

CITY OF TORONTO

ENDERBY CHILD CARE CENTRE UPGRADES

118 Enderby Road, Toronto, Ontario

SPECIFICATIONS

ISSUED FOR TENDER -

CONSULTANT PROJECT NUMBER 2503

ISSUE DATE November 19, 2025

SOCA STUDIO OF
CONTEMPORARY
ARCHITECTURE

LAPTISTE ARCHITECTURE INC.
o/a Studio of Contemporary Architecture | SOCA
1137A QUEEN STREET EAST, TORONTO, ONTARIO M4M 1K9

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Project: ENDERBY CHILD CARE CENTRE UPGRADES
Location: TORONTO, ONTARIO

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END OF SECTION

Part 1 General

1.1 Section Includes

- .1 Consultants

1.2 Consultants

- .1 ARCHITECT:
Laptiste Architecture Inc. o/a Studio of Contemporary Architecture
1137a Queen Street East
Toronto, Ontario M4M 1K9
(416) 919-4525
Attention: Shane Laptiste
- .2 STRUCTURAL ENGINEER:
Read Jones Christoffersen Ltd.
100 University Ave
Toronto, ON M5J 2Y1
(416) 977-5335
Attention: Clement Chan

Part 2 Products

2.1 Not Used

- .1 Not used

Part 3 Execution

3.1 Not Used

- .1 Not used

END OF SECTION

PART 1 - GENERAL

1.1 CASH ALLOWANCES

1. Include in Contract Price specified cash allowances.
2. Cash allowances, unless otherwise specified, cover net cost to Contractor of services, products, construction machinery and equipment, freight, handling, unloading, storage, installation and other authorized expenses incurred in performing Work.
3. Contract Price, and not cash allowance, includes Contractor's overhead and profit in connection with such cash allowance.
4. Disbursements from Cash Allowances shall be authorized by Consultant in writing and by Change Order.
5. Contract Price will be adjusted by written order to provide for excess or deficit to each cash allowance.
6. Extend to Owner refunds, trade and quantity discounts which may be received in purchasing under Cash Allowances, except cash discounts for prompt payment.
7. Include progress payments on accounts of work authorized under cash allowances in Consultant's monthly certificate for payment.
8. Prepare schedules jointly with Consultant and Contractor to show when items called for under cash allowances must be authorized by Consultant for ordering purposes so that progress of Work will not be delayed.
9. At Consultant's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
10. Purchase products and systems selected by Consultant from the designated supplier.
11. Submit invoices, summary statements or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
12. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.
13. Coordinate and process submittals for allowance items in the same manner as for other portions of the Work.
14. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.
 1. If requested by the Consultant, retain and prepare unused material for storage by the Owner. Deliver unused material to the owner's storage space as directed.

15. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to the manufacturer for replacement.
16. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.
17. Schedule of Cash Allowances: Provide cash allowances as follows:

No.	Cash Allowance Description	Amount
1.	Inspection and Testing	\$15,000.00
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
	TOTAL OF CASH ALLOWANCES	\$ 15,000.00

PART 2 - PRODUCTS

2.1 NOT USED

1. Not Used.

PART 3 - EXECUTION

3.1 NOT USED

1. Not Used.

END OF SECTION

Part 1 General

1.1 GENERAL COORDINATION

- .1 Coordinate all construction activities as required to ensure efficient and orderly installation of each part of the Work.
- .2 Where installation of one (1) part of the Work is dependent on installation of other components, either before or after its own installation, schedule and coordinate construction activities in the sequence required to obtain the best results.
- .3 Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.
- .4 Make adequate provisions to accommodate items scheduled for later installation under separate contract or by the Owner's own forces.
- .5 Make adequate provisions to accommodate Owner's on-going operations.

1.2 ADMINISTRATIVE PROCEDURES

- .1 Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities shall include, but not be limited to, the following:
 - .1 Preparation of schedules.
 - .2 Installation and removal of temporary facilities.
 - .3 Delivery and processing of submittals.
 - .4 Progress meetings.
 - .5 Contract acceptance procedures.
 - .6 Phasing of the Work, if required.

1.3 GENERAL INSTALLATION PROVISIONS

- .1 Require the installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- .2 Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
- .3 Inspect Materials immediately upon delivery and again prior to installation. Reject damaged and defective items.
- .4 Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.
- .5 Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Consultant for final decision.
- .6 Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
- .7 Coordinate temporary enclosures with required inspections and tests, to minimize the

necessity of uncovering completed construction for that purpose.

- .8 Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Consultant for final decision.
- .9 Supervise construction activities to ensure that no part of the Work, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

1.4 CUTTING AND REMEDIAL WORK

- .1 Do the cutting and remedial work required to make the several parts of the Work come together properly.
- .2 Coordinate the Work to ensure that this requirement is kept to a minimum.
- .3 Cutting and remedial work shall be performed by specialists familiar with Materials affected and shall be performed in a manner to neither damage nor endanger the Work.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 32 16 – Construction Schedules.

1.2 PRE-CONSTRUCTION MEETING

- .1 Schedule a pre-construction meeting within fifteen (15) days after date of commencement of the Contract and prior to commencement of activities at the Place of the Work.
- .2 Purpose: To review personnel assignments, responsibilities, and administrative and procedural requirements.
- .3 Location: To be determined.
- .4 Meeting chaired by the Owner's Consultant representative.
- .5 Attendees:
 - .1 Contractor's Representatives: Contractor's senior management, Contractor's project manager, Contractor's site superintendent, representatives of major Subcontractors,
 - .2 Owner's Representatives: as determined by the Owner.
 - .3 Consultants, Sub-Consultant's representatives and others as necessary.
- .6 Agenda:
 - .1 Introduction of the Owner's and Contractor's representatives.
 - .2 Review of significant contractual responsibilities and administrative and procedural requirements.
 - .3 Other business.

1.3 CONSTRUCTION PROGRESS MEETINGS

- .1 Schedule regular construction progress meetings during the course of the Work.
- .2 Purpose: To monitor construction progress and to identify problems and action required for their solution, to expedite the Work.
- .3 Frequency: Every two weeks, or as otherwise directed by the Owner or Consultant.
- .4 Location: Contractor's site office.
- .5 Attendees:
 - .1 Contractor's representatives: Contractor's project manager, Contractor's site superintendent and when so requested by the Owner, Subcontractors, suppliers and other parties involved in the Work. Contractor's representatives shall be qualified and authorized to act on behalf of the party each represents.
 - .2 Owner's representatives: as determined by the Owner.

- .6 Meeting Chaired By: Owner's Consultant representative.
- .7 Agenda:
 - .1 Review and approval of minutes of previous meeting.
 - .2 Review of items of significance that could affect progress.
 - .3 Other topics for discussion as appropriate to current status of the Work.
- .8 Minutes: The Owner's prime consultant will record minutes and distribute copies to all attendees within seven Days after meeting.

1.4 WARRANTY MEETINGS

- .1 Warranty meetings shall be held between Final Acceptance of the Work and Total Completion of the Work.
- .2 Purpose: To bring to Contractor's attention Contract Deficiencies identified during warranty period, determine action required for their correction, and monitor progress of Contract Deficiency correction.
- .3 Frequency: Called by the Owner on an as-needed basis.
- .4 Location: As agreed to between the Owner and Contractor.
- .5 Attendees: Same as construction progress meetings.
- .6 Meeting Chaired By: Owner's Consultant representative.
- .7 Agenda:
 - .1 Review and approval of minutes of previous meeting.
 - .2 Review of progress of Contract Deficiency correction.
 - .3 Identification of problems impeding Contract Deficiency correction.
 - .4 Review of outstanding Contract Deficiencies.
 - .5 Other business.
- .8 Minutes: same as construction progress meetings.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 11 00 – Summary of Work.
- .2 Section 01 33 23 – Shop Drawings, Product Data and Samples.

1.2 CONSTRUCTION PROGRESS SCHEDULE

- .1 Form of Schedule:
 - .1 Horizontal bar chart of sufficient size to clearly indicate all required information.
 - .2 Divide time into months, weeks, and days. Identify first work day of each week.
 - .3 Allow space for revisions.
- .2 Content of Schedule:
 - .1 List and provide a separate bar for each activity.
 - .2 Indicate start and completion dates for each activity and for milestones.
 - .3 Indicate projected percentage of completion for each activity as of first day of each month.
 - .4 Provide a separate bar for each specified Allowance, except for Allowances for Unforeseen Work. List each definable activity for each Allowance. Include dates for receipt of documentation or information pertaining to work covered by Cash Allowances.
 - .5 Provide a separate bar for Contractor start-up of:
 - .1 Each Electrical system
 - .2 Each Mechanical system
 - .6 Provide a schedule with critical path, successors, predecessors, and AON (Activity on Nodes) as the requested by the Owner. The provided schedule to be free from password protection.
- .3 Progress Revisions:
 - .1 Keep schedule on site and up-to-date for duration of Contract.
 - .2 Indicate actual progress of Work.
 - .3 Indicate major changes in scope.
 - .4 Revise projections of progress and completion as required.
 - .5 When requested by the Owner, submit an updated recovery schedule within seven days of the request.
 - .6 Provide two week look ahead Schedules.

- .4 Submissions:
 - .1 Within 15 days after date of commencement of Contract, submit a copy of an initial Construction Schedule for the Owner's review and acceptance, at the pre-construction meeting.
 - .2 Revise and resubmit Schedule as required by the Owner.
 - .3 Submit copy of updated Schedule when requested by the Owner.
 - .4 Submit an updated schedule with each progress claim.

1.3 SUBSCHEDULES

- .1 Provide sub-schedules to define the following portions of prime Construction Progress Schedule in greater detail:
 - .1 Mechanical.
 - .2 Electrical.
 - .3 Project Phasing.
 - .4 Contractor Start-Up.
- .2 Form of Sub-Schedules: Same as Construction Progress Schedule.
- .3 Content of Mechanical, Electrical, Project Sub-Schedules: Same as Construction Progress Schedule, except more detailed.
- .4 Content of Contractor Start-up Sub-schedules:
 - .1 List and provide a parent bar for the following:
 - .1 Each mechanical system specified in Division 20 - 25.
 - .2 Each electrical system specified in Division 26 - 28.
 - .2 Include milestone dates for the completion of Construction Progress Schedule tasks which are linked to the start dates for Contractor Start-up tasks.
 - .3 Group Contractor Start-up tasks by system and provide a separate bar for the one or more tasks within each of the following activities:
 - .1 Pre-start tests and inspections.
 - .2 Start-up procedures, including manufacturer's site services where required.
 - .3 Testing, adjusting, and balancing.
 - .4 Preparation of reports.
 - .5 Province's review of systems and reports.
 - .6 Contract Deficiency correction.

- .4 Indicate start and completion dates for each activity.
- .5 Progress Revisions: Same as Construction Progress Schedule. Confirm sub-schedules remain coordinated with Construction Progress Schedule.
- .6 Submissions: Submit sub-schedules together with Construction Progress Schedule.

1.4 SUBMITTALS SCHEDULE

- .1 Prepare a schedule of shop drawings, product data and samples which are proposed to be submitted during the course of the Contract.
- .3 Submit Submittals Schedule for the Province's review within 15 days after date of commencement of Contract.
- .4 After review, the Owner may require submission of additional information or request that some proposed submittals not be submitted. Submittals not requested may not be processed or reviewed by the Owner.
- .5 Submittals Schedule may be part of Construction Progress Schedule.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section 01 32 16 – Construction Schedules.
- .2 Section 01 33 23 – Shop Drawings, Product Data and Samples.
- .3 Section 01 78 00 – Closeout Submittals.

1.2 WORKPLACE SAFETY AND INSURANCE BOARD CERTIFICATE

- .1 Before commencement of activities at the Place of the Work, obtain and submit to the Province a clearance certificate from the Workplace Safety and Insurance Board.

1.3 CASH FLOW FORECAST

- .1 Before submission of first application for payment, submit to the Owner for approval, a forecast of approximate monthly progress payments for the duration of the Contract.
- .2 Submit revised cash flow forecasts as required as the work progresses or when requested by the Owner.

1.4 PHOTOGRAPHS

- .1 Provide progress photographs taken every two (2) weeks.
- .2 Take progress photos from two (2) separate viewpoints determined by the Owner.
- .3 In addition, illustrate any special operation, phase of construction, or special detail of unusual interest for record purposes.
- .4 Take photos of primary entrance at Substantial Completion.
- .5 Forward digital photographs in .jpg format, 150 dpi resolution minimum, 3MB maximum of each photograph, along with monthly progress estimates. Provide the following information on each photograph:

Date:
Name of Contractor:
Name of Project:
Set Number:
- .6 All photographs will become the Owner's property to be used for whatever purposes the Owner may desire.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 DEFINITIONS

- .1 Regulatory requirements mean laws, bylaws, ordinances, rules, regulations, codes, orders of Authorities Having Jurisdiction, and other legally enforceable requirements applicable to the Work and which are or become in force during the performance of the Work.

1.2 GENERAL

- .1 Comply with regulatory requirements.
- .2 Except as otherwise specified, apply for, obtain, and pay all fees associated with permits, licenses, certificates, and approvals required by regulatory requirements and the Contract Documents, based on:
 - .1 regulatory requirements and fees in force on date of Tender submission, and
 - .2 any change in regulatory requirements or fees scheduled to become effective after date of Tender submission and of which public notice has been given prior to date of Tender submission.
 - .3 The Owner will obtain permanent easements and rights of servitude which may be required for performance of the Work.
 - .4 Contractor shall give all notices required by regulatory requirements.

1.3 CONTRACT DOCUMENTS

- .1 Contractor shall not be responsible for verifying that Contract Documents comply with regulatory requirements. If Contract Documents are at variance therewith, or changes which require modification to Contract Documents are made to regulatory requirements by Authorities Having Jurisdiction subsequent to date of Tender closing, Contractor shall notify the Owner in writing requesting direction immediately as such variance or change becomes known to him. The Owner may make changes required to Contract Documents, and any resulting change in Contract Price or Contract Time will be made in accordance with the General Conditions of Contract.
- .2 If Contractor fails to notify the Owner in writing and obtain the Owner's direction as required in Paragraph 3.1, and performs Work knowing it to be contrary to regulatory requirements, Contractor shall be responsible for and shall correct violations thereof; and shall bear costs, expenses, and damages attributable to his failure to comply with provisions of such regulatory requirements.

1.4 ONTARIO BUILDING CODE

- .1 Conform to and perform Work in accordance with the Ontario Building Code, current edition, except as otherwise indicated in Contract Documents.

1.5 PERMITS

- .1 Building Permit:
 - .1 The Owner will apply for, obtain, and pay for Building Permit.

- .2 Contractor shall display the Building Permit and such other permits in a conspicuous location at the Place of the Work.
- .1 Occupancy Permits:
 - .1 Where required by Authority Having Jurisdiction, Contractor shall apply for, obtain, and pay for Occupancy Permits, including Partial Occupancy Permits.
 - .2 Where Contract Document deficiencies are required to be corrected in order to obtain Occupancy Permits, including Partial Occupancy Permits, the Owner will issue appropriate instructions to correct the Work.
 - .3 Turn Occupancy Permits over to the Owner.
- .4 Other Permits:
 - .1 Contractor is responsible for obtaining and paying for all other Permits associated with executing the Work of this Contract.
- Part 2 Products**
- 2.1 NOT USED**
- Part 3 Execution**
- 3.1 NOT USED**

END OF SECTION

Part 1 General

1.1 TESTING BY CONTRACTOR

- .1 Contractor shall furnish to the Owner upon request, test results from testing performed by Contractor.

1.2 TESTING BY THE OWNER

- .1 The Owner reserves the right to employ services of independent testing agencies to establish if Work complies with Contract Documents. The Owner will appoint and pay for services of such testing agency.
- .2 Where tests or inspections by the Owner appointed testing agency indicate Work is not in accordance with the Contract Documents, additional tests or inspections as the Owner may require, to verify acceptability of corrected Work, shall be paid for by Contractor.
- .3 Testing Agencies appointed by the Owner will review their appropriate scopes of work and report on finding and testing through the Prime Consultant and the Owner.
- .4 Testing Agencies appointed by the Owner do not have authority to direct work on site, regardless of whether the work is in accordance with the Contract Documents or not. Additional Work and remedial Work must be directed through the Prime Consultant and the Owner before it is executed on site.
- .5 Testing Agencies appointed by the Owner must provide written or electronic reports of all site reviews, or inspections within 72 hours of the review or inspection.
- .6 Contractor is responsible to provide unencumbered access to the Work for the purposes of the Owner appointed Testing Agencies to conduct inspections.
- .7 Contractor is responsible to coordinate the independent testing agencies, provide reasonable notification time (minimum forty-eight (48) hours) of testing requirements.

1.3 REVIEW OF LINES AND LEVELS

- .1 When the setting out of main lines for the building is complete and floor elevations established, request the Consultants in writing to review this Work.
- .2 Do not proceed with any further Work until this review is made and confirmed in writing.

1.4 REFERENCE STANDARDS

- .1 Within the text of these Specifications, reference may be made to the following standards and possibly additional standards not listed here:
- .1 ANSI – American National Standards Institute.
- .2 ASTM – American Society for Testing and Materials.
- .3 CGSB – Canadian General Standards Board.
- .4 CSA – Canadian Standards Association.
- .5 CAN – National Standard of Canada (published by CGSB).

.6 FM – Factory Mutual Engineering Corporation.

.7 ULC – Underwriters' Laboratories of Canada.

- .2 The referenced standard and any amendments in force on the day of receipt of Bids shall be applicable to the Work during the duration of the Contract.

1.5 REVIEW

- .1 Refer to the General Conditions.
- .2 The Owner and the Consultant Team shall have access to the Work. If parts of the Work are in preparation at locations other than the Place of the Work, access shall be given to such Work whenever it is in progress.
- .3 Give timely notice requesting site review if Work is designated for special tests, Site reviews, or approvals by Consultant Team instructions, or the law of the Place of the Work.
- .4 If the Contractor covers Work, or permits to be covered Work that has been designated for special tests, site reviews, or approvals before such are made, the Contractor shall uncover such Work, have the site reviews or tests satisfactorily completed and make good such Work, at their own cost.
- .5 The Owner may order any part of the Work to be examined if the Work is suspected to not be in accordance with the Contract Documents. If, upon examination, such Work is found not in accordance with the Contract Documents, the Contractor will correct such Work and pay the cost for the examination and correction.

1.6 CONTRACTOR'S PROJECT CONTROL

- .1 Ensure that only specified or approved materials are used.
- .2 Provide and maintain an effective Quality Control Program and perform sufficient inspections and tests of all items of the Work, including those of Subcontractors, to ensure compliance with Contract Documents.
- .3 Ensure that installation is in accordance with the Specifications and to manufacturer's directions, or to methods which have been submitted and approved in writing by the Consultant prior to proceeding with the Work. The Project Superintendent shall ensure that these requirements are made clear to the trade foremen immediately before the Work of their trade commences at the site.

1.7 TESTING BY CONTRACTOR

- .1 Upon request, the Contractor shall furnish to the Owner test results from testing performed by the Contractor.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 INTENT

- .1 Provide temporary facilities and controls specified in this Section and as otherwise required for performance of Work of the Contract.

1.2 REFERENCE DOCUMENTS

- .1 Canadian General Standards Board (CGSB):
 - .1 CAN/CGSB 1.189-00: Exterior Alkyd Primer for Wood.
 - .2 CGSB 1.59-97: Alkyd Exterior Gloss Enamel.
- .2 Canadian Standards Association (CSA):
 - .1 CSA-A23.1/A23.2-04: Concrete Materials and Methods of Concrete Construction / Methods of Test and Standard Practices for Concrete.
 - .2 CSA-0121-M1978(R2003): Douglas Fir Plywood.
 - .3 CAN/CSA-S269.2-M1987: Access Scaffolding for Construction Purposes.
 - .4 CAN/CSA-Z321-96(R2001): Signs and Symbols for the Occupational Environment.

1.3 SUBMITTALS

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

1.4 DESIGN OF TEMPORARY FACILITIES

- .1 Contractor shall be responsible for design and safety of temporary facilities. Temporary facilities of such nature that engineering proficiency is required for their design to ensure safety during construction shall be designed by a Professional Engineer in the employ of the Contractor. Before the temporary structure is used, the person responsible for the design or his representative, shall inspect the structure and issue a certificate stating that it has been constructed according to his design.

1.5 FIELD OFFICES AND SHEDS

- .1 Contractor's Office: Provide and maintain, during the entire progress of the work, a suitable office or offices on the site, for own use and sub-trade use, with suitable tables or benches for the examination of Drawings, Specifications, etc., and where all notices and instructions from the Province may be received and acknowledged.
- .2 Materials Storage: Provide suitable weather and waterproof storage buildings for the storage and protection of materials. These buildings shall be under lock and key and maintained in good condition until the completion of the building.
- .3 Off Site Materials Storage: There may be off-site materials storage requirements on this project. If required, the Contractor will be responsible for the procurement and payment of all off-site storage. Contractor is to endeavor to avoid off-site material storage.

1.6 UTILITIES

- .1 Sanitary Facilities: Provide and maintain during the work, temporary toilets for the use of all workmen employed on the work. Toilets in the finished portion of the building shall not be used by workmen. Comply with the Provincial Board of Health Regulations under the Public Health Act. Provide separate facilities for both sexes as required.
- .2 Water Supply: Contractor will be permitted use of existing water supply, for construction purposes, at no cost to the Contractor. Contractor shall be responsible for all connections, disconnections, service lines, valves, etc., required to provide service and removal of same to the satisfaction of the Owner upon completion of the Work.
- .3 Temporary Light and Power: Contractor will be permitted use of existing lights and power for construction purposes at no cost to the Contractor. Contractor will be responsible for all connections, disconnections, switches, service lines, etc., and removal of same upon completion of the Work.
- .4 Temporary Heating (if required): Make provision for heating the building during its erection and until date of Substantial Performance of the Work. Ensure the temporary heating system will maintain a minimum temperature of 16°C in the building enclosure from shell construction to completion of the interior work. For this purpose, heaters and radiators specified for the project may be used and temporarily installed. Pay all costs for temporary heating up to the date of Substantial Performance of the Work. The cost of any boilers, chimneys, pumps, piping, valves, heaters, radiators, etc., necessary for a temporary hookup shall be borne by the Contractor. Any portion of the building's heating or ventilating system used by the Contractor shall be restored to "new" condition, placed in permanent positions as indicated on Drawings before acceptance by the Owner. Warranty period on equipment used temporarily shall commence on date of Substantial Performance of the Work.
- .5 Telephone: Arrange and pay for cellular telephone service to the above-mentioned offices for the duration of the Contract.
- .6 Contractor is responsible for dewatering of the site for the entire duration of the Contract.

1.7 BARRIERS

- .1 Hoarding (if required): Supply and erect hoarding at job site to locations indicated on Drawings. Hoarding shall be 2400mm high consisting of wood uprights set firmly in the ground, faced with new 12.5mm Fir, Pine, or Poplar plywood, rough sheathing grade plywood, factory pre-treated, pre-stained green with wood preservative on both sides. Maintain in good condition during construction. When hoarding is no longer required, it shall be removed from the site. Demolished material shall become property of Contractor.
- .2 Fencing: Supply and erect temporary chain link fencing or similar temporary construction fencing 1800mm high as required for protection of the work and for public safety.
- .3 Contractor is to supply and erect barricades as required to control on-site and off-site traffic both vehicular and pedestrian for execution of the Work.
- .4 Supply, erect, and maintain barricades, sidewalk sheds (if required), catch platforms, and accessories as required by Authorities Having Jurisdiction. When no longer required, remove from the site. Demolished material shall become property of Contractor.
- .5 Dust Tight Screens

- .1 Provide dust tight screens or partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.
- .2 Maintain and relocate protection until such work is complete.

1.8 CONSTRUCTION AIDS

- .1 Appliances and Scaffolding: Furnish all necessary transportation, scaffolding, forms, labour, tools and mechanical appliances, machinery, services and material required for executing the Work.

Such aids may include but are not limited to:

Construction Hoist or Crane
Temp. & Moisture Control
Construction Stairs
Dust Tight Screens
Ramps/Ladders/Handrails
Special Equipment

1.9 TEMPORARY ENCLOSURES

- .1 Requirements specified herein are additional to and are intended to supplement requirements pertaining to temporary enclosures specified elsewhere in the Contract Documents.
- .2 Provide temporary barriers and enclosures as required to ensure that construction work and activities continue uninterrupted and unhampered by adverse weather conditions for duration of construction period.
- .3 Cold Weather Conditions:
 - .1 In advance of expected cold weather and freezing temperatures, take necessary action to protect construction from adverse effects of weather and to maintain temperatures at specified levels.
 - .2 During storage, handling and installation, maintain materials at specified temperatures. Do not allow materials to freeze or become coated with ice and snow.
 - .3 Provide enclosures for each phase of construction so that Work may be carried out under temperature-controlled conditions.

1.10 ENCLOSURE OF BUILDING

- .1 As soon as construction of building envelope is sufficiently advanced, temporarily enclose and protect openings in envelope by means of temporary doors, barriers and screens.
- .2 Cover unglazed window and door openings with heavy translucent sheeting.

1.11 VEHICULAR ACCESS

- .1 Contractor to use existing municipal crossings for vehicle access onto the site.
- .2 Vehicular access and control is otherwise at the discretion of the Contractor.

- .3 Coordinate on-site parking for both users and Staff as well as Contractor forces with the Owner.

1.12 PROTECTION OF THE PUBLIC AND FIRE SAFETY

- .1 Comply with requirements of the Ontario Building Code, current edition except as specified otherwise.
- .2 Provide and maintain temporary fire protection equipment during performance of Work in accordance with governing codes, regulations, and bylaws.
- .3 Burning rubbish and construction waste materials is not permitted on site.

1.13 SECURITY

- .1 Provide and pay for responsible security personnel, or provide security cameras acceptable to the Owner, to guard site and contents of site after working hours and during holidays.
- .2 Equip exterior temporary doors with hardware and locks.
- .3 Secure building against illegal entry at end of each work day.
- .4 Contractor to maintain existing site lighting, new site lighting or temporary site lighting for the parking lot and exterior building light fixtures during the entire course of construction. Coordinate new and existing lighting so the site is never left un-lit.

1.14 DRAINAGE CONTROLS

- .1 Provide temporary drainage and pumping systems required to keep open basements, excavations and site free from accumulations of water.
- .2 Dispose of water containing silt in suspension in accordance with local authority requirements. Do not pump into sewer or drainage system.

1.15 ACTIVITIES GENERATING VIBRATION, NOISE or SAFETY CONCERNS

- .1 Operations considered by the Owner to generate vibration, noise or safety concerns include, but are not limited to, the following:
 - .1 Jack hammering.
 - .2 Shotblasting.
 - .3 Sandblasting.
 - .4 Cutting and coring of concrete.
 - .5 Use of powder actuated fasteners.
 - .6 Site vibratory equipment, i.e. packers.
- .2 Do the following when Work generating vibration, noise, or safety concerns may affect user or user operations.
 - .1 Coordinate with the Owner and User Representative.
 - .2 Schedule and coordinate hours of work with User Representative.

- .3 Stop operations generating vibration, noise or safety concerns when instructed verbally or in writing by the Owner. Do not resume such operations until authorized by the Owner.

1.16 PREVENTING MOULD DURING CONSTRUCTION

- .1 Monitor interior relative humidity conditions in relation to surface temperatures to prevent generation of moisture that may contribute to mould growth on the surface of organic construction materials.
- .2 If using temporary heaters, use a type that exhausts combustion products directly to the exterior of building enclosures. Do not use temporary heaters that exhaust combustion products into building enclosures.
- .3 Install insulation concurrently with air and vapour retarder.
- .4 Protect all organic construction materials from the elements, before, during, and after their installation.
- .5 Refer to CCA 82-2004 Mould Guidelines for the Canadian Construction Industry, published by the Canadian Construction Association, for additional information about mould, its implications and recommendations on its prevention.
- .6 Promptly report to the Owner any mould growth observed at the work site. If the Owner determines that such mold growth was caused by the Contractor's operations, the Contractor shall promptly remove it in accordance with procedures prescribed by the Owner, at no cost to the Owner.

1.17 CLEANING DURING CONSTRUCTION

- .1 At regular intervals during progress of work, clean-up building premises and site and dispose of waste material, rubbish, and debris.
- .2 Do not allow waste material, rubbish, and debris to accumulate and become an unsightly or hazardous condition. Maintain site in a clean and orderly condition.
- .3 Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- .4 Do not allow waste material, rubbish, and windblown debris to reach and contaminate adjacent properties.
- .5 Sprinkle dusty debris with water as required.
- .6 Lower waste material in a controlled manner; do not drop or throw materials from heights.
- .7 Clean interior building areas prior to commencement of site painting and finishing operations and continue cleaning on an as-needed basis and to eliminate dust, until building is ready for occupancy.
- .8 Ensure that each Subcontractor engaged on the Work bears his full responsibility for cleaning up during and upon completion of his work in accordance with provisions of this Article.

1.18 WASTE DISPOSAL REQUIREMENTS

- .1 Comply with Construction Waste Management Plan for Construction Waste Management. Comply with Section 01 74 19 – Waste Management and Disposal.
- .2 Comply with Provincial and Municipal laws, rules, and regulations pertaining to disposal operations.
- .3 Provide on-site metal containers with lids, for collection and temporary storage of waste material, rubbish, and debris.
- .4 Dispose of waste material, rubbish, and debris at disposal areas away from site.
- .5 Do not burn or bury waste material, rubbish and debris on site.
- .6 Do not dispose of wastes into brooks, streams, rivers, waterways, lakes, or ponds.
- .7 Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.

1.19 CLEANING OF STREETS AND SIDEWALKS

- .1 Take precautions to prevent depositing of mud or debris on roadways, sidewalks, and paved areas. Promptly clean up any mud or debris so deposited.
- .2 A City of Toronto Bylaw requires, in part, that all snow, ice, dirt, debris or other obstruction, formed or deposited on any public sidewalk adjoining a property shall be cleared away and removed by owner/occupant within twenty-four (24) hours of the time when such snow, ice, dirt or other obstruction was formed or deposited thereon. For purposes of this requirement, Contractor shall be deemed to be owner/occupant during construction period.
- .3 Neglect of these requirements will cause the Owner to have necessary clean-up work carried out and to charge all costs to Contractor.

1.20 REMOVAL AND RESTORATION

- .1 Remove temporary facilities specified in this Section, prior to request for inspection for Final Acceptance.
- .2 Clean and repair damage caused by installation or use of temporary facilities. Restore existing facilities used during construction to original condition.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Product quality, availability, storage, handling, protection, and transportation.
- .2 Manufacturer's instructions.
- .3 Quality of Work, coordination and fastenings.
- .4 Existing Utilities.

1.2 QUALITY

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality (compatible with specifications) for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .3 Should any dispute arise as to quality or fitness of products, decision rests strictly with Consultant based upon requirements of Contract Documents.
- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 AVAILABILITY

- .1 Review product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of products are foreseeable, notify Consultant of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In event of failure to notify Consultant at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Consultant reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.4 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.

- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials and lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Consultant.
- .9 Touch up damaged factory finished surfaces to Consultant's satisfaction. Use touch up materials to match original. Do not paint over name plates.

1.5 TRANSPORTATION

- .1 Pay costs of transportation of products required in performance of Work.
- .2 Transportation cost of products supplied by Owner will be paid for by Owner. Contractor shall be responsible for the unloading, handling and storage of such products.

1.6 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that Consultant may establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Consultant to require removal and re installation at no increase in Contract Price or Contract Time.

1.7 QUALITY OF WORK

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed.
- .2 Immediately notify Consultant if required Work is such as to make it impractical to produce required results.
- .3 Do not employ anyone unskilled in their required duties. Consultant reserves right to require dismissal from site, workers deemed incompetent or careless.
- .4 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Consultant, whose decision is final.

1.8 COORDINATION

- .1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous

supervision.

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

1.9 CONCEALMENT

- .1 In finished areas, conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation, inform Consultant if there is interference. Install as directed by Consultant.

1.10 REMEDIAL WORK

- .1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.
- .2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.11 LOCATION OF FIXTURES

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Inform Consultant of conflicting installation. Install as directed.

1.12 FASTENINGS

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.13 FASTENINGS – EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.

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

1.14 PROTECTION OF WORK IN PROGRESS

- .1 Adequately protect Work completed or in progress. Work damaged or defaced due to failure in providing such protection is to be removed and replaced, or repaired, as directed by Consultant, at no increase in Contract Price or Contract Time.
- .2 Prevent overloading of any part of building. Do not cut, drill or sleeve any load bearing structural member, unless specifically indicated without written approval of Consultant.

1.15 EXISTING UTILITIES

- .1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and/or building occupants and pedestrian and vehicular traffic.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

1.16 HAZARDOUS MATERIALS

- .1 Report any found or suspected hazardous materials to the Owner.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 References.
- .2 Submittals.
- .3 Definitions.
- .4 Waste Management Goals for the Project.
- .5 Documents.
- .6 Waste Management Plan.
- .7 Waste Audit.
- .8 Waste Reduction Work Plan.
- .9 Materials Source Separation Program.
- .10 Disposal of Wastes.
- .11 Scheduling.
- .12 Storage, Handling and Protection.
- .13 Application.
- .14 Diversion of Materials.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 74 11 – Cleaning.

1.3 SUBMITTALS

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

1.4 DEFINITIONS

- .1 Waste Management Plan (WMP): Contractor's approved overall strategy for waste management including waste audit, waste reduction workplan and materials source separation program.
- .2 Waste Audit (WA): Relates to projected waste generation. Involves measuring and estimating quantity and composition of waste, reasons for waste generation, and operational factors which contribute to waste.

- .3 Waste Reduction Work Plan (WRW): Written report which addresses opportunities for reduction, reuse, or recycling of materials. WRW is based on information acquired from WA.
- .4 Materials Source Separation Program (MSSP): Consists of a series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.
- .5 Waste Management Coordinator (WMC): Designate individual who is in attendance on-site, full-time. Designate, or have designated, individuals from each Subcontractor to be responsible for waste management related to their trade and for coordinating activities with WMC.
- .6 Separate Condition: Refers to waste sorted into individual types.

1.5 WASTE MANAGEMENT GOALS FOR THE PROJECT

- .1 The Owner has established that this Project shall generate the least amount of waste possible and that processes shall be employed that ensure the generation of as little waste as possible including prevention of damage due to mishandling, improper storage, contamination, inadequate protection or other factors as well as minimizing over packaging and poor quantity estimating.
- .2 Of the inevitable waste that is generated, the waste materials designated in this specification shall be salvaged for reuse and or recycling. Waste disposal in landfills or incinerators shall be minimized. On new construction projects this means careful recycling of job site waste.

1.6 DOCUMENTS

- .1 Maintain at job site, one copy of following documents:
 - .1 Waste Audit.
 - .2 Waste Reduction Workplan.
 - .3 Material Source Separation Plan.

1.7 WASTE MANAGEMENT PLAN

- .1 Waste Management Plan: Within 10 calendar days after receipt of Notice of Award of Contract, or prior to any waste removal, whichever occurs sooner, submit to the Owner and Consultant a Waste Management Plan. The Plan shall contain the following:
 - .1 Analysis of the proposed job site waste to be generated, including the types of recyclable and waste materials generated (by volume or weight). In the case of demolition, a list of each item proposed to be salvaged during the course of the project should also be prepared.
 - .2 Alternatives to Land Filling: Contractor shall designate responsibility for preparing a list of each material proposed to be salvaged, reused, or recycled during the course of the Project.
- .2 Post WMP or summary where workers at site are able to review its content.

1.8 WASTE AUDIT

- .1 Prepare Waste Audit prior to project start-up.
- .2 Record, on Waste Audit, extent to which materials or products used consist of recycled or reused materials or products.

1.9 WASTE REDUCTION WORK PLAN

- .1 Prepare WRW prior to project start-up.
- .2 Reduce construction and demolition waste in compliance with regulations.
- .3 Reduction will involve action to minimize quantity of waste at source. Reuse products which would become waste where practical. Recycling will involve collection and source separation at the site, of materials for use as feedstock in manufacturing of new products.
- .4 Conform to local Municipal and Regional Landfill Solid waste management requirements. Consider reduction, reuse and recycling of waste generated during construction such as dimensional lumber, clean drywall, concrete, brick, scrap metal and corrugated cardboard.

1.10 MATERIALS SOURCE SEPARATION PROGRAM

- .1 The Waste Management Plan shall include a Source Separation Program for recyclable waste and shall be in accordance with the established policies currently in place at the local Municipality, and the requirements of the regulations.
- .2 Prepare MSSP and have ready for use prior to project start-up.
- .3 Implement MSSP for waste generated on project in compliance with approved methods and as approved by Consultant.
- .4 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and/or recyclable materials.
- .5 Provide containers to deposit reusable and/or recyclable materials.
- .6 Locate containers to facilitate deposit of materials without hindering daily operations.
- .7 Locate separated materials in areas which minimize material damage.
- .8 Collect, handle, store on-site, and transport off-site, salvaged materials in separate condition.

1.11 DISPOSAL OF WASTES

- .1 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .2 Provide appropriate on-site containers for collection of waste materials and debris.
- .3 Provide and use clearly marked separate bins for recycling.

- .4 Remove waste materials from site at regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site.
- .5 Remove waste material and debris from site and deposit in waste container at end of each working day.
- .6 Do not permit waste to accumulate onsite.
- .7 Burying of rubbish and waste materials is prohibited.
- .8 Disposal of waste into waterways, storm, or sanitary sewers is prohibited.

1.12 SCHEDULING

- .1 Coordinate work with other activities at site to ensure timely and orderly progress of the Work.

1.13 STORAGE, HANDLING AND PROTECTION

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by Owner.
- .2 Materials from building demolition to be salvaged or re-used are to be removed and salvaged.
- .3 Unless specified otherwise, materials for removal become Contractor's property.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 APPLICATION

- .1 Do work in compliance with Waste Management Plan.
- .2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.
- .3 Source separate materials to be reused/recycled into specified sort areas.

3.2 DESIGNATED SUBSTANCES

- .1 All designated substances abatement, removal and disposal shall be completed in accordance with O. Reg 278/05 and all other applicable legislation.

3.3 DIVERSION OF MATERIALS

- .1 Separate materials from general waste stream and stockpile in separate piles or containers, to approval of Owner, and consistent with applicable fire regulations. Mark containers or stockpile areas. Provide instruction on disposal practices.
- .2 On-site sale of materials is not permitted.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Section 01 33 00 – Submittals.
- .2 Section 01 74 19 – Waste Management and Disposal.
- .3 Section 01 77 00 – Closeout Procedures.

1.2 SUBMITTALS

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

1.3 DELIVERY, STORAGE AND HANDLING

- .1 Protect packaging during delivery, storage and handling to prevent development of mould and mildew on packaging and on products.
- .2 Request that suppliers provide cleaning materials to minimize packaging and equipment.
- .3 Deliver materials in recyclable, or in reusable packaging, such as cardboard, wood paper, or reusable blankets which will be reclaimed by supplier or manufacturer for recycling.

1.4 CLEANING MATERIALS

- .1 Use cleaning materials only on surfaces recommended by material manufacturer.

1.5 FINAL CLEANING

- .1 Perform final cleaning operations specified herein prior to request for inspection for Substantial Performance of the Work.
- .2 Use experienced workers or professional cleaners for final cleaning.
- .3 Remove grease, paint spots, dirt, dust, stains, labels, fingerprints, and other foreign matter from interior and exterior surfaces; vacuum and dust behind grilles, louvres, and screens; wash floor surfaces not otherwise finished; clean metal doors and frames; clean metal work; clean equipment and hardware; clean and polish glass on both sides; clean and polish mirrors.
- .4 Repair, patch and touch-up marred surfaces to match adjacent finishes.
- .5 Replace cracked and broken glass.
- .6 Ensure that cleaning agents and methods do not remove finishes and permanent protective coatings on surfaces being cleaned. Follow manufacturer's printed maintenance requirements for cleaning.
- .7 Broom clean or remove snow and ice from all exterior paved areas designed for pedestrian or vehicular traffic, including parking areas. Remove snow from gravel surfaced areas.
- .8 Leave all surfaces in perfectly clean and unsoiled condition to the Owner's satisfaction.
- .9 Remove waste, surplus materials, and temporary facilities from the site.

1.6 WASTE DISPOSAL REQUIREMENTS

- .1 Comply with Construction Waste Management Plan for Construction Waste Management.
- .2 Comply with Section 01 74 19 – Waste Management and Disposal.
- .3 Remove all waste generated during cleaning operations from site.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 As built, samples, and specifications.
- .2 Equipment and systems.
- .3 Product data, materials and finishes, and related information.
- .4 Operation and maintenance data.
- .5 Spare parts, special tools and maintenance materials.
- .6 Warranties and bonds.
- .7 Final site survey.

1.2 SUBMITTALS

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

1.3 SUBMISSION

- .1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .2 At least 2 weeks prior to commencement of scheduled commissioning activities, submit 1 copy of the DRAFT Operating and Maintenance Manual, for Consultants review and use during the commissioning activities. After the completion of the commissioning activities, the Consultant will return to the Contractor 1 DRAFT copy, with review comments, for revision. Submit 1 copy of the revised Operating and Maintenance for approval prior to the production of FINAL copies. Prior to the Issuance of the Final Certificate of Completion, and within 10 working days after Substantial Performance, submit 2 copies of the FINAL Operating and Maintenance Manuals.
- .3 Building will not be deemed ready for use unless the draft copies of the Operating and Maintenance Manuals and the "As-built" Record Documents have been submitted and reviewed by the Consultant.
- .4 Building will not be deemed ready for use unless the completed and submitted Operating and Maintenance Manuals and "As-built" Record Documents have been accepted by the Consultant.
- .5 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.
- .6 If requested, furnish evidence as to type, source and quality of products provided.
- .7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .8 Pay costs of transportation.

1.4 **FORMAT**

- .1 Organize data in the form as instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 8-1/2" x 11" with spine and face pockets.
- .3 When multiple binders are used correlate data into related consistent groupings. Identify contents of each binder on spine.
- .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content by Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- .9 Provide scaled CAD files in .dwg format on a memory stick.

1.5 **CONTENTS EACH VOLUME**

- .1 Table of Contents: provide title of project;
 - .1 Date of submission; names.
 - .2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.
 - .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
 - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 – Quality Control.

1.6 **OCCUPANT MANUAL**

- .1 Submit Occupant Manual to Consultant's requirements.

- .2 Occupant Manual to include:
 - .1 General building information.
 - .2 Building management.
 - .3 Building operations.
 - .4 Safety.
 - .5 Security.
 - .6 Environmental considerations.
 - .7 Communications.
 - .8 Contact List.
 - .9 Other/Miscellaneous.

1.7 AS-BUILTS AND SAMPLES

- .1 In addition to requirements in General Conditions, maintain at the site for Consultant one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to Contract.
 - .5 Reviewed shop drawings, product data, and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Consultant.

1.8 RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on set of drawings, provided by Consultant.
- .2 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .3 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Measured depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .4 Field changes of dimension and detail.

- .5 Changes made by change orders.
- .6 Details not on original Contract Drawings.
- .7 References to related shop drawings and modifications.
- .4 Submit following drawings:
 - .1 Record changes in red. Mark on one set of prints and at completion of project prior to final inspection, produce electronic "as-built" records on disk using latest version of AutoCad. Annotate "AS-BUILT RECORD" in each drawing title block.
 - .2 All changes shall be shown on a separate drawing layer named "as-built".
 - .3 At least 2 weeks prior to commencement of scheduled commissioning activities, submit one copy of the DRAFT "As-built" Project Record Documents for Consultants review and use during the commissioning activities. After the completion of the commissioning activities, the Consultant will return to the Contractor the DRAFT copy, with review comments, for revision. Prior to the Issuance of the Final Certificate of Completion, and within 10 working days after Substantial Performance, submit 2 copies of the FINAL "As-built" Project Record Documents and disk of "as-built" record drawings.
- .5 Specifications: legibly mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

1.9 EQUIPMENT AND SYSTEMS

- .1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with Engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.
- .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.

Project:	ENDERBY CHILD CARE CENTRE UPGRADES	CLOSEOUT SUBMITTALS
Location:	TORONTO, ONTARIO	Section 01 78 00
.8	Include sequence of operation by controls manufacturer.	
.9	Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.	
.10	Provide installed control diagrams by controls manufacturer.	
.11	Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.	
.12	Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.	
.13	Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.	
.14	Include test and balancing reports.	
.15	Additional requirements: as specified in individual specification sections.	
1.10	MATERIALS AND FINISHES	
.1	Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations.	
.2	Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.	
.3	Moisture-Protection and Weather-Exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.	
.4	Additional Requirements: as specified in individual specifications sections.	
1.11	SPARE PARTS	
.1	Provide spare parts, in quantities specified in individual specification sections.	
.2	Provide items of same manufacture and quality as items in Work.	
.3	Spare parts as identified in individual sections are to be delivered to the Owner prior to the Contractor's application for Substantial Performance.	
.4	Receive and catalogue items. Submit inventory listing to Consultant. Include approved listings in Maintenance Manual.	
.5	Obtain receipt for delivered products and submit prior to final payment.	
1.12	MAINTENANCE MATERIALS	
.1	Provide maintenance and extra materials, in quantities specified in individual specification sections.	
.2	Provide items of same manufacture and quality as items in Work.	

- .3 Maintenance materials are to be delivered to the Owner prior to the Contractor's application for Substantial Performance.
- .4 Receive and catalogue items. Submit inventory listing to Consultant. Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.

1.13 SPECIAL TOOLS

- .1 Provide special tools, in quantities specified in individual specification section.
- .2 Provide items with tags identifying their associated function and equipment.
- .3 Special tools are to be delivered to the Owner prior to the application for Substantial Performance.
- .4 Receive and catalogue items. Submit inventory listing to Consultant. Include approved listings in Maintenance Manual.

1.14 STORAGE, HANDLING AND PROTECTION

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and to satisfaction of Consultant.

1.15 WARRANTIES AND GUARANTEES

- .1 Separate each warranty or guarantee with index tab sheets keyed to Table of Contents listing.
- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .3 Obtain warranties and guarantees, 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 guarantees until time specified for submittal.

1.16 INDEPENDENT SPECIALTY ENGINEERS SIGN-OFF

- .1 Prior to Substantial Performance, provide copies of signed and stamped engineers review and sign-off letters stating that the work has been built in accordance with their drawings and designs. Conditional or vague letters of sign-off will not be accepted. All specialty design engineers for all sub-contractors and suppliers will be required to review the work in progress at appropriate intervals to ensure compliance with their designs and drawings and shall provide final sign-off letters. Provide copies of all field reports issued by specialty engineers. Carry all costs associated with full compliance with this requirement.

Part 2 Products

2.1 NOT USED

Part 3 Execution

3.1 NOT USED

END OF SECTION

Part 1 General

1.1 GENERAL

- .1 Conform to the requirements of Division 01.

1.2 RELATED SECTIONS

- .1 Division 01.

1.3 REFERENCES

- .1 The National Building Code of Canada, Part 8 - Safety Measures on Construction and Demolition Sites.
- .2 Ontario Regulation 102/94, Waste Audits and Waste Reduction Work Plans.
- .3 Ontario Regulation 103/94, Environmental Protection Act.
- .4 Ontario Regulation 213/07 -The Fire Code.
- .5 Ontario Regulation 232/98 - Landfilling Sites.
- .6 Ontario Regulation 278/05 -Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations.
- .7 Ontario Regulation 347- Environmental Protection Act, General — Waste Management.
- .8 Ontario Regulation 332/12 - The Building Code.
- .9 The Workplace Health and Safety Act, and Regulations for Construction Projects.
- .10 The Contractors Health and Safety Policy.
- .11 Laws, rules and regulations of other authorities having jurisdiction.

1.4 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit detailed written schedule, methodology and proposed procedures for demolition, including a Safe Work Plan to Consultant and Owner for review prior to commencement of demolition.
- .3 Where required by authorities having jurisdiction, submit for approval drawings, diagrams or details clearly showing sequence of disassembly work or supporting structures and underpinning.

- .4 Drawings for structural elements of the demolition process including shoring, underpinning and installation of new lintels or beams in existing load bearing walls, shall bear signature and stamp of qualified professional engineer registered in the Province of Ontario.
- .5 Submit a construction waste management plan including demolition and removal procedures under provisions of Section 01 74 19 – Construction Waste Management and Disposal.
- .6 Submit proposed dust-control measures.
- .7 Submit proposed noise-control measures.
- .8 Submit schedule of demolition activities indicating the following:
 - .1 Detailed sequence of demolition and removal work, including start and end dates for each activity.
 - .2 Dates for shutoff, capping, and continuation of utility services.
 - .3 If hazardous materials are encountered and disposed of, landfill records indicating receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.
- .9 At Project Closeout: Submit record drawings in accordance with Section 01 78 00. Identify and accurately locate capped utilities and other subsurface structural, electrical, or mechanical conditions

1.5 PERMITS

- .1 Refer to Section 01 41 00 – Regulatory Requirements.
- .2 The Consultant will complete General Review during demolition in accordance with the Ontario Building Code. All other engineering required for shoring design and for other structural elements of the demolition work will be completed by the Contractor's own engineer and paid for by the Contractor.

1.6 WASTE MANAGEMENT PLAN

- .1 All work of this section shall be completed in accordance with the contractors approved Waste Management Plan specified in Section 01 74 19 – Construction Waste Management and Disposal.

1.7 DEFINITIONS

- .1 Chemical Waste: Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, organic chemicals and inorganic wastes.
- .2 Demolition Waste: Building materials and solid waste resulting from construction, remodeling, repair, cleanup, or demolition operations that are not hazardous. This term

includes, but is not limited to, asphalt concrete, Portland cement concrete, brick, lumber, gypsum wallboard, cardboard and other associated packaging, roofing material, ceramic tile, carpeting, plastic pipe, and steel. The materials may include rock, soil, tree stumps, and other vegetative matter resulting from land clearing and landscaping for construction or land development projects.

- .3 Environmental Pollution and Damage: The presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human or animal life; affect other species of importance to humanity; or degrade the utility of the environment for aesthetic, cultural or historical purposes.
- .4 Inert Fill: A permitted facility that accepts inert waste such as asphalt and concrete exclusively for the purpose of disposal.
- .5 Inert Solids/Inert Waste: Non-liquid solid waste including, but not limited to, soil and concrete that does not contain hazardous substances or soluble pollutants at concentrations in excess of water-quality standards established by a regional water board and does not contain significant quantities of decomposable solid waste.
- .6 Landfill: A landfill that accepts non-hazardous materials such as household, commercial, and industrial waste, resulting from construction, remodeling, repair, and demolition operations. A landfill must have a solid waste facilities permit from the Ministry of the Environment and be in conformance to O.Reg 232/98.
- .7 Recycling: The process of sorting, cleansing, treating and reconstituting materials for the purpose of using the altered form in the manufacture of a new product. Recycling does not include burning, incinerating or thermally destroying solid waste.
- .8 Remove: Remove and legally dispose of items, except those identified for use in recycling, re-use, and salvage programs.
- .9 Reuse: The use, in the same or similar form as it was produced, of a material which might otherwise be discarded.
- .10 Solid Waste: All putrescible and non-putrescible solid, semisolid, and liquid wastes, including garbage, trash, refuse, paper, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, dewatered, treated, or chemically fixed sewage sludge which is not hazardous waste, manure, vegetable or animal solid and semisolid wastes, and other discarded solid and semisolid wastes. "Solid waste" does not include hazardous waste, radioactive waste, or medical waste as defined or regulated by law.

1.8 QUALITY ASSURANCE

- .1 Demolition Firm Qualifications: Demolition contractor shall be an experienced firm that has successfully completed demolition Work similar to that indicated for this Project.
- .2 Regulatory Requirements: Comply with governing regulations before starting demolition. Comply with hauling and disposal regulations of authorities having jurisdiction. Obtain and pay for all permits required.

- .3 Pre-demolition Conference: Conduct a conference at Project site.
 - .1 Review the environmental goals of this Project and make a proactive effort to increase awareness of these goals among all labor forces on site.
 - .2 Review schedule and scheduling procedures.
 - .3 Review health and safety procedures.
 - .4 Review of Project conditions including review of record photographs.

1.9 PROJECT SITE CONDITIONS

- .1 Construct safety barriers, barricades, fencing and hoarding to separate public from work areas as described in Section 01 50 00.
- .2 The Owner assumes no responsibility for the actual condition of the structures to be demolished.
- .3 Conditions existing at the time of inspection for bidding purposes will be maintained by the Owner insofar as practicable. Variations within the structures may occur by the Owner's salvage operations prior to start of demolition.

1.10 DESIGNATED SUBSTANCES

- .1 Refer to section 02 32 00.

Part 2 Products

2.1 MATERIALS

- .1 Conform to requirements of Division 1, in particular, articles on Design and Safety Requirements for Temporary Work. Provide all materials necessary for temporary shoring. On completion, remove temporary materials from site.
- .2 All building materials removed from the building shall become the property of the Contractor unless specified otherwise and shall be reused in new construction or removed from the Site.
- .3 All concrete, masonry, asphalt and similar materials shall be crushed prior to disposal.

2.2 SALVAGE

- .1 All items of salvageable value must be salvaged.
- .2 Provide a schedule of items to be salvaged and clearly indicate which items are to be retained by Owner. Clearly identify and tag each salvageable item.
- .3 Transport salvaged items from the site as they are removed.

- .4 Items of salvageable value to the Contractor may be removed from the structure as the work progresses, if such items are not claimed by the Owner.

2.3 REUSE

- .1 Salvage and reuse materials as indicated on the drawings and as noted below:
 - .1 Existing Door hardware including locksets, door closers and panic bars.

2.4 RECYCLE

- .1 All materials from demolition and land clearing which can be recycled through local municipal programs and which is not scheduled for salvage shall be sorted and separated in accordance with Regional, Provincial and Municipal standards and regulations.
- .2 Provide recycling receptacles for the duration of construction activities at the building site.

Part 3 Execution

3.1 EXAMINATION

- .1 Survey existing conditions and correlate with requirements indicated to determine extent of demolition, salvage and recycling required.
- .2 Verify that utilities have been disconnected and capped.
- .3 Survey condition of the building to determine whether removing any element might result in a structural deficiency or unplanned collapse of any portion of the structure or adjacent structures during demolition.
- .4 Retain a licensed and qualified civil or structural engineer to provide analysis, including calculations, necessary to ensure the safe execution of the demolition work.
- .5 Perform surveys and tests as the Work progresses to detect hazards resulting from demolition activities.
- .6 Preliminary Survey:
 - .1 The Demolition Plans indicate the general extent of existing conditions based upon drawings provided by the Owner and existing site conditions. Review all areas of work to determine full extent of areas to be demolished, altered or renovated and become familiar with actual conditions and extent of work required.
 - .2 Before commencing demolition operations, examine Site and provide engineering survey to determine type of construction, condition of structure, and Site conditions. Assess strength and stability of damaged or deteriorated structures.
 - .3 Assess potential effect of removal of any part or parts on the remainder of structure before such part(s) are removed.

- .4 Assess effects of demolition at adjacent structures and consider need for underpinning, shoring and/or bracing.
- .5 Investigate for following conditions:
 - .1 load bearing walls and floors.
 - .2 structure suspended from another.
 - .3 effects of soils, water, lateral pressures on retaining or foundations walls
 - .4 presence of tanks and other piping systems.
 - .5 presence of designated substances and hazardous materials.
- .7 After determining demolition methods, determine area of possible vibration. Carefully inspect beyond those adjacent areas. List potential damage areas and photograph each for record purposes before starting work.

3.2 UTILITIES

- .1 Contact authorities or utility companies for assistance in locating and marking services passing under, through, overhead or adjacent to structure to be demolished. Such services include:
 - .1 Electrical power lines.
 - .2 Gas mains.
 - .3 Communication cables.
 - .4 Fibre optic cables.
 - .5 Water lines.
 - .6 Drainage piping (storm and sanitary).
- .2 Before disconnecting, removing, plugging or abandoning any existing utilities serving the building:
 - .1 Notify the Owner, applicable utility companies, and local authorities having jurisdiction.
 - .2 Cut off and cap utilities at the mains on the property or in the street as required by the Owner and responsible utility company. Maintain fire protection to the existing buildings at all times.
 - .3 Remove, cut off and plug, or cap all utilities within the existing building areas to be demolished, except those designated to remain

3.3 PROTECTION

- .1 Erect and maintain temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction. Maintain such areas free of snow, ice, water and debris. Lighting levels shall be equal to that prior to erection.
- .2 Cease operations and notify the Owner immediately for special protective and disposal instructions when asbestos materials or other hazardous materials, other than those identified are uncovered during the work of this project.
- .3 Provide safe access and egress from working areas using entrances, hallways, stairways or ladder runs, protected to safeguard personnel using them from falling debris.
- .4 Do not interfere with use and activities of adjacent buildings and site. Maintain free and safe passage to and from buildings.
- .5 Where demolition operations prevent normal access to adjacent properties, provide and maintain suitable alternative access.
- .6 Provide flagmen where necessary or appropriate, to provide effective and safe access to site to vehicular traffic and protection to Owner's personnel. Refer to Division 1 for safety requirements.
- .7 Protect existing site improvements, appurtenances, and landscaping that are designated to remain in place.
- .8 Ensure that all necessary controls are in place at the beginning of each work period which will prevent the spread of contaminated material beyond the work area limits. Stop work immediately if there exists any possibility of the spread of contaminated materials.
- .9 Keep dust from entering existing facilities and areas of building not affected by the Work. Comply with Ministry of Health requirements regarding debris control.
- .10 Ensure scaffolds, ladders, equipment and other such equipment are not accessible to public. Protect with adequate fencing or remove and dismantle at end of each day or when no longer required.
- .11 Take precautions to guard against movement, settlement or collapse of adjacent structures, services or driveways. Be liable for such movement, settlement or collapse caused by failure to take necessary precautions. Repair promptly such damage when ordered.
- .12 If Owner considers additional bracing and shoring necessary to safeguard and prevent such movement or settlement, install bracing or shoring upon Owner's orders.
- .13 Particular attention shall be paid to prevention of fire and elimination of fire hazards which would endanger new work or existing premises.

- .14 Protect existing adjacent work against damages which might occur from falling debris or other causes due to work of this Section.
- .15 At all times protect the structure from overloading.
- .16 Provide protection around floor and/or roof openings.
- .17 Protect from weather, parts of adjoining structures not previously exposed.
- .18 Protect interiors of building parts not to be demolished from exterior elements at all times.
- .19 At end of each day's work, leave work in safe condition so that no part is in danger of toppling or falling.

3.4 PREPARATION

- .1 Provide all shoring and bracing required for the execution of the work.
- .2 Ensure all sedimentation controls as required are in place prior to commencement of demolition activities.
- .3 Before commencing demolition, verify that existing water, gas, electrical and other services in areas being demolished are cut off, capped diverted or removed as required. Post warning signs on electrical lines and equipment which must remain energized to serve adjacent areas during period of demolition.
- .4 Conduct demolition operations and remove materials from demolition to ensure minimum interference with roads, streets, walks, and other adjacent occupied and utilized facilities.
- .5 Do not close or obstruct streets, walks, or other adjacent occupied or utilized facilities without permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

3.5 TEMPORARY VENTILATION

- .1 Provide all required temporary ventilation for demolition work.

3.6 ENVIRONMENTAL CONTROLS

- .1 Comply with provincial and municipal regulations pertaining to water, air, solid waste, recycling, chemical waste, sanitary waste, sediment and noise pollution.
- .2 Protection of Natural Resources:
 - .1 Preserve the natural resources.
 - .2 Confine demolition activities to areas defined by public roads, easements, and work area limits indicated on the drawings.

- .3 Water Resources: Comply with applicable regulations concerning the direct or indirect discharge of pollutants to underground and natural surface waters. Provide sedimentation control where necessary.
- .4 Store and service construction equipment at areas designated for collection of oil wastes.
- .5 Oily Substances: Prevent oily or other hazardous substances from entering the ground, drainage areas, or local bodies of water in such quantities as to affect normal use, aesthetics, or produce a measurable ecological impact on the area.
- .3 Dust Control, Air Pollution, and Odour Control: Prevent creation of dust, air pollution and odors.
 - .1 Use temporary enclosures and other appropriate methods to limit dust and dirt rising and scattering in air to lowest practical level.
 - .2 Store volatile liquids, including fuels and solvents, in closed containers.
 - .3 Properly maintain equipment to reduce gaseous pollutant emissions.
- .4 Noise Control: Perform demolition operations to minimize noise.
 - .1 Provide equipment, sound deadening devices, and take noise abatement measures that are necessary to comply with municipal regulations.
- .5 Salvage, Re-Use, and Recycling Procedures:
 - .1 Identify re-use, salvage, and recycling facilities.
 - .2 Develop and implement procedures to re-use, salvage, and recycle demolition materials.
 - .3 Identify materials that are feasible for salvage, determine requirements for site storage, and transportation of materials to a salvage facility.
 - .4 Source-separate clean and uncontaminated demolition materials including, but not limited to the following types:
 - .1 Concrete, Concrete Block, Concrete Masonry Units (CMU), Brick.
 - .2 Metal (ferrous and non-ferrous).
 - .3 Wood.
 - .4 Glass.
 - .5 Plastics and Insulation.
 - .6 Gypsum Board.
 - .7 Porcelain Plumbing Fixtures.
 - .8 Fluorescent Light Tubes.
 - .9 Paper: Bond, Newsprint, Cardboard, Paper, Packaging Materials.
 - .10 Other materials as appropriate.

3.7 PERFORMANCE

- .1 Ensure demolition work is supervised by competent foreman at all times.
- .2 Demolition shall proceed safely in systematic manner. Work on each floor level shall be complete before commencing work on supporting structure and safety of its supports are impaired. Parts of building which would otherwise collapse prematurely shall be securely shored. Walls and piers shall not be undermined.
- .3 Until acceptance, maintain and preserve active utilities traversing premises.
- .4 Provide enclosed chutes for disposal of debris from heights more than 1 storey in accordance with CAN S350-M.
- .5 Maintain safety of site by shoring below-grade-structures and excavations resulting from demolition against collapse.

3.8 DEMOLITION

- .1 Review demolition procedures to ensure no personnel or equipment are located or working without additional safe working platforms or working surface adequate to support the operations.
- .2 Any damage caused to the adjacent buildings or properties by the neglect of the Contractor or any of his forces shall be made good at the expense of the Contractor including all costs and charges which may be claimed by the Owner for damages suffered.
- .3 Demolish in a manner to minimize dusting. Keep dusty materials wetted at all times.
- .4 Prevent movement, settlement or damage of adjacent structures, services, adjacent grades, and existing building to remain. Make good damage caused by demolition.
- .5 Demolition: Use methods required to complete Work within limitations of governing regulations and as follows:
 - .1 Locate demolition equipment throughout the building and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - .2 Demolish concrete and masonry in sizes that will be suitable for acceptance at recycling or disposal facilities.
 - .3 Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 - .4 Break up and remove concrete slabs on grade in small sizes, suitable for acceptance at recycling or disposal facilities, unless otherwise shown to remain.
 - .5 Remove all disconnected, abandoned utilities.

- .6 Remove all finishes, fixtures, fittings and services as indicated.
- .7 Damages: Promptly repair damages to adjacent facilities caused by demolition operations.
- .8 Prevent access to excavations by means of fences or hoardings.

3.9 SELECTIVE DEMOLITION

- .1 Carefully dismantle and remove all items in as shown and as necessary to complete the work.
- .2 Salvage items scheduled for reuse or to be handed over to the Owner.
- .3 Particular attention shall be paid to prevention of fire and elimination of fire hazards which would endanger the existing buildings.
- .4 Erect and maintain dustproof and weatherproof partitions as required to prevent spread of dust, fumes and smoke to other parts of building. Maintain fire exits. On completion, remove partitions and make good surfaces to match adjacent surfaces of building.
- .5 Where existing flooring is to be removed from floor slabs to remain, including ceramic tile flooring, carefully remove flooring, grout, adhesives, waterproofing membranes and the like down to the base slab. Patch and repair slab where damaged with concrete or acceptable leveling compound in accordance with new flooring manufacturer's instructions and ASTM F710-03. Refer to original building drawings and remove and replace existing concrete floor toppings as necessary and where required.
- .6 Return areas to condition existing prior to the start of the work unless indicated otherwise.
- .7 At exterior and interior bearing walls to be removed, include breaking out and removal of existing concrete foundations to a minimum of 8" below new finished floor level.

3.10 HANDLING OF DEMOLISHED MATERIALS

- .1 Conform to the approved Waste Management Plan.
- .2 Do not allow demolished materials to accumulate or be stored on-site for more than 5 days.
- .3 Do not burn, bury or otherwise dispose of rubbish and waste materials on project site.
- .4 Pallet and shrink-wrap materials scheduled for re-use and stockpile where directed on site.
- .5 Disposal: Transport demolished materials off Owner's property and legally reuse, salvage, recycle, or dispose of materials. Legally transport and dispose of materials that cannot be delivered to a source separated or mixed recycling facility to a transfer station or disposal facility that can legally accept the materials for the purpose of disposal.

- .6 Deliver to facilities that can legally accept new construction, excavation and demolition materials for purpose of re-use, recycling, composting, or disposal.

3.11 CLEANING

- .1 Proceed in accordance with Section 01 74 11 – Cleaning.
- .2 Clean adjacent streets and driveways of dust, dirt and materials caused by demolition operations.
- .3 Reinstate areas and existing works outside areas of demolition to conditions that existed prior to commencement of work.
- .4 Upon completion of demolition work, remove debris, trim surfaces and leave work site clean.
- .5 Video storm and sanitary sewers and jet clean where debris may have accumulated

END OF SECTION

Part 1 General

1.1 REFERENCE DOCUMENTS

- .1 American National Standards Institute (ANSI):
 - .1 ANSI A10.8 – 2011 – Safety Requirements for Scaffolding.
- .2 Canadian Standards Association (CSA):
 - .1 CSA S350 M1980 (R2003) – Code of Practice for Safety in Demolition of Structures.
- .3 Hazardous Materials Information Review Act, 1985.
- .4 Motor Vehicle Safety Act (MVSA), 1995.
- .5 National Fire Protection Association (NFPA):
 - .1 NFPA 241-13 – Standard for Safeguarding Construction, Alteration and Demolition Operations.

1.2 EXISTING CONDITIONS

- .1 Visit and examine the site and note all characteristics and irregularities affecting the work of this Section.

1.3 PROTECTION

- .1 Take precautions to guard against damage to adjacent work. Be liable for any damage or injury caused.
- .2 Cease operations and notify the Owner if safety or any adjacent work appears to be endangered. Do not resume operations until reviewed with the Owner.
- .3 Ensure safe passage of building occupants around and through area of demolition.
- .4 Cease operations and notify the Owner immediately for special protective and disposal instructions when asbestos materials or other hazardous materials are suspected or uncovered during the work of this project.
- .5 Protect temporarily suspended work that is without continuous supervision to prevent access by unauthorized persons.

1.4 TEMPORARY PARTITIONS

- .1 Erect and maintain dustproof partitions, seal off ducts as required to prevent spread of dust and fumes to other parts of the building. On completion, remove partitions and make good surfaces to match adjacent surfaces.

1.5 SALVAGEABLE AND RECYCLABLE MATERIALS

- .1 Except where otherwise specified, all materials indicated or specified to be permanently removed from the Place of the Work shall become Construction Manager's property. Maximize to the fullest extent possible, salvage and recycling of such materials, consistent with proper economy and expeditious performance of the Work.

- .2 To reduce the quantity of material otherwise destined for disposal at a landfill, the Contractor is encouraged to consider utilizing the services of businesses and non-profit organizations that specialize in salvage and recycling of used building materials, but does so at his own option and risk.
- .3 A current listing of recyclers specializing in specific categories of materials is available from the Authority Having Jurisdiction.

Part 2 Products

2.1 MATERIALS AND EQUIPMENT

- .1 Provide materials and equipment as required to perform the work of this Section.

Part 3 Execution

3.1 MATERIALS TO BE RETAINED BY OWNER

- .1 Consult with the Owner for identification of objects to be removed from areas to be renovated.
- .2 Carefully remove the following materials and equipment as identified to be retained by the Owner. Obtain instructions from the Owner regarding location of storage.

3.2 MATERIALS TO BE REUSED

- .1 Carefully remove, store and protect for possible re-installation materials and/or equipment, the Owner has requested to be salvaged for its own use or re-use.

3.3 DEMOLITION

- .1 Unless otherwise specified, carry out demolition in accordance with CSA S350.
- .2 Completely demolish the items scheduled and immediately remove materials from the premises.
- .3 Carry out demolition work in a manner to least inconvenience adjacent occupied building area.
- .4 Carry out demolition in an orderly and careful manner.
- .5 Lower waste materials in a controlled manner; do not drop or throw materials from heights.

3.4 EXISTING SERVICES

- .1 If required, disconnect all electrical and telephone service lines in the areas to be demolished. Post warning signs on all electrical lines and equipment which must remain energized to serve other areas during period of demolition. Disconnect electrical and telephone service lines in demolition areas to the requirements of local authority having jurisdiction.
- .2 If required, disconnect and cap all mechanical services in accordance with requirements of local authority having jurisdiction. Natural gas supply lines shall be removed by the gas company or by a qualified tradesman in accordance with gas company instructions.

- .3 Essential Services: Maintain fire alarm, sprinkler system, emergency lighting and all essential services to all areas.
- .4 In each case notify the affected utility company in advance and obtain approval where required, before commencing with the work on main services.

3.5 RESTORATION

- .1 Make good any demolition to the existing work beyond that necessary for carrying out new work, at no expense to the Owner.

3.6 CLEAN UP

- .1 Remove all debris and rubbish away from site at regular intervals.
- .2 Remove all tools and equipment from site.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Conform to the requirements of Division 01.

1.2 RELATED SECTIONS

- .1 Section 01 61 00 – Common Product Requirements.
- .2 Section 01 74 11 – Cleaning.
- .3 Section 01 74 19 – Construction Waste Management and Disposal.
- .4 Section 02 41 19 – Selective Demolition.

1.3 REFERENCE STANDARDS

- .1 Canadian Environmental Protection Act, 1999 (CEPA 1999).
 - .1 Export and Import of Hazardous Waste Regulations (SOR/2002-300).
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (MSDS).
- .3 National Fire Code of Canada 2005.
- .4 Transportation of Dangerous Goods Act (TDG Act) 1999, (c. 34).
- .5 Transportation of Dangerous Goods Regulations (T-19.01-SOR/2003-400).

1.4 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data:
 - .1 Submit to Consultant current Material Safety Data Sheet (MSDS) for each hazardous material required prior to bringing hazardous material on site.
 - .2 Maintain MSDS in proximity to where materials are being used. Communicate this location to personnel who may have contact with hazardous materials.
- .3 Submit hazardous materials management plan to Consultant that identifies hazardous materials, their use, their location, personal protective equipment requirements, and disposal arrangements

1.5 DEFINITIONS

- .1 Dangerous Goods: product, substance, or organism that is specifically listed or meets hazard criteria established in Transportation of Dangerous Goods Regulations.

- .2 Hazardous Material: product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into the environment.
- .3 Hazardous Waste: any hazardous material that is no longer used for its original purpose and that is intended for recycling, treatment or disposal.
- .4 Workplace Hazardous Materials Information System (WHMIS): Canada-wide system designed to give employers and workers information about hazardous materials used in workplace. Under WHMIS, information on hazardous materials is provided on container labels, material safety data sheets (MSDS), and worker education programs. WHMIS is put into effect by combination of federal and provincial laws.

1.6 SHIPPING, STORAGE AND HANDLING

- .1 Refer to Section 01 61 00 – Common Product Requirements.
- .2 Deliver, handle and store materials in accordance with manufacturer's printed instructions.
- .3 Co-ordinate storage of hazardous materials with Consultant and abide by internal requirements for labeling and storage of materials and wastes.
- .4 Storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids:
 - .1 Store hazardous materials and wastes in closed and sealed containers.
 - .2 Label containers of hazardous materials and wastes in accordance with WHMIS.
 - .3 Store hazardous materials and wastes in containers compatible with that material or waste.
 - .4 Segregate incompatible materials and wastes.
 - .5 Ensure that different hazardous materials or hazardous wastes are not mixed.
 - .6 Store hazardous materials and wastes in secure storage area with controlled access.
 - .7 Maintain clear egress from storage area.
 - .8 Store hazardous materials and wastes in location that will prevent them from spilling into environment.
 - .9 Have appropriate emergency spill response equipment available near storage area, including personal protective equipment.
 - .10 .Maintain inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.
- .5 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.

- .6 Report spills or accidents immediately to Consultant. Submit a written spill report to Consultant within 24 hours of incident.

1.7 TRANSPORTATION

- .1 Transport hazardous materials and wastes in accordance with federal Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, and applicable provincial regulations.
- .2 If hazardous waste is generated on site:
 - .1 Co-ordinate transportation and disposal with Consultant.
 - .2 Ensure compliance with applicable federal, provincial and municipal laws and regulations for generators of hazardous waste.
 - .3 Use licensed carrier authorized by provincial authorities to accept subject material.
 - .4 Prior to shipping material obtain written notice from intended hazardous waste treatment or disposal facility that it will accept material and that it is licensed to accept this material.
 - .5 Label containers with legible, visible safety marks as prescribed by federal and provincial regulations.
 - .6 Ensure that trained personnel handle, offer for transport, or transport dangerous goods.
 - .7 Provide photocopy of shipping documents and waste manifests to Consultant.
 - .8 Track receipt of completed manifest from consignee after shipping dangerous goods. Provide a photocopy of completed manifest to Consultant.
 - .9 Report discharge, emission, or escape of hazardous materials immediately to Consultant and appropriate provincial authority. Take reasonable measures to control release.

Part 2 Products

2.1 MATERIALS

- .1 Only bring on site quantity of hazardous materials required to perform work.

Part 3 Execution

3.1 DISPOSAL

- .1 Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines. Refer to Section 01 74 11 – Cleaning.
- .2 Recycle hazardous wastes for which there is approved, cost effective recycling process available.
- .3 Send hazardous wastes to authorized hazardous waste disposal or treatment facilities.

- .4 Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.
- .5 Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.
- .6 Dispose of hazardous wastes in timely fashion in accordance with applicable provincial regulations.
- .7 Minimize generation of hazardous waste to maximum extent practicable. Take necessary precautions to avoid mixing clean and contaminated wastes.
- .8 Identify and evaluate recycling and reclamation options as alternatives to land disposal, such as:
 - .1 Hazardous wastes recycled in manner constituting disposal.
 - .2 Hazardous waste burned for energy recovery.
 - .3 Lead-acid battery recycling.
 - .4 Hazardous wastes with economically recoverable precious metals.

END OF SECTION

1.0 GENERAL

1.1 Work Included

- .1 Provide all labour, material, equipment, and supervision necessary to prepare slab-on-grade surface and place new concrete repair material.

1.2 Repair Quantity Determination

- .1 Length and width shall be measured to the nearest 25 mm. Depth shall be measured to the nearest 1 mm.

1.3 References

- .1 All referenced Standards are latest editions referenced by the Building Code in the Place of the Work, or latest editions if not referenced by Code.
- .2 Ontario Building Code
- .3 CSA A23.1/CSA A23.2 Concrete Materials and Methods of Concrete Construction / Test Methods and Standard Practices for Concrete
- .4 CSA A3000 Cementitious Materials Compendium
- .5 CSA S413 Parking Structures
- .6 ASTM C260/C260M Standard Specification for Air-Entraining Admixtures for Concrete
- .7 ICRI 310.2R Selecting and Specifying Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair

1.4 Performance Requirements

- .1 Repaired concrete surfaces shall not scale or crack excessively.
- .2 Concrete repair materials shall not spall or debond from existing concrete.

1.5 Submittals

- .1 Submit manufacturer's product specifications and data sheets for the following products:
 - .1 Self-Levelling Cementitious Underlayment and Primer

- .2 Submittals to be provided for review by the Consultant a minimum of two weeks prior to placement or use of products.
- .3 Do not commence placement of repair products until review is complete and proposed products and procedures are accepted by Consultant.
- .4 If requested by Consultant, provide a certificate signed by the Contractor and pre-packaged material manufacturer certifying the following:
 - .1 Surfaces to receive pre-packaged material were acceptable and satisfactory to receive the materials per the manufacturer's requirements and these Specifications. Application of pre-packaged materials shall imply acceptance of surfaces.
 - .2 Pre-packaged materials were installed in accordance with manufacturer's written instructions and these Specifications.

1.6 Qualifications

- .1 Use only qualified concrete placers and finishers, with a minimum of two years' experience in similar work.

2.0 PRODUCTS

2.1 Concrete Primer and Sealer for Underlayments

- .1 Approved product for concrete surface priming and sealing:

	<u>Product Name</u>	<u>Manufacturer</u>
.1	Sika Level-01 Primer CA	Sika

2.2 Self-Leveling Cementitious Floor Underlayments

- .1 Approved product for slab-on-grade leveling repairs

	<u>Product Name</u>	<u>Manufacturer</u>
.1	Sika Level-125	Sika

3.0 EXECUTION

3.1 Concrete Surface Preparation

- .1 All concrete surfaces to receive new concrete repair material shall have a minimum No. 6 CSP per ICRI 310.2R and be thoroughly abrasive-blast prior to concrete placement to remove laitance, debris, and loose aggregate.
- .2 Clean all existing concrete surfaces to receive new concrete of foreign material, dust, debris, grease, and oil as directed by Consultant. Emulsifiers shall be required for surfaces containing grease or oil.
- .3 Contractor to notify Consultant to review surfaces prior to installation of primer.

3.2 Slab Surface - Repair of Surface Scaling

- .1 The entire slab surface shall be lightly jackhammered or scarified to a minimum No. 3 CSP per ICRI 310.2R and be thoroughly abrasive-blast, or shot blast prior to concrete placement to remove laitance, debris, and loose aggregate. Minimum removal depth of 12 mm at all areas shall be provided.
- .2 Slab surfaces shall be cleaned of all grease and oil.
- .3 Thoroughly clean patch of dust and debris.
- .4 Install slab sealer and primer in strict accordance with manufacturer's instructions.
- .5 Prepare surfaces and place concrete mixture in strict accordance with CSA A23.1 and manufacturer requirements.
- .6 Cure in accordance with the more rigorous requirements of this section and manufacturer written instructions.
- .7 Do not permit traffic on repairs for a minimum of 24 hours after finishing.

3.3 Mixing and Placing

- .1 Repair material shall be machine mixed unless otherwise stipulated by the manufacturer. Mixing and placing shall be in accordance with CSA A23.1.
- .2 Repair material shall be conveyed from the mixer to the place of deposit by methods that will ensure the required quality of the repair material.

- .3 Install repair materials in strict accordance with the manufacturer's instructions.
- .4 No concrete shall be placed later than one half hour after leaving the mixer. No re-tempered concrete shall be allowed.
- .5 Mix concrete in accordance with the manufacturer's written instructions.

3.4 Concrete Curing

- .1 Ensure manufacturer's recommended curing conditions are maintained over the patch area. The more stringent curing conditions between the manufacturer's written instructions and those outlined in this section will govern unless otherwise agreed upon by the Consultant in writing.
- .2 Maintain repair material between 18°C and 27°C and air cure only.
- .3 Do not allow traffic onto patch until material has adequately cured to its specified 24-hour compressive strength.

3.5 Field Quality Control

- .1 The Consultant shall evaluate bonding of fresh patch material to existing concrete after the fresh patch material has cured sufficiently.

3.6 Rejection of Defective Work

- .1 The Consultant shall have the right to order additional concrete testing of any portion of repairs in accordance with CSA A23.1 if previous testing demonstrates non-conformance with specified requirements. The testing agency shall be selected by the Consultant and shall deal directly with the Consultant. Payment for costs associated with the additional concrete testing will be at the Contractor's expense.
- .2 Where it is the Consultant's opinion that material or workmanship fails to meet the specified requirements, the work shall be replaced or repaired to the approval of the Consultant at no additional cost to the Owner.
- .3 Bond failure between repair material and the existing concrete, will result in additional testing at the Contractor's expense. Failure of these additional samples will require the work to be replaced or repaired to the approval of the Consultant at no additional cost to the Owner.

END OF SECTION

1.0 GENERAL

1.1 Work Included

- .1 Remove sound and unsound concrete from concrete slab-on-grade where directed by Consultant and as described herein.

2.0 PRODUCTS

2.1 Equipment

- .1 Provide hand-held jackhammers for concrete removal that are capable of efficiently removing sound and unsound concrete without causing excessive or unwanted removal.
- .2 Maximum jackhammer size is 15 kg. Light chipping hammers are to be used where the Consultant deems it necessary to reduce the amount of concrete breakage. Maximum light chipping hammer size is 7 kg. The use of light chipping hammers is at no additional cost to the Owner.
- .3 Equipment located outside shall be mufflered or placed within an acoustic enclosure to produce maximum operating noise levels of 70 dBa at 3.0 m. Noise levels are also to be in accordance with all local and municipal by-laws and regulations.
- .4 Use "silenced" compressors.
- .5 Compressors and all diesel-powered equipment are to be fitted with a diesel exhaust scrubber.

3.0 EXECUTION

3.1 Surface Concrete Removal

- .1 Actual concrete removal areas to be designated on site by the Consultant. Minimum depth of removal to be 12 mm at patch boundaries.
- .2 Take all necessary precautions to avoid damaging the in-slab heating system.
- .3 Minimum removal depth shall be 12 mm, which may include sound concrete.
- .4 Excess or unnecessary concrete removal to be at no extra cost to the Contract.

- .5 Outline patch area with a 12-mm deep vertical sawcut as close as possible to limits of concrete already removed. Reduce sawcut depth if necessary to avoid cutting reinforcement or damaging the in-slab heating system. Remove concrete to sawcut taking precautions to avoid damaging sawcut edge. Edges with spalls or chips will be rejected and shall be re-sawcut at Contractor's expense.

3.2 Existing Exposed Electrical Services

- .1 The Contractor shall perform temporary removal, replacement, or relocation of existing electrical wiring, conduit, equipment, fixtures, or hardware in designated concrete delamination repair areas as required for completion of the Work. Contractor shall correct damages at their own expense. Contractor shall promptly report any damage to the Owner and the Consultant.
- .2 Prior to commencing the Work, the Contractor shall contact the Owner to locate all protective or alarm systems and sensors. All services shall be protected against damage or interruption. The Contractor shall provide the Owner with minimum 48 hours advance notice of any necessary interruption. All claims resulting from damage shall be the responsibility of the Contractor.

3.3 Existing Embedded Electrical Services

- .1 It is the Contractor's responsibility to ensure that all potential areas of embedded conduit be identified and that all high voltage systems located in the area of work are switched off to prevent possible injury. Coordinate requirements with Owner.
- .2 The Contractor shall take the utmost caution during concrete removal operations in order to prevent damage to embedded conduits. Any damage caused to such conduits will be immediately reported to the Owner and Consultant. In no instance will damaged or deteriorated conduits be covered up by the Contractor without specific approval from the Owner.
- .3 Contractor to repair or abandon damaged conduit within the slab at the discretion of the Consultant. Owner to pay for repairs provided that damage did not result from Contractor's negligence.
- .4 Contractor to coordinate required repairs with designated Electrical Sub-Contractor. Owner shall designate Electrical Sub-Contractor for the Work.

3.4 Existing Embedded Heating System

- .1 It is the Contractor's responsibility to ensure that the embedded heating system is switched off and protected from damage during the repair. Coordinate requirements with Owner.
- .2 The Contractor shall take the utmost caution during concrete removal operations in order to prevent damage to the embedded heating system. Any damage caused to the heating piping will be immediately reported to the Owner and Consultant. In no instance will damaged or deteriorated heating systems be covered up by the Contractor without specific approval from the Owner.
- .3 Contractor to repair damaged flexible piping within the slab at the discretion of the Consultant. Owner to pay for repairs provided that damage did not result from Contractor's negligence.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Cast-in-Place Concrete – Refer to Structural Drawings.
- .2 Section 09 91 00 – Painting.

1.2 REFERENCE DOCUMENTS

- .1 American Society for Testing and Materials (ASTM):
 - .1 ASTM A53/A53M-12: Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - .2 ASTM A269/A269M-15: Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
 - .3 ASTM A307-14: Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength.
- .2 Canadian Standards Association (CSA):
 - .1 CAN/CSA G40.20-13/G40.21-13: General Requirements for Rolled or Welded Structural Quality Steel / Structural Quality Steel.
 - .2 CAN/CSA G164-M92 (R2003): Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CAN/CSA S16-14: Design of Steel Structures.
 - .4 CSA W48-14: Filler Metals and Allied Materials for Metal Arc Welding.
 - .5 CSA W55.3-08 (R2013): Certification of Companies for Resistance Welding of Steel and Aluminum.
 - .6 CSA W59-13: Welded Steel Construction (Metal Arc Welding), Includes Update No. 1 (2014), Update No. 3 (2015), Update No. 4 (2015).
 - .7 CSA W47.1-09 (R2014): Certification of Companies for Fusion Welding of Steel.
 - .8 CSA G30.18-09 (R2014): Carbon steel bars for concrete reinforcement, Includes Update No. 1 (2012).
- .3 Canadian Institute of Steel Construction (CISC)/Canadian Paint Manufacturer's Association (CPMA):
 - .1 CISC/CPMA 2-75: A Quick Drying Primer for use on Structural Steel.
- .4 Green Seal Standards:
 - .1 GC-3: Green Seal Environmental Criteria for Anti-Corrosive Paints, Second Edition, January 7, 1997.

- .5 Master Painters Institute (MPI):
 - .1 MPI Green Performance™ Standard GPS-1-08 and GPS-2-08 For Paints and Coatings.
- .6 The Society for Protective Coatings (SSPC):
 - .1 SSPC SP 6/NACE No. 3: Commercial Blast Cleaning.
 - .2 Surface Preparation Standards, latest editions.

1.3 PRODUCTS SUPPLIED BUT NOT INSTALLED UNDER THIS SECTION

- .1 Supply following products for installation under other Sections:
 - .1 Anchor bolts, bearing plates, sleeves and other inserts to be built into concrete and masonry as required for anchorage and support of fabricated steel components.
 - .2 Fabricated steel components to be built into concrete and masonry.
 - .2 Supply instructions and templates as required for accurate setting of inserts and components.

1.4 SUBMITTALS

- .1 Comply with requirements of Division 01.
- .2 Submit shop drawings clearly indicating:
 - .1 Components.
 - .2 Core metal thicknesses.
 - .3 Finishes.
 - .4 Dimensions.
 - .5 Fabrication details.
 - .6 Installation details.
- .3 Submit paint manufacturer's product data.
- .4 Submit certificates of welder qualifications specified in this Section.

1.5 QUALITY ASSURANCE

- .1 Qualifications of Welders:
 - .1 Welding of load supporting components shall be performed by companies certified by Canadian Welding Bureau in accordance with CSA W47.1.
 - .2 Welders shall be qualified by Canadian Welding Bureau for classification of Work being performed.

- .2 Workmanship Standards:
 - .1 Resistance Welding: to CSA W55.3.
 - .2 Fusion welding: to CSA W59.
- .3 Prime Painting of Steel Fabrications:
 - .1 The painting and finishing specifications for new, not previously painted or finished, substrates are based on and make reference to the "Master Painters Institute Architectural Painting Specification Manual", latest edition, including the "MPI Approved Products Lists" (MPI).

1.6 PRODUCT DELIVERY AND STORAGE

- .1 Schedule delivery of components to site to coincide with installation of this work.
- .2 Store components to prevent damage and distortion.
- .3 Protect finishes from scratches and soiling.

2 Products

2.1 MATERIALS

- .1 Steel sections and plates: to CAN/CSA-G40.20-13/G40.21-13, Grade 260W.
- .2 Deformed steel bars: of billet steel to CSA G30.18, grade 300.
- .3 Bolts and nuts: to ASTM A307, hot dip galvanized where noted.
- .4 Shop paint primer: Refer to Section 09 91 00 - Painting.
- .5 Zinc rich paint on exterior applications: meeting requirements of MPI GPS-1-08 and GPS-2-08 standard for VOC content.
- .6 Zinc rich paint and touch-up primer for interior surfaces: meeting requirements of Green Seal Standard GC-3, for VOC content to be less than 250 g/l.
- .7 Isolation coating: acid and alkali resistant asphaltic paint.
- .8 Refer to drawings for handrails, guardrails, stairs, ladders, angles, bollards, embeds and other miscellaneous metal details.

2.2 FABRICATION

- .1 Shop fabricate components where possible.
- .2 Fabricate components square, straight, true, free from warpage and other defects. Accurately cut, machine, file and fit joints, corners, copes and mitres.
- .3 Exposed joints and connections shall be tight, flush and smooth unless otherwise indicated.
- .4 Where work of other Sections is to be attached to work of this Section, prepare work by drilling and tapping holes as required to facilitate installation of such work.

- .5 Work of this Section, supplied for installation under other Sections, shall be prepared as required ready for installation.

2.3 SURFACE PREPARATION

- .1 Thoroughly clean and suitably pretreat steel prior to finishing.
- .2 Remove loose mill scale, rust, oil, grease, dirt and other foreign matter using one or more of the following methods:
 - .1 solvent cleaning
 - .2 wire brushing
 - .3 power wire brushing
 - .4 sandblasting
- .3 Grind smooth sharp projections.

2.4 FINISHES

- .1 Galvanized:
 - .1 Hop dip galvanize components to CAN/CSA G164.
 - .2 Minimum zinc coating of 600 g/m².
 - .3 Where size permits galvanize components after assembly.
- .2 Zinc Rich Paint:
 - .1 Clean metal in accordance with surface preparation requirements of the SSPC.
 - .2 Apply one coat of zinc rich paint to all surfaces exposed after assembly to minimum dry film thickness of 60 micrometres. Apply coating immediately after cleaning.
- .3 Isolation Coating:
 - .1 Apply an isolation coating to contact surfaces of following components in contact with cementitious materials and dissimilar metals except stainless steel: (1) exterior components (2) interior components exposed to high humidity conditions.

3 Execution

3.1 INSTALLATION

- .1 Install components square, straight and true to line.
- .2 Securely anchor components in place. Unless otherwise indicated, anchor components as follows:
 - .1 To concrete and solid masonry with expansion shields and bolts.

- .2 To hollow construction with toggle bolts.
- .3 To thin metal with screws or bolts.
- .4 To thick metal with bolts or by welding.
- .5 To wood with bolts for heavy and medium duty fastenings; with screws for light duty fastenings.
- .3 After installation, site clean and refinish damaged finishes, welds, bolt heads and nuts. Refinish with primer or zinc rich paint to match original finish.

3.2 COMPONENTS / FABRICATIONS

- .1 All miscellaneous metal items shall be as detailed on the drawings. Contractor is responsible to provide all metal components as described on the drawings. Miscellaneous metal may include, but shall not be limited to the following:
 - .1 Hot dip Galvanized Metal Angles and Loose Lintels.
 - .2 Other miscellaneous items indicated on the drawings.

END OF SECTION

Part 1 General

PART 1 SUMMARY

1.1 SECTION INCLUDES:

- .1 Acetylated Wood used in:
 - .1 Cladding/Siding.

1.2 REFERENCES

- .1 Definitions:
 - .1 Acetylation: A process that essentially alters the actual cell structure of wood by transforming free hydroxyl groups into acetyl groups, improving the technical properties (durability and dimensional stability) of wood.
- .1 Reference Standards: Current edition at date of bid.
 - .1 ASTM D143 - 09 Standard Test Methods for Small Clear Specimens of Timber
 - .2 ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials
 - .3 AWPA E1 - Standard Method for Laboratory Evaluation to Determine Resistance to Subterranean Termites
 - .4 AWPA E10 - Standard Method of Testing Wood Preservatives by Laboratory Soil-Block Cultures
 - .5 BS EN 350-1 - Durability of wood and wood-based products. Natural durability of solid wood. Guide to the principles of testing and classification of natural durability of wood
 - .6 WDMA T.M. 1 - Soil Block Test.
 - .7 WDMA T.M. 2 - Swellometer Test, Test Method to Determine the Water Repellent Effectiveness of Treating Formulations.

1.3 SUBMITTALS

- .1 Reference Section "01 33 00 – Submittal Procedures."
- .2 Test and Evaluation Reports
- .3 Warranty Documentation.
- .4 Sustainable Design Closeout Documentation.

1.4 QUALITY ASSURANCE

- .1 Manufacturer:
 - .1 Single firm providing acetylated material.
 - .2 Minimum 4 years' experience in commercial production of acetylated wood.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Reference Section "01 66 00 – Product Storage and Handling Requirements."
- .2 Store materials under cover of a breathable barrier and protected from weather and contact with damp or wet surfaces.
- .3 Maintain temperature and relative humidity.
- .4 Store materials flat, with spacers between each bundle to provide adequate air circulation, a minimum 10 cm above concrete flooring and 30 cm above ground, on framework or blocking.
- .5 Protect edges, joints, and corners from damage.
- .6 Packaging:

- .1 Include the following information:
 - .1 Dimensions.
 - .2 Manufacturer's contact information.
- .7 Environmental Limitations:
 - .1 Disposal: Wood to be non-toxic, can be reused when no longer needed or can be disposed like regular wood.
 - .2 Gluing: Wood to be glued using many commonly used wood adhesive systems.
 - .3 Fasteners and Other Hardware: Corrosion-resistant, high-quality 304 or 316 stainless steel or naval brass fasteners are recommended. Chrome-plated aircraft anodized aluminium or proprietary epoxy or ceramic-coated fasteners may be a suitable alternative. Zinc-plated or galvanized steel are not recommended.
 - .4 Coatings: Many high quality outdoor approved wood coating systems are compatible with Wood.
 - .5 For further guidance, reference to manufacturer instructions.

1.6 WARRANTY

- .1 Special Warranty: Manufacturer's standard form in which manufacturer agrees to replace acetylated wood that fails per warranty guidelines within specified warranty period.
 - .1 Warranty Period
 - .1 Fifty (50) years for above-ground installations.
 - .2 Twenty-Five (25) years for in-ground installations.

PART 2 PRODUCT

2.1 Products

- .1 Acetylated Wood
 - .1 Basis of design:
 - .1 Product: Accsys Technologies "Accoya®" Wood
 - .2 Manufacturer
 - .1 Accsys Technologies PLC
 - .3 Distributor
 - .1 Upper Canada Forest Products

2.2 Wood Characteristics

- .1 Veneer Species: Radiata Pine (also known as Monterey Pine).
- .2 Moisture Content: Less than or equal to 8%.
- .3 Acetylated Wood Properties:
 - .1 Dimensional Stability:
 - .1 Tangential Shrink/Swell, 1.5%
 - .2 Radial Shrink/Swell, 0.8%
 - .3 Volumetric Shrink/Swell, 2.3%.
 - .4 Water Repellent Effectiveness: WDMA T.M. 2: >70%
 - .2 Durability, BS EN 350-1 Testing: Class 1 (very durable).
 - .3 Fungal Decay, AWPA E10: < 0.30% weight loss.
 - .4 Fungal Decay, WDMA T.M. 1: < 0.25% weight loss.
 - .5 Termites, AWPA E1: ≤ 5% weight loss with Formosan termites.
 - .6 Hardness, ASTM D143: 922 lbf side, 1,484 lbf end2 .
 - .7 Bending Strength, ASTM D143: 13,144 psi (small clear specimens).
 - .8 Bending Stiffness, ASTM D143: 1,297,492 psi (small clear specimens).
 - .9 Density: 32 lb/cu ft (@ 65% relative humidity, 20 degrees C).
 - .10 Equilibrium Moisture Content: 3-5% (@ 65% relative humidity, 20 degrees C).
- .4 Acetylated Lumber Available Dimensions:

.1 Nominal Depth & Width: 38mm x 89mm

2.3 Accessories

.1 Primer

.1 Supply and apply a suitable outdoor primer addressing mold growth. Confirm with consultant before application.

PART 3 EXECUTION

3.1 INSTALLATION

.1 Refer to manufacturer instructions.

END OF SECTION

1 General

1.1 SECTION INCLUDES

- .1 This Section includes all work related to wood wall veneers, trims or surfaces, fixed and constructed benches and non-cabinetry based finish carpentry.
- .2 Section also includes wood slat assemblies as noted and detailed on the Drawings.

1.2 REFERENCE DOCUMENTS

- .1 Materials and workmanship shall meet or exceed "Architectural Woodwork Standards Manual" of the Architectural Woodwork Manufacturer's Association of Canada (AWMAC) current edition, hereinafter referred to as "AWMAC Manual".
- .2 American National Standards Institute (ANSI):
 - .1 ANSI/NPA A208.1-2016: Particleboard.
 - .2 ANSI/NPA A208.2-2016: Medium Density Fiberboard (MDF) for Interior Applications.
 - .3 ANSI/HPVA HP-1-2009: Standard for Hardwood and Decroative Plywood.
- .3 American Society for Testing and Materials (ASTM):
 - .1 ASTM D1037-12: Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials.
 - .2 ASTM F1667-18A: Standard Specification for Driven Fasteners: nails, Spikes and Staples.
- .4 Canadian General Standards Board (CGSB): CAN/CGSB-11.3-M87: Hardboard.
- .5 Canadian Plywood Association (CanPly).
- .6 Canadian Standards Association (CSA):
 - .1 CAN/CSA-G164-18: Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .2 CSA O121-17: Douglas Fir Plywood , Includes Update No. 1 (2013).
 - .3 CAN/CSA O141-05 (R2019): Softwood Lumber.
 - .4 CSA O151-17: Canadian Softwood Plywood.
 - .5 CSA O153:19: Poplar Plywood.
 - .6 CSA Z760-94 (R2001): Life Cycle Assessment.
- .7 National Hardwood Lumber Association (NHLA): Rules for the Measurement and Inspection of Hardwood and Cypress, January 1, 2011.
- .8 National Lumber Grading Authority (NLGA): Standard Grading Rules for Canadian Lumber (2014 edition).

- .9 Underwriters Laboratories Canada (ULC): CAN/ULC-S105:2016: Standard Specification for Fire Door Frames Meeting the Performance Required by CAN/ULC-S104-15.
- .10 Forest Stewardship Council (FSC) where possible:
 - .1 FSC-STD-01-001-2004: FSC Principle and Criteria for Forest Stewardship.
 - .2 FSC-STD-20-002-2004: Structure and Content of Forest Stewardship Standards V2-1.
 - .3 FSC Certified Bodies.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Coordination:
 - .1 Coordinate provision of concealed blocking or supports.
 - .2 Ensure that back-priming of finish carpentry surfaces concealed after installation, has been performed as specified in Section 09 91 00 – Painting, prior to installation.

1.4 SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications, and data sheets in accordance with Section 01 33 00 – Submittal Procedures.
 - .2 Submit two (2) copies of WHMIS MSDS in accordance with Section 01 33 00 – Submittal Procedures. Indicate VOCs for:
 - .1 Finishes.
 - .2 Adhesives.
- .2 Shop Drawings:
 - .1 Indicate details of construction, profiles, jointing, fastening and other related details.
 - .2 Indicate materials, thicknesses, finishes and hardware.
- .3 Samples:
 - .1 Submit 300mm x 300mm samples of each type of solid wood or plywood to receive stain or natural finish.
 - .2 Submit 250mm long samples of each type of trim and moulding.

1.5 QUALITY ASSURANCE

- .1 Regulatory Agency Approvals:
 - .1 Lumber shall be graded and stamped by an agency certified by Canadian Lumber Standards Administrative Board.

.2 Plywood shall be graded and stamped in accordance with applicable CSA standards.

.3 Particleboard, fibreboard and wood based composite panels shall conform to ANSI standards.

.2 Company specializing in finish carpentry work, possessing a minimum of 5 years experience in work of this nature.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Make no delivery until site conditions have stable humidity and temperature conditions as required by AWMAC standards and are adequate to receive the work of this Section. Protect materials from weather while in transit to site.

.2 Adequately protect finish surfaces during moving, handling and storage.

.3 Store materials on site in a location protected from weather and contact with damp or wet surfaces, and activities that could damage finished surfaces.

.4 Store in a location where environmental conditions meet requirements required for installation areas.

.5 Stack lumber, plywood, and other panels; allow for air circulation within and around stacks and under temporary coverings.

.6 Separate waste materials for reuse and recycling where possible.

1.7 SITE CONDITIONS

.1 Materials for interior installation shall be installed only in areas with a constant and minimum temperature of 15°C, with interior relative humidity conditions within design values.

2 Products

2.1 MATERIALS

.1 Softwood Lumber: Average moisture content of 6% and maximum of 9% for interior work, an average of 12% and maximum of 15% for exterior work to AWMAC custom grade.

.1 CAN/CSA-O141:05(R2019), kiln dried, dressed four (4) sides.

.2 NLGA Standard Grading Rules for Canadian Lumber.

.2 Typical Hardwood Lumber (Maple): Average moisture content of 6% and maximum of 9% for interior work.

.1 To AWMAC custom grade.

.2 NLGA Standard Grading Rules for Canadian Lumber.

.3 Hardwood Plywood: To current CSA standard, of thickness indicated, species, rotary cut face veneer of architectural grade. Use particle board core with Type I bond. Select veneers to provide random match.

.4 Canadian Softwood Plywood: To CSA O151-17, medium density overlaid.

- .5 Douglas Fir Plywood: To CSA O121-17, good one side, medium density overlaid.
- .6 Poplar Plywood: to CSA O153:19, standard sheathing, interior moisture resistant.
- .7 Particleboard: To ANSI A208.1, grade M2 for interior use, prefinished with plastic laminate finish.
- .8 Hardboard: to CAN/CGSB-11.3 standard 6 mm thick.
- .9 Pegboard: to CAN/CGSB-11.3 standard 6 mm thick.
- .10 Medium Density Fibreboard (MDF): to ASTM D1037-12 and ANSI A208.2-2016, premium grade for interior use, density 720 kg/m³.
- .11 Fasteners: To suit size and nature of components being fastened.
 - .1 ASTM F1667-18a: Standard Specification for Driven Fasteners: Nails, Spikes and Staples.
 - .1 Use common spiral nails and spiral spikes except where indicated otherwise.
 - .2 Use hot dip galvanized finished steel for exposed exterior work, highly humid interior areas and for pressure-preservative and fire-retardant treated lumber.
 - .2 Bolt, nut, washer, screw and pin type fasteners: hot dip galvanized finish to CSA G164-18.
- .12 Adhesive: recommended by manufacturer and suited for intended purpose and duty.

2.2 SITE FABRICATION

- .1 Fabricate items rigid, plumb and square, as detailed, with tight, hairline joints. Sand work smooth, set all nails and screws.

3 Execution

3.1 EXAMINATION

- .1 Visit site and note state of completion within various areas in which work is to be completed; verify that surfaces are ready to receive Work of this Section and that other Work is finished and painted before being built-over or covered in any way by installed Work.
- .2 Verify that areas in which Work is scheduled are finished and ready to accept work of this Section; with walls painted, ceilings finished, overhead services completed, tested and accepted.
- .3 Starting Work will be considered as acceptance of conditions.

3.2 PREPARATION

- .1 Confirm access is sufficient for large pieces of millwork, and that they can be transported easily and safely to final installation location.
- .2 Protect adjacent finished surfaces and materials from damage by Work of this Section.

3.3 INSTALLATION

- .1 Scribe and cut as required to fit abutting walls, and surfaces, to fit properly into recesses and to accommodate intersecting or penetrating objects.
- .2 Install door and window trim in single lengths without splicing.
- .3 Fit backs of baseboards and casing snugly to wall surfaces to eliminate cracks at junction of base and casing with walls.
- .4 Set and secure materials and components in place, rigid, plumb and square, with tight, hairline joints.
- .5 Form joints to conceal shrinkage.
- .6 Set finishing nails to receive filler. Where screws are used to secure components countersink screw in round cleanly cut hole and plug with wood plug to match material being secured.
- .7 Butt and cope internal joints of baseboards to make snug, tight joint. Cut right angle joints of mouldings and external corners of base with mitred joints.
- .8 Provide heavy duty fixture attachments for wall mounted cabinets, shelving and handrails.
- .9 Sand smooth, fill and retouch nicks, chips, and scratches; replace damaged items that cannot be repaired.
- .10 After installation, adjust operating hardware to ensure correct operation.

END OF SECTION

1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 07 92 00 – Joint Sealants.

1.2 REFERENCE DOCUMENTS

- .1 Design of cladding system in accordance to the latest edition of:
 - .1 CAN/C.S.A. Standard S136 latest editions for the Design of Cold Formed Steel Structural Members.
 - .2 Canadian Sheet steel Building Institute Standards 10M and 20M.
 - .3 National Building Code of Canada (latest edition).
 - .4 Applicable local codes and standards.
 - .5 ASTM A653/A653M-04a Specification for Sheet Steel, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated by the Hot-Dip Process.
 - .6 ASTM A792/A792M-03, Specification for Sheet Steel, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
 - .7 CSSBI S8-2001, Quality & Performance Specification for Prefinished Sheet Steel Used for Building Products.
 - .8 CSSBI Fact Sheet #3, Care and Maintenance of Prefinished Sheet Steel Building Products.
 - .9 CSSBI Fact Sheet #13, Position Paper on Oil Canning.
 - .10 CSSBI Fact Sheet #24, Natural Finish Metallic Coatings.

1.3 SUBMITTALS

- .1 Submit duplicate samples in accordance with Division 01.
- .2 Product Data: Submit manufacturer's printed product literature, specifications, and data sheets in accordance with Section 01 33 00 – Submittal Procedures.
- .3 Shop Drawings: Submit shop drawings clearly indicating bending, folding, jointing, fastening, and all other installation details.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Store materials off ground and under cover in a dry, well ventilated enclosure.
- .2 Stack preformed material in manner to prevent twisting, bending and rubbing.
- .3 Provide protection for galvanized and pre-painted surfaces.
- .4 Prevent contact of dissimilar metals during storage and protect from acids, flux, and other corrosive materials and elements.

1.5 QUALITY ASSURANCE

- .1 Manufacturer of wall system and installer of the Metal Wall Panels shall demonstrate a minimum of five years' experience in the fabrication and installation of projects of similar scope.

1.6 DESIGN REQUIREMENTS

- .1 Design wall system to resist:
 - .1 Wind loads, positive and negative, expected in this geographical region NBCC climatic data, 50 year probability.
 - .2 Deflection of the wall system is not to exceed 1/180th of the span for the wind load based on serviceability limit states.
 - .3 Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, overstressing of components, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime sky heat loss.
 - .1 Temperature Change (Range): 20 deg C, ambient; 40 deg C, material surfaces.
 - .4 Design expansion joints to accommodate movement in cladding and between cladding and structure to prevent permanent distortion or damage to the cladding.
 - .5 Design wall system to maintain the following erection tolerances:
 - .1 Maximum variation from plane or location shown on shop drawings: 20 mm/10 m.
 - .2 Maximum offset from true alignment between two adjacent members abutting end to end in line: 1 mm.

2 Products

2.1 MATERIALS

- .1 Metal Wall System:
 - .1 Sub-girts: Minimum 1.21 mm thick formed galvanized steel, ASTM A653M Grade 230 with Z275 zinc coating. Full depth of wall system, factory notched and formed to match liner.
 - .2 Steel Cladding:
 - .1 Profile: Profile shall be Vicwest Metals profile (COR1229).
 - .3 Base material: Z275 galvanized sheet steel conforming to ASTM A653M Grade 230.
 - .4 Finish: Galvanized - G90 (26, 28GA) - Natural Finishes.

2.2 ACCESSORIES

- .1 Flashing: In accordance with Section 07 62 00. Material to match cladding in exposed locations, galvanized material in concealed locations. Custom fabricated to suit architectural details, as required. Use preformed corner pieces only. Double back exposed edges.
- .2 Closures: Foam and metal closures to suit profiles selected, to manufacturer's recommendations.

2.3 FABRICATION

- .1 Fabricate components to comply with dimensions, profiles, gauges and details as shown on the shop drawings, including fascia and soffit panels and all companion flashing.
- .2 Fabricate all components of the system in the factory, ready for field installation.
- .3 Provide metal liner and cladding and all accessories in longest practicable length to minimize field lapping of joints.

PART 3 – EXECUTION

3.1 EXAMINATION

- .1 Prior to proceeding with installation of the Metal Wall Panel System, inspect the work of all preceding trades to ensure conformity to drawings. All discrepancies or incomplete work should be reported, in writing, to the Architect and General Contractor for corrective measures. Installation of the wall assembly shall not proceed until all discrepancies are corrected.

3.2 INSTALLATION

- .1 Sub-girt framing system:
 - .1 Install sub-girts. Frame all openings in the cladding.
- .2 Flashing:
 - .1 Install starter flashing, drip and other flashing, corners, edgings, window and door flashing as shown on the drawings.
- .3 Exterior Cladding:
 - .1 Install soffit in accordance with manufacturer's standard installation procedures, providing proper laps and detailing to ensure a weather tight face.
 - .2 Install finishing flashing and cap flashing.

3.3 CLEAN-UP

- .1 Clean exposed panel surfaces in accordance with manufacturer's instructions.
- .2 Repair and touch up with colour matching high grade enamel minor surface damage, only where permitted by the Architect and only where appearance after touch-up is acceptable to Architect.
- .3 Replace damaged panels and components that, in opinion of the Architect, cannot be satisfactorily repaired.

END OF SECTION

1 General

1.1 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 07 92 00 – Joint Sealants.
- .3 Mechanical Sections.

1.2 REFERENCE DOCUMENTS

- .1 Aluminum Association (AA):
 - .1 AA-C22-A41: Anodized Clear Coatings.
 - .2 AA-CC22-A42: Integral Colour Coatings.
- .2 American Society for Testing and Materials (ASTM):
 - .1 ASTM A653/A653M-19a: Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .2 ASTM D2822/D2822M-05(2011)e1: Standard Specification for Asphalt Roof Cement.
 - .3 ASTM D3019-17: Standard Specification for Lap Cement Used with Asphalt Roll Roofing, Non-Fibred, Asbestos-Fibred, and Non-Asbestos-Fibred.

1.3 SUBMITTALS

- .1 Submit duplicate samples in accordance with Division 01.
- .2 Product Data: Submit manufacturer's printed product literature, specifications, and data sheets in accordance with Section 01 33 00 – Submittal Procedures.
- .3 Shop Drawings: Submit shop drawings clearly indicating bending, folding, jointing, fastening, and all other installation details.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Store materials off ground and under cover in a dry, well ventilated enclosure.
- .2 Stack preformed material in manner to prevent twisting, bending and rubbing.
- .3 Provide protection for galvanized and pre-painted surfaces.
- .4 Prevent contact of dissimilar metals during storage and protect from acids, flux, and other corrosive materials and elements.

2 Products

2.1 MATERIALS

- .1 Aluminum: 6063 T54 alloy and temper and AA 1100, anodizing quality, for sheet.
- .2 Galvanized Steel Sheet: Commercial quality sheet to ASTM A653/A653M-19a, with Z275 designation zinc coating.
- .3 Prepainted Galvanized Steel: Commercial quality to ASTM A653/A653M-19a with Z275 zinc coating prepainted with baked on enamel with colours of proven durability for exterior exposure, to CSSBI Technical Bulletin No. 7, 5000 Series. Colour to be selected by Consultant.
- .4 Solder: 50% pig lead and 50% block tin.
- .5 Flux: Commercial quality as recommended by sheet metal manufacturer.
- .6 Flashing Nails: #12 hot dipped zinc coated, annular ringed.
- .7 Sheet Metal Screws: Cadmium plated, self tapping, pan head.
- .8 Plastic Cement: To ASTM D2822.
- .9 Lap Cement: To ASTM D3019-17.
- .10 Sealing Compound: To Section 07 92 00 – Joint Sealants.
- .11 Sealant: One-component, elastomeric, chemical curing.
- .12 Recessed Reglet: Preformed 0.70mm thick galvanized steel channel with face and ends covered with plastic tape.
- .13 Flashing Anchor Clips: 0.80mm thick galvanized steel.

2.2 FABRICATION, GENERALLY

- .1 Form sections square, true, and accurate to size; free from distortion and other defects detrimental to appearance or performance.
- .2 Backpaint sheet metal with bituminous paint on surface in contact with concrete, masonry, cementitious materials or dissimilar metal.

2.3 FABRICATION, FLASHING

- .1 Maximum Joint Spacing:
 - .1 Parapet Face Flashings: 1200mm.
 - .2 Cap Flashing 300mm and Greater in Width: 1200mm.
 - .3 All Other Flashings: 2400mm.
- .2 Construct flashing joints to allow for flashing movement, using flat "S" lock seams.
- .3 Maintain minimum of 22mm lap at all joints. Provide 25mm anchor projection of "S" locks.

- .4 At inside and outside corners, mitre the joint; use upstanding seams 25mm minimum height and 22mm minimum lap.
- .5 Maintain minimum 1:5 slope on horizontal surfaces of flashings, parapets, and control joints.
- .6 Hem exposed edges on underside of all flashings.
- .7 Fabricate cap flashing to have a drip leg minimum 100mm high.
- .8 Fabricate cap and counter flashings to lap minimum 100mm over base flashings.

2.4 FABRICATION, ROOF ACCESSORIES

- .1 Form sheet steel roof drain sleeves, air-stops etc., from 0.70mm galvanized steel.
- .2 Fabricate roof scuppers from 0.70mm, prepainted galvanized sheet steel with one (1) piece deck flange, minimum 150mm. Contour scuppers to cant strips.
- .3 Fabricate splash pans from 0.70mm galvanized steel.
- .4 Fabricate air/firestop below control joint box from 0.70mm galvanized steel.
- .5 Fabricate roof drain sleeves as detailed on drawings, from 0.70mm galvanized steel.

3 Execution

3.1 EXAMINATION OF SURFACES

- .1 Examine surfaces to receive flashings. Notify the Consultant of surfaces which are considered unacceptable to receive the Work of this Section.
- .2 The commencement of flashing work will imply unconditional acceptance of the surfaces and substrates to which the flashing is to be fastened.
- .3 Verify that the following are located and installed as detailed on Drawings:
 - .1 Plywood and lumber nailer plates to walls and parapets.
 - .2 Control joints.

3.2 PROTECTION OF EXISTING WORK

- .1 Protect the Work of other Sections from damage by the Work of this Section.
- .2 Place protection to the requirements and satisfaction of this Section before performing the Work of other Sections.

3.3 FLASHING INSTALLATION, GENERALLY

- .1 Install flashings not later than seven (7) days after installation of the membrane on any particular section of the roof.
- .2 Use 0.80mm thick x 150mm long anchor clips on fascia faces, and screws or annular ringed nails on the opposite face.

- .3 Use exposed fastenings in approved locations. Install anchors using annular ringed nails.
- .4 Fasten flashings of 1200mm length and shorter, through the extended "S" locks. Fasten flashings over 1200mm length, through the extended "S" locks, and at mid-length with a 150mm long, 0.80mm thick galvanized steel clip.
- .5 Where possible, do not set base flashing screws less than 200mm from top of roof membrane.

3.4 INSTALLATION OF FLASHING JOINTS

- .1 Fit flashings together so that one (1) end of each section is free to move in the joint. Do not use sealant at joints.
- .2 Wipe and wash clean soldered joints to remove traces of flux immediately after soldering.

3.5 INSTALLATION AT REGLETS

- .1 Assist in locating and installing recessed reglets, as required.
- .2 Confirm reglet installation and report defects to the consultant.
- .3 Insert metal flashing into reglets to form tight fit.
- .4 Seal flashing into reglet with sealant.

3.6 ROOF OPENINGS

- .1 All roof openings shall be curbed. No gum boxes will be allowed.

END OF SECTION

1 General

1.1 RELATED WORK SPECIFIED IN OTHER SECTIONS

- .1 All Sections of this Specification apply to this Section.

1.2 SUBMITTALS

- .1 Comply with requirements of Division 01.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications, and data sheets in accordance with Section 01 33 00 – Submittal Procedures. Submittals shall describe the following:
 - .1 Cleaning compound.
 - .2 Sealant.
 - .3 Primers.
 - .3 Samples:
 - .1 Submit samples of each type of material and colour to be used.
 - .2 Cure samples under identical conditions to job site, before submission.

1.3 QUALITY ASSURANCE

- .1 Sealant manufacturers representative shall review site conditions, joint design and installers qualifications. Report unsatisfactory conditions to the Consultant.
- .2 Representative shall check container labels, random inspect preparation of substrate materials and random test installed work.
- .3 Make 150mm long cut tests to random locations of installed work. Certify thickness, hardness and surface finish conforms to intended design. Report to the Consultant.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Receive and store materials as recommended by materials manufacturer.
- .2 Maintain containers and labels in undamaged condition.

1.5 EXISTING CONDITIONS

- .1 Examine substrate materials, joint voids and note temperature/humidity conditions. Report unacceptable conditions to the Consultant.
- .2 Commencement of Work implies acceptance of conditions.

2 Products

2.1 MATERIALS

- .1 Joint Cleaner: Non corrosive solvent recommended by sealant manufacturer for applicable substrate material.
- .2 Primer: Non-staining type recommended by sealant manufacturer.
- .3 Joint Back-Up: Round closed cell foam, extruded neoprene, Shore A hardness of 20, tensile strength 140 to 200 kPa, outsized 30-50%, compatible with sealant and primer, nonadhering to sealant.
- .4 Bond breaker: Pressure sensitive polyethylene tape, not bondable to sealant.
- .5 Sealant: Polysulphide base, one-component, to CAN/CGSB-19.13-M87, Shore A hardness 15-25.
- .6 Sealant: Polysulphide base, two-component, to CAN/CGSB-19.24-M90 Type 1 (horizontal) and Type 2 (vertical), Shore A hardness 15-25.
- .7 Sealant: Silicone base, one-component to CAN/CGSB-19.13-M87, Shore A hardness 15-25.
- .8 Sealant: Silicone base, two-component, to CAN/CGSB-19.24-M90, Shore A hardness 15-25.
- .9 Sealant: Polyurethane base, one-component, to CAN/CGSB-19.13-M87 Types 1 and 2, Shore A hardness 20-35.
- .10 Sealant: Polyurethane base, multi-component, to CAN/CGSB-19.24-M90 Types 1 and 2, Shore A hardness 20-35.
- .11 Colours: Sealant and caulking colours shall match adjacent materials and be selected by Consultant from manufacturer's standard colour range.

2.2 SEALANTS

Type	Description and Standard	Attributes
S = Sealant		
Type S-1	Polysulphide base, two-component, non-sag, to CAN/CGSB-19.24-M90, Type 2	Shore A hardness 15-25, joint movement range +/- 25%
Type S-2	Polysulphide base, two-component, self-levelling, to CAN/CGSB-19.24-M90, Type 2	Shore A hardness 15-25, joint movement range +/- 25%
Type S2A	Polysulphide base, two-component, self-levelling, to CAN/CGSB-19.3-M90,	PRC Rubber Caulk 250, no substitution.

Type S-3	Polysulphide base, one-component, non-sag, to CAN/CGSB-19.13-M87, Types 1 and 2	Shore A hardness 15-25, joint movement range +/- 25%
Type S-4	Silicone base, one-component to CAN/CGSB-19.13-M87 chemical curing	Shore A hardness 15-25, joint movement range +/- 25%
Type S-5:	Silicone base, one-component to CAN/CGSB-19.18-M87 solvent curing	Shore A hardness 15-25, joint movement range +/- 25%
Type S-6	Silicone base, one-component, non-sag, to CAN/CGSB-19.22-M89 mildew resistant	Shore A hardness 2025
Type S-7	Silicone base, two-component, non-sag, to CAN/CGSB-19.24-M90, Type 2 chemical curing	Shore A hardness 15-25, joint movement range +/- 25%
Type S-8	Polyurethane base, one-component, non-sag, to CAN/CGSB-19.13-M87, Types 1 and 2	Shore A hardness 15-25, joint movement range +/- 25%
Type S-9	Polyurethane base, multi-component, non-sag, to CAN/CGSB-19.24-M90 Type 2	Shore A hardness 2035, , joint movement range +/- 25

Type	Description and Standard	Attributes
C = Caulking		
Type C-1	Acrylic base, one-component to CAN/CGSB-19.17-M90 emulsion base.	Joint movement range +/- 7.5%
Type C-2	Butyl-Polyisobutylene polymer base, solvent curing, one-comoponent butyl rubber caulking to 19-GP-14 M	Joint movement range +/- 0.5%
Type C-3	Sealing and bedding compound acoustical, one-component, to CAN/CGSB-19.21-M87, non-drying, non- hardening, synthetic rubber	

3 Execution

3.1 PREPARATION

- .1 Remove dust, paint, loose mortar and all foreign matter; dry joint surfaces.
- .2 Remove rust, mill scale and coatings from ferrous metals by wire brush, grinding or sandblasting.
- .3 Remove oil, grease and other coatings from non-ferrous metals with appropriate solvent.
- .4 Prepare concrete, masonry, glazed and vitreous surfaces as recommended by sealant manufacturer.
- .5 Examine joint dimensions and size materials to achieve joint depth which is half the width of the joint with minimum width and depth of 5mm, maximum width 25mm.
- .6 Install joint back-up to achieve correct joint depth.
- .7 To prevent staining, mask adjacent surfaces with tape prior to priming.
- .8 Apply bond breaker tape in accordance with manufacturer's directions.
- .9 Prime sides of joints to manufacturer's directions immediately prior to caulking.

3.2 APPLICATION

- .1 Select sealant to suit applications as recommended by manufacturer. Apply sealant in accordance with manufacturer's directions, using a gun with proper size nozzle, to leave a weathertight, air tight installation. Use sufficient pressure to fill voids and joints solid. Superficial pointing with skin bead is not acceptable.
- .2 Form surface of sealant smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities. Neatly tool surface to a slight concave joint.
- .3 In masonry cavity construction, vent caulked joints from cavity to 3mm beyond external face of wall by inserting 3mm diameter plastic tubing at bottom of each joint and maximum of 1500mm on center vertically.
- .4 Clean adjacent surfaces immediately and leave work neat and clean. Remove excess sealant and droppings, using recommended cleaners as work progresses. Remove masking tape after tooling of joints.

3.3 SEALANT APPLICATION SCHEDULE

Movement	Application	Sealant Types
Significant +25 or -25%	Vertical or inclined joints such as panel, coping, expansion, precast planks, prestressed concrete joints and sloped pavement.	S-1, 3
Significant +25 or -25%	Horizontal joints not exposed to fuel or gas.	S-2A
Minimal +25 or -25%	Vertical or inclined joints such as perimeter of doors, windows, wall penetrations.	S-1, 3, 9,
Minimal +25 or -25%	Glazing sealant for non-structural glazing.	S-4, 5
Low +5 or -5%	Interior joints such as steel door frames in drywall or masonry, drywall control joints	C-1
	Exposed acoustical	S-5
	Non-exposed acoustical	S-5, C-3

END OF SECTION

Part 1 General

1.1 GENERAL

- .1 Conform to the requirements of Division 1.

1.2 RELATED SECTIONS

- .1 Section 06 10 00 Rough Carpentry
- .2 Section 07 92 00 Joint Sealants
- .3 Section 09 22 16 Non-Structural Metal Framing
- .4 Section 09 91 00 Painting

1.3 REFERENCES

- .1 ASTM International (ASTM)
 - .1 ASTM C475/C475M-17 Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
 - .2 ASTM C514-04(2014) Standard Specification for Nails for the Application of Gypsum Board
 - .3 ASTM C840-17a Standard Specification for Application and Finishing of Gypsum Board
 - .4 ASTM C954-15 Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness
 - .5 ASTM C1002-16 Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs
 - .6 ASTM C1047-14a Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base
 - .7 ASTM C1177/C1177M-17 Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing
 - .8 ASTM C1178/C1178M-13 Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel
 - .9 ASTM C1280 - 13a Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing.
 - .10 ASTM C1396/C1396M - 17 Standard Specification for Gypsum Board
 - .11 ASTM E90-09 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
 - .12 ASTM E814-13a Standard Test Method for Fire Tests of Penetration Firestop Systems
 - .13 ASTM E1966-15 Standard Test Method for Fire-Resistive Joint Systems
- .2 Canadian General Services Board (CGSB)
 - .1 CAN/CGSB-51.34, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
 - .2 CAN/CGSB 19-GP-21M Sealing and Bedding Compound for Acoustical Purposes
- .3 CAN/ULC-S102, Building Materials and Assemblies, Standard Method of Test for Surface Burning Characteristics of.
- .4 Underwriters Laboratories of Canada (ULC)
 - .1 ULC List of Equipment and Material, Volume III, Fire Resistance Ratings.

1.4 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Submit WHMIS Material Data Safety Sheets (MSDS) for all products, prior to delivery of products to the site.

1.5 QUALITY ASSURANCE

- .1 Dry wall installers: minimum 5 years proven experience.
- .2 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .3 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .4 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.6 MOCK-UPS

- .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
- .2 Construct mockup gypsum board wall installation including one inside corner and one outside corner. Mock-up may be part of finished work.
- .3 Allow two (2) working days for inspection of mock-up by Consultant before proceeding with rest of the work.
- .4 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may remain as part of finished work.

1.7 SHIPPING, HANDLING AND STORAGE

- .1 Refer to Section 01 61 00 – Common Product Requirements.
- .2 Deliver, handle and store materials in accordance with manufacturer's printed instructions.
- .3 Use all means necessary to protect gypsum board materials before, during and after installation and to protect the installed work and materials of other trades affected by this work. Store materials in a dry area inside the building. Do not remove wrapping until ready for use. Prevent damage to all edges and surfaces.

1.8 ENVIRONMENTAL REQUIREMENTS

- .1 Maintain temperature minimum 10°C, maximum 21°C for 48 hours prior to and during application of gypsum boards and joint treatment, and for at least 48 hours after completion of joint treatment.
- .2 Apply board and joint treatment to dry, frost free surfaces.
- .3 Ventilation: Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

1.9 WASTE MANAGEMENT AND DISPOSAL

- .1 Refer to Section 01 74 19 – Construction Waste Management and Disposal.

Part 2 Products

2.1 GYPSUM BOARD

- .1 To CSA A82.27-M and ASTM C1396/C1396M. Standard for non-rated applications, Type X for rated applications, 1220 mm wide x maximum practical length, ends square cut, edges tapered with round edge, 12.7 mm thick or to thickness indicated on drawings. All fire rated board shall be minimum 16 mm thickness.
- .2 Glass mat water-resistant gypsum board: to ASTM C1178/C1178M with glass mat facings, both sides, regular and Type X, thicknesses as indicated on drawings, 1200 mm wide x maximum practical length, ends square cut, long edges tapered.
- .3 Abuse Resistant Gypsum Board: CGC Fibrerock abuse resistant fibre / gypsum panels, 16 mm thickness.
- .4 Water and Moisture Resistant Board: to CSA A82.27 and ASTM C1396, 12.7 mm thick, 1220 mm wide with tapered edges.
- .5 Glass Mat Exterior Gypsum Sheathing: to ASTM C1177, Georgia Pacific DENS-Glass Gold, 12.7 mm thick, 1219 mm wide x 2440 mm long, square edge with water repellant glass mat facings.
 - .1 CGC Securock
 - .2 Georgia Pacific DENS-Glass Gold
 - .3 Certainteed GlasRoc

2.2 FASTENING AND ADHESIVES

- .1 Drywall Screws: To ASTM C954 or ASTM C1002 self-drilling, self-tapping, case hardened, length to suit board thickness and provide minimum 12 mm penetration into support.
- .2 Sheathing Screws: Pan head Buildex S-12 climaseal polymer coated, corrosion resistant self-tapping sheet metal screws minimum 32 mm long.
- .3 Joint Tape: To ASTM C475, 50 mm perforated with preformed seam, mould and mildew resistant.
 - .1 Joint tape for abuse resistant gypsum board: CGC Mould Resistant Fiberglass Drywall Tape.
- .4 Joint Filler and Topping: To ASTM C475 vinyl or latex base, slow setting.
- .5 Joint treatment for Gypsum Sheathing: 50 mm wide, 10 x 10 woven threads per inch, self-adhering fibreglass joint tape and Borden HPPG Elmer's Siliconized Acrylic Latex Caulk.
- .6 Laminating Compound: To CSA A82.31-M, asbestos-free.

2.3 ACOUSTIC INSULATION

- .1 Acoustic Insulation: Mineral or Glass Fibre Acoustic Insulation:
 - .1 Mineral Fibre Acoustic Insulation: To ASTM C665, Mineral fibre blanket insulation, minimum density of 40 kg/m2:
 - .1 AFB Acoustical Fire Batts manufactured by Roxul Inc.
 - .2 Glass Fibre Acoustic Blanket Insulation: To CAN/ULC-S702, type 1, pre-formed unfaced glass fibre batt acoustic insulation.
 - .1 QUIETZONE Acoustic Blanket insulation manufactured by Owens Corning Canada.
- .3 STC contribution and fire resistance (hr): Refer to NBC 2015, tables A-9.10.3.1-A/-B and Product Data Sheet for various assemblies contributing to acoustic performance and fire resistance.

- .4 Surface burning characteristics to CAN/ULC-S102:
 - .1 flame spread: 15
 - .2 smoke developed: 5
 - .3 Smoulder resistance: to ULC S129.
 - .4 Non-combustible: to CAN4-S114.
- .5 Thickness to suit depth of wall framing and as indicated.
- .2 Acoustic sealant: To CGSB 19-GP-21M, ASTM E814 and ASTM E1966, with STC performance rating of 55 to ASTM E90-09.

2.4 ACCESSORIES

- .1 Casing Beads, Corner Beads and Edge Trim: To ASTM C 1047, 0.5 mm gauge base thickness commercial grade sheet steel with G90 zinc finish to ASTM A525-80A; perforated flanges; one piece length per location.
- .2 Insulating Strip: Rubberized, moisture resistant, 3.0 mm thick, 12 mm wide closed cell neoprene strip, with self-sticking permanent adhesive on one face; lengths as required.
- .3 Control Joints shall be DRM-50-25 2PC extruded aluminum as manufactured by Fry Reglet Corporation to provide a 1/4" reveal.
- .4 Sealants: as specified in Section 07 92 00 - Joint Sealants.

Part 3 Execution

3.1 GENERAL

- .1 Prior to installation of gypsum wallboard, ensure that all required vapour barriers, air seals, gaskets and the like installed under another Section have been inspected and accepted by Municipal authorities and the Consultant. Failure to do so will result in removal of all gypsum board installed prior to approval and replacement, at no additional cost to the Owner.
- .2 Unless otherwise indicated on the drawings, all gypsum board partitions shall extend from floor level to the underside of floor or roof structures above.

3.2 ACOUSTIC INSULATION

- .1 Install acoustic blankets full width and length, with tight joints, between wall framing and around penetrating electrical service boxes, piping, air ducts and frames.
- .2 Place acoustic blankets where indicated on the Drawings and to thickness required to obtain acoustic performance indicated for the assembly.
- .3 Place acoustic blankets between studs ensuring friction fit, free of sags, folds or open joints that may let sound pass through.
- .4 Install blankets from the bottom up, tightly adjusted and trim accurately with a utility knife.

3.3 GYPSUM BOARD APPLICATION

- .1 Do application and finishing of gypsum board in accordance with ASTM C 840 except where specified otherwise.

- .2 Do not apply gypsum board until bucks, anchors, blocking, electrical, and mechanical work are approved.
- .3 Do not apply gypsum board to ceilings until insulation, vapour retarder and air seals have been installed and inspected by others, including consultant, owner and municipal building inspectors.
- .4 Apply gypsum board at right angles to framing members or furring using screw fasteners. Maximum spacing of screws 300 mm o.c.
- .5 Install fibre gypsum abuse resistant panels at all ceilings and bulkheads except as noted below. Treat joints with fibreglass reinforced joint tape in accordance with manufacturer's instructions.
- .6 Apply water resistant gypsum wallboard where indicated. Apply water resistant sealant to edges, ends and cut outs which expose gypsum core.
- .7 Install Hi-Density Water Resistant Gypsum Sheathing in showers and other wet areas.
- .8 Laminate gypsum board to existing masonry wall surfaces where indicated.
- .9 Carry gypsum board from floor to underside of floor or roof structure above. Furr out and carry gypsum board around any structural members as may be required. Neatly cope gypsum board to fill deck flutes where gypsum board abuts floor or roof deck.

3.4 GYPSUM SHEATHING

- .1 Install exterior gypsum sheathing horizontally on all exterior walls where indicated. Stagger joints between adjacent sheets.
- .2 Screw-attach gypsum sheathing to each stud with 32 mm self-drilling corrosion resistant sheathing screws spaced 10 mm from ends and edges 200 mm o.c. Drive fasteners to bear tight against and flush with surface of sheathing. Do not countersink. Apply sealant around sheathing perimeter at interface with other materials and install flashing as indicated on the drawings.
- .3 Apply fiberglass joint treatment to all joints, overlapping at intersections by the width of the tape. Apply 10 mm bead of sealant along the joint and embed the sealant into the entire surface of the tape with a trowel. Apply enough sealant to each exposed fastener to cover completely when troweled smooth.

3.5 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 secured. Miter and fit corners accurately, free from rough edges.
- .2 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated.
- .3 Install insulating strips continuously at edges of gypsum board or casing beads abutting exterior door or window frames, to provide thermal break.
- .4 Install continuous bead of acoustic sealant at all penetrations through sound control partitions.
- .5 Provide control joints in gypsum board facing. Control joints shall be supported with metal studs or furring channels on both sides of the joint. Control joints shall be provided:

- .1 At abutting structural elements, steel columns.
- .2 At expansion or control joints in the substrate;
- .3 At maximum 20' spacings on long partition and bulkhead runs;
- .4 At each door jamb.

3.6 ACCESS DOORS

- .1 Install access doors to electrical and mechanical fixtures specified in respective Sections.
- .2 Rigidly secure frames to furring or framing systems, to satisfy fire rating requirements.

3.7 TAPING AND FILLING

- .1 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.
- .2 Finish corner beads, control joints and trims as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.
- .3 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.
- .4 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
- .5 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for painting.

3.8 CLEANING

- .1 Proceed in accordance with Section 01 74 11 – Cleaning.

End of Section

Part 1 General

PART 1 SUMMARY

1.1 RELATED DOCUMENTS

- .1 DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 01 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

1.2 SECTION INCLUDES:

- .1 Vinyl Composition Tile

1.3 SUBMITTALS

- .1 Product Data: For each type of product indicated.
- .2 Samples for Initial Selection: For each type of product indicated.
- .3 Samples for Verification: For each type of product indicated, in manufacturer's standard-size samples of each resilient product color, texture, and pattern required.
- .4 Product Schedule: For resilient products. Use same designations indicated on Drawings.

1.4 QUALITY ASSURANCE

- .1 Installation Qualification: Contractors for floor covering installation should be experienced in managing commercial flooring projects and provide professional installers, qualified to install the various flooring materials specified. An installer is "qualified" if trained or a certified INSTALL (International Standards & Training Alliance) resilient floor covering installer.
- .2 Mockups: Provide resilient products with mockups specified in other Sections.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by Tarkett, but not less than 13 degrees C or more than 29 degrees C.

1.6 PROJECT CONDITIONS

- .1 Install resilient products after other finishing operations, including painting, have been completed.
- .2 Maintain ambient temperatures within range recommended by the manufacturer, but not less than 18 degrees C or more than 29 degrees C in spaces to receive resilient products during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- .3 Maintain the ambient relative humidity between 40% and 60% during installation.
- .4 Until Substantial Completion, maintain ambient temperatures within range recommended by the manufacturer, but not less than 13 degrees C or more than 29 degrees C.

PART 2 PRODUCT

2.1 RESILIENT SHEET FLOORING

- .1 Manufacturer: Tarkett North America, 30000 Aurora Rd., Solon, OH 44139, Web: www.tarkettna.com

2.2 Performance Requirements

- .1 Fire-Test-Response Characteristics: For resilient tile flooring, as determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
- .1 Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.3 VINYL COMPOSITION TILE

- .1 Basis-of-Design Product: Subject to compliance with requirements, provide; Tarkett VCT or comparable product.
- .2 Tile Standard: ASTM F1066, specify: Type II (Through Pattern)
- .3 Thickness/Wearlayer: 3.17 mm
- .4 Colours and Patterns: As selected by Architect from full range of industry colors.
- .5 Sizes: 30.5 by 30.5 cm
- .6 Test Data
 - .1 Heat Stability (ASTM F1514): $\Delta E < 8$
 - .2 Size/Squareness (ASTM F2055): Passes
 - .3 Deflection (ASTM F1304): Passes
 - .4 Chemical Resistance (ASTM F925): Passes
 - .5 Static Load Limit (ASTM F970): 150 psi, ≤ 0.005 inches
 - .6 Residual Indentation (ASTM F1914): Passes
 - .7 Slip Resistance (ASTM D2047): ≥ 0.5 SCOF
 - .8 Dimensional Stability (ASTM F2199): Passes
 - .9 Impact Resistance (ASTM F1265): Passes
 - .10 Flamability (ASTM E648 Critical Radiant Flux): Class 1 (≥ 0.45 W/cm²)
 - .11 Smoke Density (ASTM E662): ≤ 450
 - .12 Limited Commercial Warranty: 5 years

2.4 ACCESSORIES

- .1 Resilient Wall Base
 - .1 Basis-of-Design Product: Subject to compliance with requirements, provide Tarkett Traditional Thermoplastic Rubber Wall Base.
 - .1 Height: 101.6mm
 - .2 Length: 1220mm
 - .3 Colours and Patterns: As selected by Architect from full range of industry colors

2.5 INSTALLATION MATERIALS

- .1 Trowelable Leveling and Patching Compounds: Latex-modified, Portland cement based or blended hydraulic-cement-based formulation.
- .2 Adhesives: As recommended by the manufacturer to meet site conditions

PART 3 EXECUTION

3.1 EXAMINATION

- .1 Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the work.
- .2 Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- .3 Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- .1 Prepare substrates according to manufacturer written instructions to ensure proper adhesion of Resilient Flooring.
 - .1 Prepare concrete substrates in accordance with ASTM F 710.

- .1 Concrete floors must be free of dust, solvent, paint, wax, oil, grease, residual adhesive, adhesive removers, film-forming curing compounds, silicate penetrating curing compounds, sealing, hardening or parting compounds, alkaline salts, excessive carbonation or laitence, mold, mildew, and other foreign materials that may affect dissipation rate of moisture from the concrete, discoloration or adhesive bonding.
- .2 Mechanically remove contamination on the substrate that may cause damage to the resilient flooring material. Permanent and non-permanent markers, pens, crayons, paint, etc., must not be used to write on the back of the flooring material or used to mark the substrate as they could bleed through and stain the flooring material.
- .3 Perform moisture testing as recommended by manufacturer. Proceed with installation only after substrates have been tested and meet the minimum requirements from the manufacturer in accordance with ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride or ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
- .4 A pH test for alkalinity must be conducted on the concrete floor prior to installation with results conforming to manufacturer requirements. If the test results are not within the acceptable range, then installation must not proceed until the problem has been corrected.
- .2 Fill cracks, holes, depressions and irregularities in the substrate with good quality Portland cement based underlayment leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
- .3 Floor covering shall not be installed over expansion joints.
- .4 Do not install resilient products until they are same temperature as the space where they are to be installed.
 - .1 Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- .5 Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

3.3 RESILIENT TILE FLOORING INSTALLATION

- .1 Comply with manufacturer's written instructions for installing resilient tile flooring.
- .2 Vinyl Composition Flooring:
 - .1 Install with Tarkett adhesive specified for the site conditions and follow adhesive label for proper use.
 - .2 Follow manufacturer's recommendation for tile orientation.
 - .3 Open enough cartons of floor tiles to cover each area, and mix tile to ensure shade variations do not occur within any one area.
 - .4 Roll the flooring in both directions using a 100 pound three-section roller.

3.4 CLEANING AND PROTECTION

- .1 Comply with manufacturer's written instructions for cleaning and protection of resilient products.
- .2 Perform the following operations immediately after completing resilient product installation:
 - .1 Remove adhesive and other blemishes from exposed surfaces.
 - .2 Sweep and vacuum surfaces thoroughly.
 - .3 Damp-mop surfaces to remove marks and soil.
- .3 Protect resilient products from marks, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
 - .1 No traffic for 24 hours after installation.
 - .2 No heavy traffic, rolling loads, or furniture placement for 48 hours after installation.
- .4 Wait 48 hours after installation before performing initial cleaning.

- .5 A regular maintenance program must be started after the initial cleaning.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 This Section includes all labour, materials, tools and other equipment, services and supervision required to complete all exterior and interior painting and surfaces to full extent of the drawings and specifications to the requirements of the **Architectural Specifications Manual**, current edition, including the latest edition of the **Approved Products List**, published by **The Master Painters Institute (MPI)**.
- .2 The painting and finishing specifications for previously painted or finished substrates are based on, and make reference to the **Maintenance Repainting Manual**, current edition, including the latest edition of the **Approved Products Lists**, published by **The Master Painters Institute (MPI)**.
- .3 Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections, and as follows:
 - .1 Surface preparation of substrates including cleaning, small crack repair, patching, caulking and making good surfaces and areas.
 - .2 Surface preparation and prime painting surfaces for wall coverings before installation in accordance with wall covering manufacturer's written instruction.
 - .3 Prime painting and back-priming of surfaces except where pre-primed with an MPI-approved primer under other Sections of the Work.
- .4 Paint exposed and semi-exposed items and surfaces, except where Specifications indicate that the surface or material is not painted or is to remain natural, as follows:
 - .1 Paint item or surface same as similar adjacent materials or surfaces where item or surface is not specifically mentioned.
 - .2 Consultant will select from Standard colours and finishes available where a colour of finish is not specified.
 - .3 Painting including field painting of exposed bare and covered conduit, pipes and ducts including colour coding, hangers, exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory applied final finish.
 - .4 Painting of semi-concealed areas such as inside of light valances, behind grills, and projecting edges below sight lines.
 - .5 Provision of safe and adequate ventilation as required over and above temporary ventilation supplied by Contractor, where toxic, volatile, or flammable materials are being used.
 - .6 Touch-ups and field painting necessary to complete work shown, scheduled, or specified.
 - .7 Site touch-up of pre-finished wood doors.

- .5 The reference document is available from:

The Master Painters Institute

2800 Ingleton Avenue, Burnaby, BC Canada V5C 6G7

Tel: toll free 1-888-674-8937 Fax: toll free 1-888-211-8708

Email: info@paintinfo.com Website: www.paintinfo.com

1.2 RELATED SECTIONS

- .1 Section 05 50 00 – Metal Fabrications.
- .2 Section 08 31 00 – Access Doors and Panels.
- .3 Section 09 29 00 – Gypsum Board.

1.3 REFERENCES

- .1 American Society for Testing and Materials (ASTM):
- .1 ASTM D16-14: Standard Terminology for Paint, Related Coatings, Materials, and Applications.
 - .2 ASTM E84-15a: Standard Test Method for Surface Burning Characteristics of Building Materials.
- .2 Canadian Standards Association (CSA):
- .1 CSA A23.1-14/A23.2-14: Concrete Materials and Methods of Concrete Construction / Test Methods and Standard Practices for Concrete.
- .3 Canadian General Standards Board (CGSB):
- .1 CGSB 1 Series of Standards contained in the MPI Manual Description of Products, for products forming part of the specified systems.
- .4 Green Seal Standards:
- .1 GC-3: Green Seal Environmental Criteria for Anti-Corrosive Paints, Second Edition, January 7, 1997.
 - .2 GS-11: Green Seal Standard for Paints and Coatings, Third Edition, August 17, 2011.
- .5 Environmental Choice Program (ECP):
- .1 Paints and Surface Coatings, Low VOC Product Listings.
- .6 The Master Painters Institute (MPI):
- .1 Architectural Painting Specification Manual.
- .7 The Society for Protective Coatings (SSPC):

- .1 Coating Material Guide.
- .2 Surface Preparation Guidelines.

1.4 SUBMITTALS

- .1 Provide required information in accordance with Division 01.
- .2 Submit list of all painting materials used for the Work, to Consultant for review prior to ordering materials for each paint system indicated, including cleaning agents, block fillers, and primers:
 - .1 Material List: An inclusive list of required coating materials indicating each material and cross reference specific coating, finish system, and application; identify each material by manufacturer's catalogue number and general classification.
 - .2 Manufacturer's Information: Manufacturer's product technical information, including label analysis and instructions for handling, storing, and applying each coating material.
 - .3 Manufacturer's printed product literature, Specifications, and data sheets in accordance with Section 01 33 00 – Submittal Procedures.
- .3 Sample for Verification:
 - .1 Provide samples of each colour and material, with texture to simulate actual conditions, on representative samples of the actual substrates.
 - .2 Provide stepped samples, defining each separate coat, including block fillers and primers.
 - .3 Resubmit until required sheen, colour, and texture are achieved.
 - .4 Provide a list of materials and applications for each coat of each sample.
 - .5 Label each sample for location and application.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- .1 Extra Stock Materials:
 - .1 Leave on premises not less than 4L of new material of each colour and finish sheen used.
 - .2 Provide maintenance materials in new containers, full, tightly sealed, and clearly labelled. Remnants of used materials are not acceptable.

1.6 QUALITY ASSURANCE

- .1 Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated in this Project, whose work has resulted in applications with a record of successful service performance, and as follows:

- .1 Have a minimum of five (5) years proven satisfactory experience and shall show proof before commencement of work that he will maintain a qualified crew of painters throughout the duration of the Work.
- .2 Only qualified journeymen who have a Tradesman Qualification Certificate of Proficiency shall be engaged in painting and decorating work.
- .3 Apprentices may be employed provided they work under the direct supervision of a qualified journeyman in accordance with trade regulations.
- .2 Source Limitations:
 - .1 Use only paint manufacturers and products as listed under the Approved Products Section of the MPI Architectural Painting Specification Manual.
- .3 Installation:
 - .1 The following requirements establish the standard of acceptance for the Work, when viewed using the final lighting source.
 - .1 Vertical surfaces: No defects visible from a distance of 1m at 90 degrees to surface.
 - .2 Horizontal surfaces: No defects visible from a distance of 1m at 45 degrees to surface.
 - .3 Ceilings: No defects visible from floor at 45 degrees to surface.
 - .4 Final coat shall exhibit uniformity of sheen across full surface area.
 - .2 Defects include brush marks, streaks, runs, laps, drips, heavy stippling, pile up of paints, roller tracking, inadequate hiding of substrate, skipped or missed areas, and foreign materials in paint.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following:
 - .1 Product name or title of material.
 - .2 Product description.
 - .3 Manufactures stock number and date of manufacture.
 - .4 Contents by volume.
 - .5 Thinning instructions.
 - .6 Application instructions.
 - .7 Colour name and number.

- .2 Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 10°C.
 - .1 Protect materials from freezing.
 - .2 Store material off concrete slabs on raised pallets.
 - .3 Keep storage area neat and orderly.
 - .4 Remove oily rags and waste daily.
 - .5 Maintain toxic, volatile, and explosive or flammable materials in a safe environment.
 - .6 Provide one (1) 9kg ABC fire extinguisher with all temporary heating equipment, and in close proximity to where paint and coating materials are being stored.
- .3 Waste Management and Disposal:
 - .1 Separate waste materials for reuse and recycling, where possible.
 - .2 Place materials defined as hazardous or toxic in designated containers.
 - .3 Handle and dispose of hazardous materials in accordance with regional and municipal regulations.
 - .4 Ensure emptied containers are sealed and stored safely.
 - .5 Unused paint and coating materials must be disposed of at official hazardous material collections site as approved by the Owner.
 - .6 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.
 - .7 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.
 - .8 To reduce amounts of contaminants entering waterways, sanitary/storm drain systems, or into ground, follow these procedures:
 - .1 Retain cleaning water for water-based materials to allow sediments to be filtered out.
 - .2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.
 - .3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.
 - .4 Dispose of contaminants in approved legal manner in accordance with hazardous waste regulations.
 - .5 Empty paint cans are to be dry prior to disposal or recycling (where

available).

- .9 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.

1.8 PROJECT CONDITIONS

- .1 Maintain temperatures of surfaces and surrounding air between the following temperatures for a minimum of twenty-four (24) hours before, during, and after application or until paints and coatings are fully cured, whichever is greater:
 - .1 Waterborne Paints and Coatings: 10°C to 32°C.
 - .2 Solvent-Thinned Paints and Coatings: 7°C to 35°C.
 - .3 Maintain temperatures during application and until materials are fully cured.
- .2 Maintain surfaces free from:
 - .1 Snow, rain, fog or mist, dampness, or wetness that could impair bond.
 - .2 Relative humidity in excess of 85%.
 - .3 Temperatures less than 3°C above the dew point.
 - .4 Painting may continue during inclement weather if surfaces and areas are enclosed and heated within temperature limits specified above.
- .3 Maintain surfaces at less than maximum moisture content indicated below; test wood and plaster surfaces using a properly calibrated electronic moisture meter.
 - .1 12% for concrete and masonry, test concrete surfaces in accordance with ASTM F1869 and as follows:
 - .1 Do not paint concrete or masonry surfaces for a minimum of sixty (60) days after installation.
 - .2 Concrete and masonry surfaces must be visually dry on both sides and tested for maximum moisture content.
 - .3 This is not to be construed as including a wetting down process that may be required for latex or filler coatings.
 - .2 15% for wood.
 - .3 12% for plaster and gypsum board.
- .4 Test concrete, masonry, and plaster surfaces for alkalinity as required.
- .5 Maintain a minimum lighting level of 323 Lux (30 foot candles) on surfaces where paint or coatings are being applied.

Project:	ENDERBY CHILD CARE CENTRE UPGRADES	PAINTING
Location:	TORONTO, ONTARIO	Section 09 91 00
.6	Maintain adequate continuous ventilation and sufficient heating facilities to maintain specified air and substrate temperatures.	
.7	Maintain a dust free environment in area of site painting.	
1.9	WARRANTY	
.1	Provide a two (2) year warranty commencing from the date of Substantial Performance of the Work.	
Part 2	Products	
2.1	MATERIALS	
.1	Provide materials (cleaning agents, primers, coatings, varnishes, lacquers, fillers, solvents, thinners) in accordance with the MPI Manual Architectural Painting Specification Manual, Chapter 5 Approved Product Listing.	
.2	Paint materials for each coating formula to be products of a single manufacturer.	
.3	Use only MPI approved products from the MPI Approved Product List corresponding to the specified finishing systems.	
.4	All paint materials shall have good flowing and brushing properties and shall dry or cure free of blemishes, sags, air entrapment, etc.	
.5	Where required, paints and coatings shall meet flame spread and smoke developed ratings designated by local Code requirements and/or Authorities Having Jurisdiction.	
.6	For exterior paint, provide the following as a basis of design:	
.1	1st Coat:	S-W SuperPaint® Exterior Latex Flat, A80 Series
	2nd Coat:	S-W SuperPaint® Exterior Latex Flat, A80 Series
	(4.0 mils wet, 1.5 mils dry per coat)	
2.2	MIXING	
.1	Except as otherwise specified, paint shall be ready-mixed. Re-mix prior to application to ensure colour and gloss uniformity. Materials in paste or powder form, or to be field-catalyzed, shall be field mixed in accordance with manufacturer's directions. Perform colour tinting operations prior to site delivery.	
.2	Paste, powder or catalyzed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.	
.3	Where thinner is used, addition shall not exceed paint manufacturer's recommendations. Do not use kerosene or any such organic solvents to thin water-based paints.	
.4	If required, thin paint for spraying according in strict accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Consultant.	
2.3	COLOURS	

- .1 Paint colours and other finishes will be selected by the Consultant.
 - .1 Exterior paint on EIFS to match existing.
- .2 Colour Scheme: For bidding purposes, colour schemes will be generally as follows unless noted otherwise:
 - .1 Maximum two (2) colours for walls within room or area.
 - .2 Maximum two (2) colours for ceilings.
 - .3 Maximum two (2) colours for doors, frames, trims, etc.
 - .4 Maximum two (2) colours for exterior EIFS finish.

2.4 GLOSS / SHEEN RATINGS

- .1 Paint gloss shall be defined as the sheen rating of applied paint, in accordance with the following MPI values:

Gloss Level	Description	Units at 60 degrees	Units at 85 degrees
G1	Matte or Flat Finish	0 to 5	10 max.
G2	Velvet Finish	0 to 10	10 to 35
G3	Eggshell Finish	10 to 25	10 to 35
G4	Satin Finish	20 to 35	35 min.
G5	Semi-Gloss Finish	35 to 70	
G6	Gloss Finish	70 to 85	
G7	High-Gloss Finish	> 85	

- .2 Except as otherwise specified, provide the following gloss levels for specified locations and substrates:
 - .1 Interior Paint Finishes:
 - .1 Flat Finish - G1
 - .2 Velvet Finish - G2
 - .3 Eggshell Finish - G3
 - .4 Satin Finish - G4
 - .5 Semi-Gloss Finish - G5
 - .6 Gloss Finish - G6
 - .7 High-Gloss Finish - G7

- .2 Interior Transparent Finishes:
 - .1 Satin Finish - G4
 - .2 Gloss Finish - G6
- .3 Exterior Paint Finishes:
 - .1 Flat Finish - G1
 - .2 Semi-Gloss Finish - G5
 - .3 Gloss Finish - G6
- .4 Exterior Transparent Finishes:
 - .1 Satin Finish - G4
 - .2 Gloss Finish - G6
- .3 Where gloss level is not specified, confirm required gloss level with Consultant prior to proceeding with finish coats.

Part 3 Execution

3.1 VERIFICATION OF CONDITIONS

- .1 Ensure all dust generating activities have been terminated and dust removed.
- .2 Prior to commencement of painting and finishing work, thoroughly examine substrates scheduled to receive coatings.
- .3 Do not apply coatings to substrates whose condition will adversely affect execution, permanence, or quality of work and which cannot be put into an acceptable condition through preparatory work specified herein.
- .4 Ensure that site applied paints and finishes are compatible with primers or other finishes applied in the shop or factory.
- .5 Verify compatibility of any previously applied coatings with specified coatings.
- .6 Notify Consultant of any incompatibilities.

3.2 PREPARATION OF SURFACES

- .1 Prepare new and existing surfaces in accordance with the Master Painters Institute (MPI) Architectural Painting Specification Manual, current edition and MPI Repainting Manual, current edition.
- .2 Protect adjacent surfaces from spray, splashing's, and droppings.
- .3 Remove electrical plates, surface hardware, fixtures, fittings, and fastenings etc., prior to painting operations, unless approved by the Consultant in writing.

- .4 Keep sprinkler heads and smoke detectors free of paint. Replace those that do receive paint.
- .5 Properly prepare each surface to obtain correct and sufficient adhesion of next coat of material.
- .6 Mildew Removal: Scrub with solution of TSP and bleach, rinse with clear water, and allow surface to dry completely.
- .7 Remove dirt, oil, grease, and sand as necessary to provide adhesion key, and when asphalt, creosote or bituminous surfaces required paint finish.
- .8 Remove contamination from wall surfaces and prime to show defects, if any. Carry on with paint coating after defects have been remedied.
- .9 Wood: Sandpaper to a smooth and even surface. Remove dust. Ensure that moisture content is less than 15%.
- .10 Gypsum Wallboard and Plaster: Fill minor irregularities with spackling compound and sand to a smooth, level surface. Avoid raising nap of paper.
- .11 Concrete: Remove loose mortar, scale powder, and foreign matter. Remove oil and grease with a solution of TSP, rinse well and allow to thoroughly dry. Fill holes which are too large to be filled by block filler as required to produce a uniform texture.
- .12 Concrete Floors: Remove contamination, acid etch and rinse with clear water and assure acid-alkali balance is achieved, let dry thoroughly.
- .13 Masonry: Remove loose mortar, scale powder and foreign matter. Remove oil and grease with a solution of TSP, rinse well and allow to thoroughly dry. Fill holes which are too large to be filled by block filler as required to produce a uniform texture. This applies only to Change Rooms and the Natatorium; other block wall locations to be stoned or rubbed only with thinned paint application. Refer to Room Finish Schedule for locations.
- .14 Unprimed Steel: Clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts and nuts are similarly cleaned. Prime surfaces to indicate defects, if any. Commence with painting immediately after defects have been remedied.
- .15 Primed Metal: Remove dirt and grease by cleaning with solvent. Feather shoulders of uneven primer to prevent edges from telegraphing through finish coats. Touch up of damaged shop coating and touch up patches inconspicuous. Prime all bare steel surfaces.
- .16 Galvanized Metal: Clean with detergent and solvent to etch surface, as spray, product per MPI Manual.
- .17 EIFS:
 - .1 Do not use solvents or acid based cleaners.
 - .2 Clean all walls to receive new paint with a recommend a solution of: 16 parts warm water, 4 parts household bleach and 1 part trisodium phosphate (TSP), or as recommended by the textured EIFS maintenance manual or the MPI Manual. Always test-clean a small area first to make sure the desired results are

- achieved.
.2 Provide Flat Finish - G1

- .18 Apply paint only to dry, clean, properly cured and adequately prepared surfaces in areas where dust is no longer generated by construction activities such that airborne particles will not affect the quality of finished surfaces.
- .19 Remove all oil and grease then clean substrates that could impair bond of the various coatings before applying paint or other surface treatments.

3.3 APPLICATION

- .1 Refer to SSPC and to the MPI Architectural Painting Specification Manual, as a general reference for application techniques, requirements, and precautions **MPI Manual Premium Grade Finish Requirements (three (3) coat system)**.
- .2 Finishes specified are intended to cover surfaces satisfactorily when applied in accordance with the manufacturer's recommendations. Re-paint surfaces to achieve hiding of substrate and uniform finish.
- .3 Mix materials thoroughly before application and apply evenly, free from sags, and other defects. Perform cutting-in neatly.
- .4 Lightly sandpaper each coat before the next coat is applied. After the prime coat is applied, fill holes and sand smooth when dry.
- .5 The filler must match the colour of the wood when a clear finish is used. Work filler well into the grain before it has set. Wipe excess from the surface.
- .6 Tint each coat slightly darker than the preceding coat, unless otherwise approved by the Consultant.
- .7 Ensure that finish work is uniform in sheen, colour and texture and free from roller or brush hair, with no indication of base coat visibility. Telegraphing through of the base colours is not acceptable and will be considered a deficiency.
- .8 Clean droppings and overspray as work progresses.
- .9 Use brush application on doors and metal surfaces, unless otherwise directed. On other surfaces, airless spray or roller work is acceptable, but if this does not prove to give satisfactory results, repaint rejected surfaces with brush at no additional cost to the Owner.
- .10 Apply each coat at the proper consistency in accordance with the manufacturer's directions.
- .11 Each coat of finish should be dry and hard before a following coat is applied unless the manufacturer's directions state otherwise. Allow each coat of finish to dry twenty-four (24) hours before a following coat is applied, unless directed otherwise by the Consultant.
- .12 Finish a whole panel, door, or frame etc., rather than spot painting of facing off where a portion of the finish has been damaged or is unsatisfactory.
- .13 Paint top and bottom edges of metal doors to match faces. Finish edges of clear finished doors.

- .14 For concrete and concrete block and where block filler would be used, ensure that sufficient primer/sealer is used to totally fill and seal the surfaces and produce a uniform surface colouration of sealer so that the block colour does not telegraph through. Re-coat as required to achieve. Apply block filler at a rate sufficient to fill all voids. Work block filler into surface leaving no pinholes or unsealed voids in the surface.

3.4 INTERIOR FINISHES

- .1 Concrete Vertical Surfaces

INT 3.1C High Performance Architectural Latex G3/G5 (over waterborne alkali resistant primer)

1st coat	WB Alkali Resistant Primer	MPI# 3
2nd coat	High Performance Architectural Latex	MPI# 139, 141
3rd coat	High Performance Architectural Latex	MPI# 139, 141

- .1a Concrete Vertical Surfaces (Storage Room, Garbage Room, Washrooms, Change Rooms etc.)

INT 3.1C Epoxy Modified Latex G5

1st coat	Epoxy Modified Latex	MPI# 115
2nd coat	Epoxy Modified Latex	MPI# 115
3rd coat	Epoxy Modified Latex	MPI# 115

- .2 Concrete Masonry Units

INT 4.2D High Performance Architectural Latex G3/G5 (over block filler)

1st coat	Latex Block Filler	MPI# 4
2nd coat	High Performance Architectural Latex	MPI# 139, 141
3rd coat	High Performance Architectural Latex	MPI# 139, 141

For areas listed above that will not have block filler, paint system specified final coat material is to be thinned and applied in three (3) coats.

- .2a Concrete Masonry Unit Vertical Surfaces (Storage Room, Garbage Room, Washrooms, Change Rooms etc.)

INT 4.2J Epoxy Modified Latex G5

1st coat	Latex Block Filler	MPI# 4
2nd coat	Epoxy Modified Latex	MPI# 115
3rd coat	Epoxy Modified Latex	MPI# 115

- .3 Metal Fabrications and Structural Steel columns, beams, joists, angles, channels brackets, plates, clips

INT 5.1R High Performance Architectural Latex G5 (over QD metal primer)

1st coat	Anti –Corrosive Alkyd Primer	MPI# 79
2nd coat	High Performance Architectural Latex	MPI# 141
3rd coat	High Performance Architectural Latex	MPI# 141

- .3a Metal Fabrications and Structural Steel columns, beams, joists, angles, channels

brackets, plates, clips (Washrooms, Change Rooms etc.)

INT 5.1H Polyurethane Pigmented (over inorganic zinc & high build epoxy)

1st coat	Inorganic Zinc Primer	MPI# 19
2nd coat	High Build Epoxy	MPI# 108
3rd coat	Polyurethane Pigmented	MPI# 72

- .4 Galvanized Metal (doors, frames, railings, misc. steel, pipes, overhead decking, ducts, etc.):

INT 5.3K WB Light Industrial Coating G5 (over w.b. primer)

1st coat	WB Galvanized Primer	MPI# 134
2nd coat	WB Light Industrial Coating	MPI# 153
3rd coat	WB Light Industrial Coating	MPI# 153

- .4a Galvanized Metal (Washrooms, Change Rooms etc.):

INT 5.3D Epoxy Modified (over epoxy primer) INT 5.1G Polyurethane Pigmented (over high build epoxy)

1st coat	Epoxy Primer	MPI# 101
2nd coat	High Build Epoxy	MPI# 108
3rd coat	Polyurethane Pigmented	MPI# 72

- .5 Copper

INT 5.5H Latex G5

1st coat	QD Primer	MPI# 95
2nd coat	Latex	MPI# 54
3rd coat	Latex	MPI# 54

- .6 Dimension Lumber (columns, beams, exposed joists, underside of decking, etc.):

INT 6.2M – WB Varnish G4 (over semi-transparent stain)

1st coat	Semi Transparent Stain	MPI# 90
2nd coat	WB Varnish	MPI# 128
3rd coat	WB Varnish	MPI# 128
4th coat	WB Varnish	MPI# 128

- .7 Dressed Lumber (including doors, door and window frames, casings, molding, etc.):

INT 6.3Z Polyurethane Clear (2 component)

1st coat	Aliphatic Polyurethane Clear	MPI# 78
2nd coat	Aliphatic Polyurethane Clear	MPI# 78
3rd coat	Aliphatic Polyurethane Clear	MPI# 78

- .8 Plaster and Gypsum Board Surfaces (gypsum wallboard, drywall, sheet rock type material, etc., and textured finishes):

INT 9.2A Latex (over latex sealer) G1 (ceilings and bulkheads)

Project:		ENDERBY CHILD CARE CENTRE UPGRADES	PAINTING
Location:		TORONTO, ONTARIO	Section 09 91 00
	1st coat	Latex Sealer	MPI# 50
	2nd coat	Latex	MPI# 53
	3rd coat	Latex	MPI# 53
	INT 9.2B High Performance Architectural Latex G3/G5 (over latex sealer)		
	1st coat	Latex Sealer	MPI# 50
	2nd coat	High Performance Architectural Latex	MPI# 139, 141
	3rd coat	High Performance Architectural Latex	MPI# 139, 141
.8a	Plaster and Gypsum Board Surfaces (Washrooms, Change Rooms etc.):		
	INT 9.2F Epoxy Modified Latex G5		
	1st coat	Latex Block Filler	MPI# 4
	2nd coat	Epoxy Modified Latex	MPI# 115
	3rd coat	Epoxy Modified Latex	MPI# 115
.9	Canvas and Cotton Coverings		
	INT 10.1A Latex G1		
	1st coat	Latex Sealer	MPI# 50
	2nd coat	Latex	MPI# 53
	3rd coat	Latex	MPI# 53
.10	Bituminous Coated Surfaces (cast iron pipe, concrete, etc.):		
	INT 10.2A Latex G5		
	1st coat	WB Rust Inhibitive Primer	MPI# 107
	2nd coat	Latex	MPI# 54
	3rd coat	Latex	MPI# 54
3.5	EXTERIOR FINISHES		
.1	Metal Fabrications and Structural Steel, Bollards, Angles, Brackets, Plates, Clips, etc.		
	EXT 5.1 W.B. Light Industrial Coating (over alkyd primer) Premium Grade G5		
	1st coat	Alkyd Metal Primer	MPI# 79
	2nd coat	WB Light Industrial Coating	MPI# 163
	3rd coat	WB Light Industrial Coating	MPI# 163
.2	Galvanized Metal and Pressed Steel Doors and Frames.		
	EXT 5.3 W.B. Light Industrial Coating (over WB primer) Premium Grade G5		
	1st coat	W.B. Primer	MPI# 79
	2nd coat	WB Light Industrial Coating	MPI# 163
	3rd coat	WB Light Industrial Coating	MPI# 163
.3	EIFS.		
	REX 9.1J	LATEX Flat finish (over alkali resistant primer).	

3.8 FIELD QUALITY CONTROL / STANDARD OF ACCEPTANCE

- .1 All surfaces, preparation and paint applications shall be reviewed.
- .2 Painted exterior surfaces shall be considered to lack uniformity and soundness if any of the following defects are apparent to the reviewer:
 - .1 brush / roller marks, streaks, laps, runs, sags, drips, heavy stippling, hiding or shadowing by inefficient application methods, skipped, or missed areas, and foreign materials in paint coatings.
 - .2 evidence of poor coverage at rivet heads, plate edges, lap joints, crevices, pockets, corners, and re-entrant angles.
 - .3 damage due to touching before paint is sufficiently dry or any other contributory cause.
 - .4 damage due to application on moist surfaces or caused by inadequate protection from the weather.
 - .5 damage and/or contamination of paint due to blown contaminants (dust, spray paint, etc.).
- .3 Painted surfaces shall be considered unacceptable if any of the following are evident under natural lighting source for exterior surfaces:
 - .1 visible defects are evident on vertical surfaces when viewed at normal viewing angles from a distance of not less than 39".
 - .2 visible defects are evident on horizontal surfaces when viewed at normal viewing angles from a distance of not less than 39".
 - .3 visible defects are evident on ceiling, soffit and other overhead surfaces when viewed at normal viewing angles.
 - .4 when the final coat on any surface exhibits a lack of uniformity of color, sheen, texture, and hiding across full surface area.
- .4 Painted surfaces rejected by the reviewer shall be made good at the expense of the Contractor. Small, affected areas may be touched up; large affected areas or areas without sufficient dry film thickness of paint shall be repainted. Runs and sags of damaged paint shall be removed by scraper or by sanding prior to application of paint.

END OF SECTION