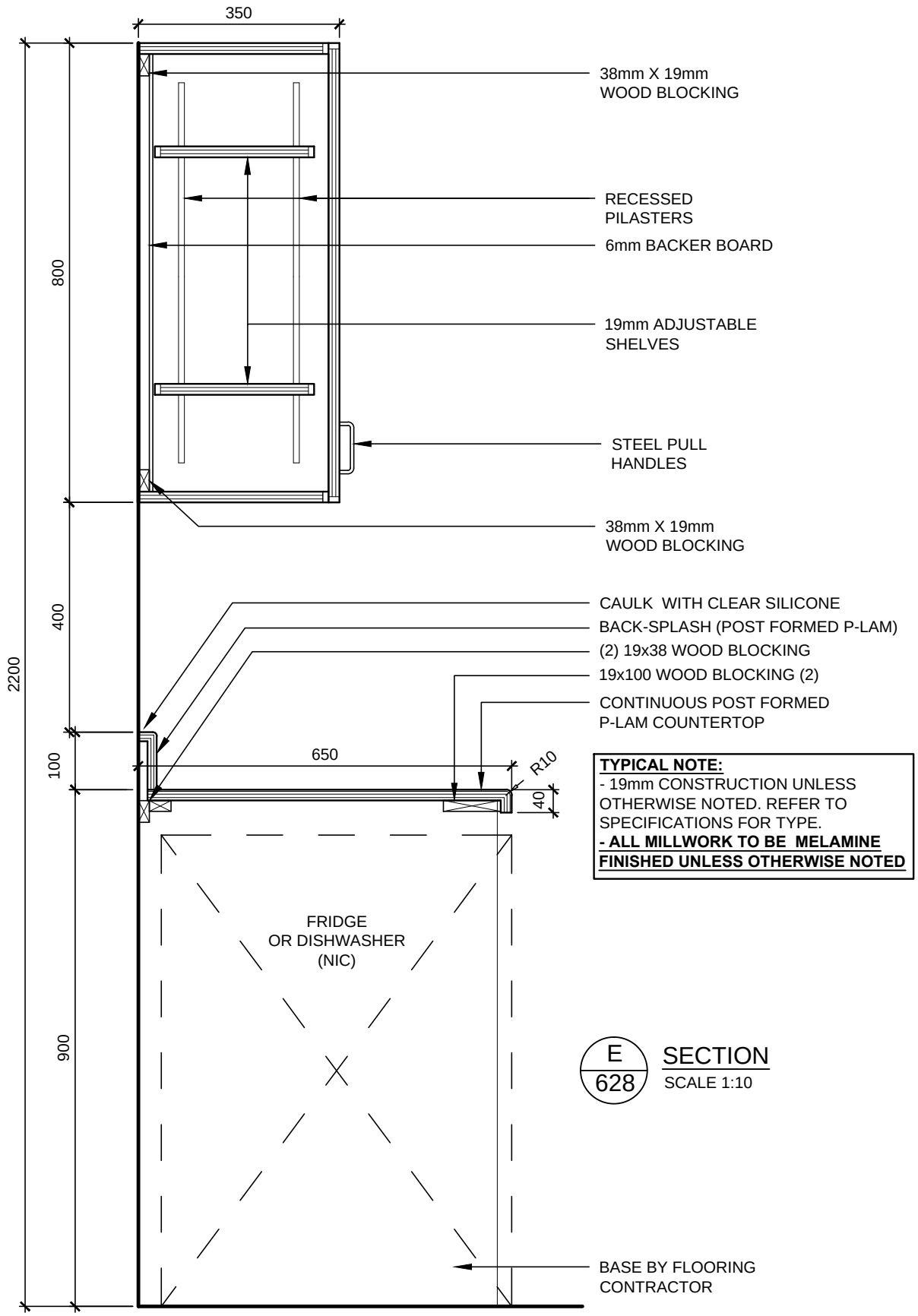
AD
627



TYPICAL NOTE:
- 19mm CONSTRUCTION UNLESS OTHERWISE NOTED. REFER TO SPECIFICATIONS FOR TYPE.
- ALL MILLWORK TO BE MELAMINE FINISHED UNLESS OTHERWISE NOTED

E / 628 SECTION
SCALE 1:10

TOWNSHIP OF WEST LINCOLN RENOVATIONS

318 CANBOROUGH ST. SMITHVILLE, ON. L0R 2A0

MILLWORK SECTION DETAIL

TYPICAL SECTION E

PROJ:	2020-18
SCALE:	AS NOTED
DRAWN:	R.P.
DATE:	2020-06-18

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AD 628