Project	Winnipeg Transit Maintenance Facility Office Redevelopment
Location	421 Osborne Street South Winnipeg, Manitoba, Canada
Prime Consultant	Stantec Architecture Ltd. 500 - 311 Portage Avenue, Winnipeg, Manitoba, Canada Tel 204-489-5900, Fax 204-453-9012 Todd Littleford, todd.littleford@stantec.com
Consultant (Mechanical Engineering)	Stantec Consulting Ltd. 500 - 311 Portage Avenue, Winnipeg, Manitoba, Canada Tel 204-489-5900, Fax 204-453-9012 Bruce Haugh, bruce.haugh@stantec.com
Consultant (Electrical Engineering)	Stantec Consulting Ltd. 500 - 311 Portage Avenue, Winnipeg, Manitoba, Canada Tel 204-489-5900, Fax 204-453-9012 Andrei Hillonov, andrei.hillonov@stantec.com

END OF SECTION

1.01 WORK OF THIS CONTRACT

.1 Work of this Contract comprises alterations and construction of a new Maintenance Office and a new Training Area / Office Development within the existing facility. The Work includes demolition, architectural, structural (RTU installation), mechanical, and electrical modifications to approximately 10,310 SF of existing space located at 421 Osborne Street South located in Winnipeg, Manitoba.

1.02 REFERENCES AND CODES

.1 Perform Work in accordance with the 2020 National Building Code of Canada (NBCC), Manitoba Building Code 2023, 2020 National Energy Code of Canada for Buildings (NECB) latest edition for Manitoba, and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.

.2 Meet or exceed requirements of:

.1 Contract documents.

.2 Specified standards, codes and referenced documents.

.3 Wherever codes, standards, regulations are referenced throughout the Contract Documents they mean the latest editions including amendments, supplements and revisions as of the date of bid closing.

1.03 CONTRACT METHOD

.1 Construct Work under single stipulated price contract as identified in Section 00 72 00 - Agreement and General Conditions

.2 Relations and responsibilities between Contractor and subcontractors assigned by Owner are as defined in Conditions of Contract. Assigned Subcontractors must:

.1 Furnish to Contractor, bonds covering faithful performance of subcontracted work and payment of obligations thereunder when Contractor is required to furnish such bonds to Owner, and

.2 Purchase and maintain liability insurance to protect Contractor from claims for not less than limits of liability which Contractor is required to provide to Consultant.

1.04 CONSTRUCTION SCHEDULE

.1 Owner specifically requests that Substantial Performance of the Work be attained no later than **February 27, 2026.**

.2 Owner specifically requests that final completion of the Work be attained no later than **March 27, 2026.**

.3 There will be no bonus awarded for early completion of the Work.

1.05 DIVISION OF WORK

.1 Division of the Work among Subcontractors and Suppliers is solely Contractor's responsibility. Consultant and Owner assume no responsibility to act as an arbiter to establish subcontract limits between Sections or Divisions of the Work.

1.06 SPECIFICATION LANGUAGE AND STYLE

.1 Division 01 - General Requirements apply to the Work of all Sections in the project manual.

.2 These Specifications are written in the imperative mood and in streamlined form. The imperative language is directed to Contractor, unless stated otherwise.

.3 Complete sentences by reading "shall", " Contractor shall", "shall be", and similar phrases by inference. Where a colon (:) is used within sentences and phrases, read the words "shall be" by inference.

.4 The word “shall” when used in the Specifications means “has a duty to.”

.5 Fulfill and perform all indicated requirements whether stated imperatively or otherwise.

.6 When used in the context of a Product, read the word “provide” to mean “supply and install to result in a complete installation ready for its intended use”.

.7 Specification Addressing Scheme:

1.01	**ARTICLE**					
	.1	Paragraph				
		.1	Subparagraph			
			.1	Subparagraph		
				.1	Subparagraph	
					.1	Subparagraph

1.7 CONTRACT DOCUMENTS FOR CONSTRUCTION PURPOSES

.1 Owner will supply Contractor with a complete set of Contract Documents in electronic form before commencement of the Work. Contractor may print hard copies for construction purposes as required.

.2 The copyrights to all designs, Drawings, and Specifications are the property of Stantec Architecture Ltd. Reproduction or use for any purpose other than that authorized by Stantec is forbidden.

.3 For trade contractor use, electronic copies of the Consultant’s drawings may be available for purchase. Purchasers of electronic copies of the drawings will be required to sign an electronic file use agreement form prepared by Stantec Architecture Ltd. A copy of the form is available for viewing upon request.

.4 Electronic copies of the Contract Drawings may only be available after award of Contract and will be current only up to the date they are issued for Bid. They will not include revisions made to the Contract Documents after Bid closing (e.g. addenda, change order, supplemental instruction).

.5 Stantec reserves the right to refuse any and all requests for electronic documents.

1.8 DOCUMENTS AT THE SITE

.1 Keep the following documents at Place of the Work, stored securely and in good order and available to Owner and Consultant in hard copy and electronic form:

.1 Current Contract Documents, including Drawings, Specifications and addenda.

.2 Change Orders, Change Directives, and Supplementary Instructions.

.3 Requests for Interpretation (RFI) including RFI log.

.4 Reviewed Shop Drawings, Product data and samples.

.5 Field test reports and records.

.6 Construction progress schedule.

.7 Meeting minutes.

.8 Manufacturer’s certifications.

.9 Permits, inspection certificates, and other documents required by authorities having jurisdiction.

.10 Current as-built drawings.

.11 Safety Data Sheets (SDS) for all controlled Products.

.12 Health and Safety Plan and other safety related documents.

.13 Other documents as specified.

END OF SECTION

1.01 ACCESS AND EGRESS

.1 Design, construct and maintain temporary 'access to' and 'egress from' work areas, including stairs, runways, ramps or ladders, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.

1.02 USE OF SITE AND FACILITIES

.1 Execute work with least possible interference or disturbance to normal use of adjacent premises. Make arrangements with Contract Administrator to facilitate work as stated.

.2 Closures: Protect work temporarily until permanent enclosures are completed.

.3 Facility access shall be provided 24 hours a day, seven days a week.

.4 Secure facilities at end of each workday.

1.03 SITE SMOKING ENVIRONMENT

.1 Comply with City smoking By-laws and protocols.

END OF SECTION

1.01 SUMMARY

.1 Section Includes:

.1 Cash allowances carried by the Contractor.

1.02 EXPENDITURE OF CASH ALLOWANCES

.1 Owner, through Consultant, will provide Contractor with documentation required to permit pricing of a cash allowance item.

.2 Owner, through Consultant, may request Contractor to identify potential Suppliers or Subcontractors, as applicable, and to obtain at least three competitive prices for each cash allowance item.

.3 Owner, through Consultant, may request the Contractor to disclose originals of all bids, quotations, and other price related information received from potential Suppliers or Subcontractors.

.4 Owner, through Consultant, will determine by whom and for what amount each cash allowance item will be performed. Obtain Owner's prior written approval in the form of a Change Order before entering into a subcontract, amending an existing subcontract, or performing own forces work included in a cash allowance. Upon issuance of the Change Order, the Contractor's responsibilities for a cash allowance item shall be the same as for other work of the Contract.

1.03 CASH ALLOWANCES FOR SERVICES

.1 Amount of each cash allowance includes:

.1 All costs related to the services, excluding Value Added Taxes.

.2 Subcontractor's and sub-Subcontractor's overheads and profits related to the cash allowance.

.2 Amount of each cash allowance does not include Contractor's overhead and profit, and other related costs, which shall be included in the Contract Price and not in the cash allowance.

.1 Cash Allowance Number 01: Independent testing for asbestos abatement

.1 Allow the stipulated sum of $10,000.00 for asbestos abatement.

.1 Removal of asbestos containing materials (ACM) covering mechanical pipes.

.2 Refer to Section 02 82 00.01 – Asbestos Abatement Requirements Type 1 Work procedures for related requirements.

.3 Refer to Mechanical Drawings.

END OF SECTION

Request for Information (RFI)

Date Submitted:	Click here to select a date.	**RFI No.:**	Enter RFI#
Project Name:	Click here to enter project name.	**Date Response Required by:**	Select date.

Submitted To:

Contract Administrator (CA):	Click here to enter name of Contact Administrator.
Department/Firm:	Click here to enter CA's Dept/Firm.

Consultant Ref. No.	Click here to enter Reference No.
Bid Opportunity No.	Click here to enter Bid Opp. No.

Requested By:

Name:	Click here to enter name.
Title:	Click here to enter Title.
Firm:	Click here to enter Firm name.
Email/Tel:	Click here to enter email/tel.

For City Office use		
	City File No.:	Click here to enter City File No.
	Project ID:	Click here to enter Project ID.
	Project Record Index No.:	Click here to enter PRI No.
	Purchase Order No.:	Click here to enter PO No.

For details and instructions on how to complete this document, click the [¶] icon under the Home tab to display the hidden text.

Request/Question: (to be completed by Contractor)

Click here to enter Question/Request.

Answer/Response: (to be completed by Contract Administrator)

Click here to enter Answer/Response.

Attachment(s): ☐

RFI Response Distribution: (to be completed by Contract Administrator)

- ☐ Contract Administrator
- ☐ Contractor
- ☐ City Project Manager
- ☐ Consultant
- ☐ Other: Click here to enter text.

1.01 RELATED DOCUMENTS

.1 Builders' Liens Act (Manitoba).

1.02 SCHEDULE OF VALUES

.2 Submit to Contract Administrator, Schedule of Values, at least 15 days prior to submitting first Application for Payment.

.3 Use Schedule of Values as basis for Contractor's Progress Claim.

.4 Form of Submittal:

.1 Submit typewritten Schedule of Values on letter size white paper.

.2 Use Table of Contents of this Tender as basis for format for listing costs of work for Sections under all Divisions.

.3 Identify each line item with number and title as listed in Table of Contents of this Tender.

.5 Itemize separate line item cost for work required by each Section of this Tender.

.6 After review by Contract Administrator, revise and resubmit Schedule as directed.

END OF SECTION

1.01 SUMMARY

.1 Section Includes:

.1 Start-up meeting, progress meetings and reports.

1.02 MEETING LOCATION

.1 Project meetings shall be held in site office provided by Contractor as specified in Section 01 52 00 - Construction Facilities.

1.03 CONSTRUCTION START-UP MEETING

.1 After award of Contract, but before start of Work, Contract Administrator shall convene a start-up meeting to discuss and resolve administrative procedures and responsibilities.

.2 Senior representatives of the Contract Administrator, Contractor, and major Subcontractors are to attend.

.3 Contract Administrator shall establish time and location of meeting and notify all concerned parties within five working days of meeting.

.4 Contract Administrator shall chair meeting, record minutes, and distribute minutes to all attending parties within four working days after meeting.

.5 Agenda:

.1 Appointment of official representatives of participants in the work.
.2 Lines of communication.
.3 Schedule of work, progress scheduling.
.4 Critical work sequencing and long-lead items.
.5 Storage of Materials and Equipment
.6 Deliveries
.7 Access
.8 Procedures for RFIs.
.9 Submittal procedures
.10 Schedule of submission of shop drawings, product data, samples, test reports,
.11 Schedule for provision of mock-ups and field samples.
.12 Preconstruction photographs
.13 Procedures for changes, field decisions, change orders, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.
.14 City-furnished products
.15 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 56 00 - Temporary Barriers and
.16 Enclosures.
Safety
.17 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
.18 Requirements for temporary utilities, temporary barriers and controls, construction
.19 facilities, site sign and other temporary construction.
Record drawings in accordance with Section 01 78 00 - Project Closeout.
Maintenance Manuals in accordance with Section 01 78 00 - Project Closeout.

.20 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Project Closeout.

.21 Monthly progress claims, administrative procedures, photographs, and holdbacks.

.22 Appointment of inspection and testing agencies or firms in accordance with Section 01 40 00 - Quality Requirements.

.23 Insurances and transcript of policies.

.24 Commissioning

1.04 JOB PROGRESS MEETINGS

.1 After award of Contract and signing of Agreement, Contractor will convene job progress meetings at regularly scheduled intervals to ensure proper coordination of the Work.

.2 Designate times and locations of meetings, and notify all parties concerned, including Subcontractors, a minimum five days prior to meetings.

.3 Chair meetings, record minutes, and distribute minutes to all attending parties within four working days after meetings.

.4 Agenda to generally include the following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems, conflicts.

.4 Problems which impede construction schedule.

.5 Review of off-site fabrication delivery schedules.

.6 Corrective measures and procedures to regain projected schedule.

.7 Revision to construction schedule and comparison to initial Gantt-Chart Schedule.

.8 Review schedule progress, during succeeding work period and comparison to initial Gantt-Chart Schedule.

.9 Review submittal schedules: expedite as required.

.10 Maintenance of quality standards.

.11 Review proposed changes for effect on construction schedule and on completion date.

.12 Health and Safety.

.13 Other business.

END OF SECTION

1.01 SUMMARY

.1 Section Includes:

.1 Administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

.1 Startup construction schedule.

.2 Contractor's Construction Schedule.

.3 Construction schedule updating reports.

.4 Daily construction reports.

.5 Material location reports.

.6 Site condition reports.

.7 Unusual event reports.

1.02 DEFINITIONS

.1 Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.

.1 Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.

.2 Predecessor Activity: An activity that precedes another activity in the network.

.3 Successor Activity: An activity that follows another activity in the network.

.2 Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum.

.3 CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

.4 Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

.5 Event: The starting or ending point of an activity.

.6 Float: The measure of leeway in starting and completing an activity.

.1 Float time is not for the exclusive use or benefit of either City or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

.2 Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.

.3 Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

.7 Resource Loading: The allocation of manpower and equipment necessary for completing an activity as scheduled.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

.1 Format for Submittals: Submit required submittals in the following format:

.1 Working electronic copy of schedule file, where indicated.

.2 Startup construction schedule.

.1 Submittal of cost-loaded, start-up construction schedule will not constitute approval of schedule of values for cost-loaded activities.

.3 Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

.4 Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

.1 Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals.

.5 CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

.1 Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.

.2 Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.

.3 Total Float Report: List of activities sorted in ascending order of total float.

.4 Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.

.6 Construction Schedule Updating Reports: Submit with Applications for Payment.

.7 Daily Construction Reports: Submit at weekly intervals.

.8 Material Location Reports: Submit at weekly or monthly intervals.

.9 Site Condition Reports: Submit at time of discovery of differing conditions.

.10 Unusual Event Reports: Submit at time of unusual event.

.11 Qualification Data: For scheduling consultant.

1.04 QUALITY ASSURANCE

.1 Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 01 31 19 - Project Meetings. Review methods and procedures related to the preliminary construction schedule and Contractor's Construction Schedule, including, but not limited to, the following:

.1 Review software limitations and content and format for reports.

.2 Verify availability of qualified personnel needed to develop and update schedule.

.3 Discuss constraints, including phasing, work stages, area separations, interim milestones and partial Owner occupancy.

.4 Review delivery dates for City-furnished products.

.5 Review schedule for work of City separate contracts.

.6 Review submittal requirements and procedures.

.7 Review time required for review of submittals and resubmittals.

.8 Review requirements for tests and inspections by independent testing and inspecting agencies.

.9 Review time required for Project closeout and City start-up procedures, including commissioning activities.

.10 Review and finalize list of construction activities to be included in schedule.

.11 Review procedures for updating schedule.

1.05 COORDINATION

.1 Coordinate Contractor's Construction Schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

.1 Secure time commitments for performing critical elements of the Work from entities involved.

.2 Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.06 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

.1 Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

.1 Use Microsoft Project, Primavera, Meridian Prolog for current Windows operating system.

.2 Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.

.1 Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

.3 Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

.1 Activity Duration: Define activities so no activity is longer than 30 days, unless specifically allowed by Consultant.

.2 Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

.3 Submittal Review Time: Include review and resubmittal times indicated in Section 01 33 00 - Submittal Procedures in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.

.4 Startup and Testing Time: Include no fewer than 30 days for startup and testing.

.5 Commissioning Time: Include no fewer than 30 days for commissioning.

.6 Substantial Completion: Indicate completion in advance of date established for Substantial Completion and allow time for Consultant's administrative procedures necessary for certification of Substantial Completion.

.7 Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.

.4 Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule and show how the sequence of the Work is affected.

.1 Phasing: Arrange list of activities on schedule by phase.

.2 Work under More Than One Contract: Include a separate activity for each contract.

.3 Work by City: Include a separate activity for each portion of the Work performed by City.

.4 City-Furnished Products: Include a separate activity for each product. Include delivery date Delivery dates to stipulate the earliest possible delivery date.

.5 Work Restrictions: Show the effect of the following items on the schedule:

.1 Coordination with City site activities.

.2 Limitations of continued occupancies.

.3 Uninterruptible services.

.4 Partial occupancy before Substantial Completion.

.5 Use-of-premises restrictions.

.6 Seasonal variations.

.7 Environmental control.

.6 Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

.1 Subcontract awards.

.2 Submittals.

.3 Purchases.

.4 Fabrication.

.5 Sample testing.

.6 Deliveries.

.7 Installation.

.8 Tests and inspections.

.9 Adjusting.

.10 Curing.

.11 Startup and placement into final use and operation.

.12 Commissioning.

.7 Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:

.1 Structural completion.

.2 Temporary enclosure and space conditioning.

.3 Completion of mechanical installation.

.4 Completion of electrical installation.

.5 Substantial Completion.

.8 Other Constraints: Community material resources.

.5 Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, piling, Substantial Completion, and final completion.

.6 Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.

.7 Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

.1 Unresolved issues.

.2 Unanswered Requests for Information.

.3 Rejected or unreturned submittals.

.4 Notations on returned submittals.

.5 Pending modifications affecting the Work and the Contract Time.

.8 Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

.1 Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

.2 Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.

.3 As the Work progresses, indicate final completion percentage for each activity.

.9 Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

.10 Distribution: Distribute copies of approved schedule to Consultant, City, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

.1 Post copies in Project meeting rooms and temporary field offices.

.2 When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.07 STARTUP CONSTRUCTION SCHEDULE

.1 Gantt-Chart Schedule: Submit startup, horizontal, Gantt-chart-type construction schedule within seven days of date established for the Notice to Proceed.

.2 Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

.3 Gantt-Chart Schedule to be consistent with the schedule submitted by the Contractor in their Bid.

1.08 CPM SCHEDULE REQUIREMENTS

.1 General: Prepare network diagrams using AON (activity-on-node) format.

.2 Startup Network Diagram: Submit diagram within 14 days of date established for the Notice to Proceed. Outline significant construction activities for the first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

.3 CPM Schedule: Prepare Contractor's Construction Schedule using a time-scaled CPM network analysis diagram for the Work.

.1 Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 60 days after date established for the Notice to Proceed.

.1 Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates.

.2 Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.

.3 Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.

.4 Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule to coordinate with the Contract Time.

.4 CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.

.1 Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:

.1 Preparation and processing of submittals.

.2 Mobilization and demobilization.

.3 Purchase of materials.

.4 Delivery

.5 Fabrication

.6 Utility interruptions

.7 Installation

.8 Work by City that may affect or be affected by Contractor's activities.

.9 Testing and inspection

.10 Commissioning

.11 Punch list and final completion.

.12 Activities occurring following final completion.

.2 Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.

.3 Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.

.4 Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.

.1 Subnetworks on separate sheets are permissible for activities clearly off the critical path.

.5 Cost- and Resource-Loading of CPM Schedule: Assign cost to construction activities on the CPM schedule. Do not assign costs to submittal activities. Obtain Consultant's approval prior to assigning costs to fabrication and delivery activities. Assign costs under main subcontracts for testing and commissioning activities, operation and maintenance manuals, punch list activities, Project record documents, sustainable design documentation, and demonstration and training (if applicable), in the amount of five percent of the Contract Sum.

.1 Each activity cost shall reflect an appropriate value subject to approval by Consultant.

.2 Total cost assigned to activities shall equal the total Contract Sum.

.5 Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall Project schedule.

.6 Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:

.1 Contractor or subcontractor and the Work or activity.

.2 Description of activity.

.3 Main events of activity.

.4 Immediately preceding and succeeding activities.

.5 Early and late start dates.

.6 Early and late finish dates.

.7 Activity duration in workdays.

.8 Total float or slack time.

.9 Average size of workforce.

.10 Dollar value of activity (coordinated with the schedule of values).

.7 Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:

.1 Identification of activities that have changed.

.2 Changes in early and late start dates.

.3 Changes in early and late finish dates.

.4 Changes in activity durations in workdays.

.5 Changes in the critical path.

.6 Changes in total float or slack time.

.7 Changes in the Contract Time.

.8 Value Summaries: Prepare two cumulative value lists, sorted by finish dates.

.1 In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.

.2 In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.

.3 In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.

.4 Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.

.1 In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.

.2 Submit value summary printouts one week before each regularly scheduled progress meeting.

1.09 REPORTS

.1 Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

.1 List of subcontractors at Project site.

.2 List of separate contractors at Project site.

.3 List of Community Resources utilized, labour, equipment and materials

.4 Approximate count of personnel at Project site.

.5 Equipment at Project site.

.6 Material deliveries.

.7 High and low temperatures and general weather conditions, including presence of rain or snow.

.8 Testing and inspection.

.9 Accidents.

.10 Meetings and significant decisions.

.11 Unusual events.

.12 Stoppages, delays, shortages, and losses.

.13 Meter readings and similar recordings.

.14 Emergency procedures.

.15 Orders and requests of authorities having jurisdiction.

.16 Change Orders received and implemented.

.17 Change Directives received and implemented.

.18 Services connected and disconnected.

.19 Equipment or system tests and startups.

.20 Partial completions and occupancies.

.21 Substantial Completions authorized.

.2 Material Location Reports: At weekly or monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:

.1 Material stored prior to previous report and remaining in storage.

.2 Material stored prior to previous report and since removed from storage and installed.

.3 Material stored following previous report and remaining in storage.

.3 Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

.4 Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise City in advance when these events are known or predictable.

.1 Submit unusual event reports directly to Consultant and City within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.

END OF SECTION

1.01 SUMMARY

.1 Section Includes:

.1 Photographic documentation of:

.1 Project site and surrounding properties to record existing conditions prior to start of Work.

.2 Project site during course of construction to record construction progress.

.3 Project site at final completion of the Work to record completed work.

.4 Other specific items as may be requested by Contract Administrator.

1.02 DEFINITIONS

.1 Within the content of this Section the term "photograph" shall mean "digital image".

.2 Digital image is a still picture taken with a digital camera which can be viewed on a computer with photo editing/viewing software.

1.03 DIGITAL IMAGES

.1 Use digital camera with capability of producing digital images at minimum 5.0 megapixels, uncompressed, saved in *.jpeg or *.tif format.

.2 Copy (burn) each set of images onto a flash drive.

.3 Identification: identify each disc with name and number of project, date of exposure, set number.

1.04 DISTRIBUTION

.1 Keep one set of photographs on site.

.2 Provide one set of photographs to Contract Administrator.

1.05 PRE-CONSTRUCTION PHOTOGRAPHS

.1 Provide photographs of existing site features, and adjacent buildings and surrounding properties to record existing conditions prior to start of construction work, to the satisfaction of the Contract Administrator.

.2 Allow for minimum 24 images for each set.

.3 Number of Sets Required: Three.

.4 Viewpoints: Exterior viewpoints including close ups of specific details in locations as determined by Contract Administrator.

1.06 CONSTRUCTION PROGRESS PHOTOGRAPHS

.1 Provide photographs of project site during progress of the Work to record construction progress.

.2 Provide photographs of remedial work for items of work identified by Contract Administrator as deficient, incomplete or otherwise non-conforming to contract documents.

.3 Allow for minimum 24 images for each set.

.4 Number of Sets Required: Three.

.5 Number of Viewpoints: Interior and exterior viewpoints including close ups of specific details, in locations determined by Contract Administrator.

.6 Frequency: Monthly with progress statement and as requested by Contract Administrator.

1.07 FINAL PHOTOGRAPHS

.1 Provide photographs of project site at final completion to record completed work.

.2 Number of Prints Required: Three.

.3 Allow for minimum 24 images for each set.

.4 Number of Viewpoints:

.1 Each adjacent building and surrounding property photographed as described in Article 1.5, and other exterior features.

.2 Close ups of specific details as determined by Contract Administrator.

.3 Locations of viewpoints as determined by Contract Administrator.

1.08 PHOTOGRAPH LABELING CONVENTION

.1 Provide progress digital images to the Contract Administrator monthly and at final completion of work.

.2 Label each photograph in accordance with the following naming convention example.

Project Descriptor		Element Descriptor (see Legend below)		Month		Year		Numerical Descriptor
wtgb	_	a-ext	_	12	_	2021	_	00001
Winnipeg Transit Garage Building		Architectural - Exterior						(five digits)

.3 Legend

.1 Element Descriptor

Architectural - Interior	a-int
Architectural - Exterior	a-ext
Structural	s
Mechanical	m
Electrical	e

END OF SECTION

1.01 SUMMARY

.1 Section Includes:

.1 Shop drawings

.2 Product data, test reports, certificates.

.3 Manufacturer's instructions and field reports

.4 Samples

1.02 DEFINITIONS

.1 Action Submittals: Written and graphic information and physical samples that require Contract Administrator's responsive action. Unless specifically noted otherwise in individual section, the following are considered Action Submittals:

.1 Product Data

.2 Shop Drawings

.3 Reports

.4 Closeout Submittals

.2 Informational Submittals: Written and graphic information and physical samples that do not require Contract Administrator's responsive action. Submittals may be rejected for not complying with requirements. Unless specifically noted otherwise in individual section, the following are considered Informational Submittals:

.1 Certificates

.2 Maintenance Data

.3 Safety Data Sheets (SDS)

.4 Inspection Reports

.5 Manufacturer's Instructions

1.03 ADMINISTRATIVE

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

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

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

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

.5 Notify Contract Administrator, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

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

.7 Contractor's responsibility for errors and omissions in submission is not relieved by Contract Administrator review of submittals.

.8 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Contract Administrator ‘s review.

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

.10 Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Contract Administrator’s receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

.1 Submittals that are received by the Contract Administrator after 1:00 pm on working days will be considered as have been received on the next working day.

.2 Initial Review: Allow five working days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Contract Administrator will advise Contractor when a submittal being processed must be delayed for coordination.

.3 Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.

.4 Resubmittal Review: Allow five working days for review of each resubmittal.

1.04 SUBMITTAL SCHEDULE

.1 Submittal Schedule: Submit, as an Action Submittal, a list of submittals, arranged in chronological order by dates required by demolition schedule. Include time required for review when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Contract Administrator and additional time for handling and reviewing submittals required by those corrections.

.2 Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction progress schedule.

.1 Initial Submittal: Submit for review concurrently with the Construction Progress Schedule utilizing the Critical Path Method (CPM).

.1 Allow five working days for Consultant review of submittal schedule.

.2 Format: Arrange the following information in a tabular format:

.1 Scheduled date for first submittal.

.2 Specification Section number and title.

.3 Submittal Category: Action; Informational.

.4 Name of Subcontractor.

.5 Description of the Work covered.

.6 Scheduled date for Contract Administrator’s final release or approval scheduled dates.

.2 Final (Revised) Submittal: Submit within 14 days of initial submittal.

.1 Submit revised submittal schedule to reflect Consultant review comments and changes in current status and timing for submittals.

.3 Progress Submittals: Submit updated Submittal Schedule at monthly intervals to coincide with project meetings.

1.05 SHOP DRAWINGS AND PRODUCT DATA

.1 Submit shop drawings for Contract Administrator’s review.

.2 This review by the Contract Administrator is for the sole purpose of ascertaining conformance with the general concept of the scope of work. This review shall not mean that the Contract Administrator approves the content inherent in the shop drawings, responsibility for which shall remain with the Contractor submitting same, and such review

shall not relieve the Contractor of their responsibilities for errors or omissions in the shop drawings or of their responsibility for meeting all requirements of the contract documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of the work of all sub-trades.

.3 The term “shop drawings” means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

.4 Shop drawings that do not include the stamp, date, and signature of the person responsible for reviewing the shop drawings before submittal to the Contract Administrator, will be rejected and returned without being examined.

.5 Submit shop drawings bearing stamp and signature of qualified professional engineer registered or registered in Province of Manitoba, Canada and who holds a “certificate of authorization” from the EGM, where specifically requested in the specifications. Shop drawings not bearing the required Engineer’s seal will be rejected and returned without being examined.

.6 Indicate materials, methods of construction and explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.7 Adjustments made on shop drawings by the Contract Administrator are not intended to change the Contract Price. If it is deemed that such adjustments affect the value of Work, state such in writing to the Contract Administrator prior to proceeding with fabrication or the Work.

.8 Make changes in shop drawings that the Contract Administrator may require, consistent with Contract Documents. When resubmitting, notify the Contract Administrator in writing of any revisions other than those requested.

.9 Accompany submissions with transmittal letter, containing:

- .1 date,
- .2 project title and number,
- .3 contractor’s name and address,
- .4 identification and quantity of each shop drawing, product data, and samples, and
- .5 other pertinent data.

.10 Submissions include:

- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and Address of:
  - .1 Subcontractor,
  - .2 Supplier, and
  - .3 Manufacturer.
- .4 Contractor’s stamp, signed by Contractor’s authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .5 Details of appropriate portions of Work as applicable:

.1 Layout, showing dimensions, including identified field dimensions, and clearances.

.2 Setting details

.3 Capacities

.4 Performance characteristics

.5 Standards

.6 Operating weight

.7 Relationship to adjacent work.

.8 Other

.12 Submit one digital file in Adobe PDF file format of the following submittals:

.1 Shop drawings for each requirement requested in specification sections and as the Contract Administrator may reasonably request.

.2 Product data sheets or brochures for requirements requested in specification Sections and as requested by Contract Administrator where shop drawings will not be prepared due to standardized manufacture of product.

.3 Test reports for requirements requested in specification Sections and as requested by Contract Administrator.

.1 Report signed by authorized official of testing laboratory

.2 Testing must have been within three years of date of contract award for project.

.4 Certificates for requirements requested in specification Sections and as requested by Contract Administrator.

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

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

.5 Manufacturers' instructions for requirements requested in specification Sections and as requested by Contract Administrator.

.1 Pre-printed material describing installation of product, system or material, including special notices and material safety data sheets concerning impedances, hazards and safety precautions.

.6 Manufacturer's field reports for requirements requested in specification Sections and as requested by Contract Administrator.

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

.11 Delete information not applicable to project.

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

.13 If upon review by the Contract Administrator, no errors or omissions in compliance with the Contract Documents are discovered or if only minor corrections are made, copies will be returned, and Work may proceed. If, however, shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through the same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

.14 No extension of Contract Time will be allowed for delays in the Work which may be caused for Contract Administrator‘s rejection of shop drawings.

.15 Shop drawings, which contain deviations from the Contract Documents which are not presented to the Contract Administrator in writing will be rejected and returned without being examined.

1.06 TESTING

.1 Keep one set of photographs on site.

.2 Provide one set of photographs to Contract Administrator.

1.07 CERTIFICATES AND TRANSCRIPTS

.1 Prior to commencement of the Work, provide evidence of compliance with worker's compensation legislation at the place of the Work, including payments due thereunder.

.2 Submit transcription of insurance immediately after award of Contract.

END OF SECTION

1.01 SUMMARY

.1 Section Includes:

.1 Requirements and limitations for cutting and patching the Work.

.2 Selective demolition and removal of existing materials, equipment and finishes; cutting openings in walls, ceiling, floors and roof decks as required to accommodate the new work and finishes.

.3 Patching and making good existing work and finishes affected by alteration and renovation work.

.4 Salvage of existing materials and equipment where indicated.

1.02 RELATED WORK

.1 Patching and making good existing construction and finishes as part of the work of the respective Subcontractors whose work is affected.

.2 Removal, relocation, of existing mechanical and/or electrical services and equipment.

1.03 COORDINATION MEETING

.1 Prior to start of alteration and renovation work convene a coordination meeting to review construction procedures for alteration and renovation work. Agenda to include:

.1 Construction progress schedule.

.2 Site security, temporary enclosures, emergency exits.

.3 Site access and storage.

.4 Start-up and shut down of mechanical and electrical services.

.5 Waste management and disposal.

.6 Work procedures in occupied spaces.

.2 Senior representatives of the Contract Administrator, City, Contractor and major Subcontractors are to be in attendance.

.3 Establish time and location of meeting and notify all concerned parties within [five] working days of meeting.

.4 Chair meeting and record minutes. Distribute minutes to all attending parties within [four] working days after meeting.

1.04 GENERAL PROCEDURES

.1 The existing building(s) are to remain occupied and functional during the work of this project. Execute work with least possible interference or disturbance to building occupants and the general public and the normal use of the premises.

.2 Prior to start of any alteration work, arrange with the City and Contract Administrator a work schedule satisfactory to operational requirements of the existing facility.

.3 The City shall vacate only those areas designated for alteration work.

.4 Confine construction activities to designated work areas. Do not store materials, tools or equipment outside of designated work areas.

.5 Prevent migration of dust and debris into occupied areas.

.6 Establish access routes to and from the work areas. Use only designated access routes for movement of workers, tools, equipment, materials, and construction debris.

.7 Where work must proceed in occupied areas clean up at the end of each workday. Place tools, equipment, and materials into secure lock-up.

.8 Provide temporary protection to cut and partially finished surfaces to building occupants and general public from possible injury.

1.05 WASTE MANAGEMENT AND DISPOSAL

.1 Comply with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

.2 Except for items indicated for salvage, construction waste, abandoned or demolished materials and equipment are the Contractor's responsibility and shall be promptly removed from site.

.3 Dispose of construction debris, abandoned equipment and materials off site via designated access routes.

.4 Do not allow demolition debris to accumulate within the building or on site. Remove debris on a regular basis.

.5 Do not allow waste and debris to block access routes to and from exits, fire lanes, or impede access to the building.

.6 Do not burn rubbish or debris on site.

.7 Do not use City's waste containers for waste removal.

.8 Provide suitable waste containers. Locate large waste containers on City's property only in areas acceptable to the City.

1.06 TEMPORARY ENCLOSURES

.1 Construct temporary partitions to isolate work areas from occupied areas of the building(s). Erect partitions to contain construction debris and prevent unauthorized entry to work areas.

.2 Prior to erection confirm exact location(s) with Contract Administrator.

.3 Provide doors to prevent unauthorized access.

.4 Where temporary partitions restrict access to emergency exits review security requirements with Contract Administrator prior to erection.

.5 Construct partitions of steel studs spaced at maximum 600 mm on centre. Cover finished side with gypsum board.

.6 Provide continuous dust barrier on inside of 6 mil polyethylene sheet. Seal holes and joints to prevent migration of dust to occupied areas.

.7 Where overhead structures are more than 2 400 mm above floor provide continuous polyethylene dust barriers at top of partition to seal off space above partition and structure.

1.07 PROTECTIVE COVERS

.1 Where furniture, furnishings, cabinet work or other finished work is adjacent to or in areas where alteration work is in progress provide covers to protect against construction debris and dust.

.2 Remove covers and clean up after each work stage as instructed by Contract Administrator.

1.08 EXISTING MECHANICAL AND ELECTRICAL SERVICES

.1 Prior to start of Work identify and confirm the location of all mechanical and electrical services within or passing through construction areas. Confirm their origin and destination.

.2 Where services are concealed within walls, floors, or ceilings and cannot be visually identified use electronic scanning devices or other acceptable means to locate and identify concealed services.

.3 Do not shut off, disconnect, or remove existing mechanical and electrical services without prior notification of Contract Administrator.

.4 Where existing service must be shut-down or disconnected, notify City in advance of shut-down or disconnection. Provide schedule indicating which services are affected and duration of shut-down.

.5 Some services within construction areas may serve other areas of the building not affected by construction work and must remain in service during construction period. Take special precautions to protect and maintain continuance of services that are to remain active to service adjacent areas.

.6 Include for required connections, temporary or permanent, for continuance of existing services.

1.09 EXISTING FIXTURES AND EQUIPMENT

.1 Where new flooring and finishes are to be installed, remove and replace existing plumbing fixtures and other equipment to allow for installation of new flooring and finishing products under or behind such item.

.2 In rooms with floor drains, remove and replace clamp rings to allow for installation of finish flooring under clamp ring.

1.10 SALVAGE MATERIAL

.1 Remove as salvage items as indicated.

.2 Remove items carefully to prevent damage. Dismantle large items to fit through openings and ease of transport.

.3 For items indicated for reinstallation store on site until required.

.4 For items to be turned over to City transport to storage areas [on site] as directed by City.

1.11 EQUIPMENT

.1 Provide equipment, tools and machinery for proper execution of the Work.

1.12 PREPARATION

.1 Structural and load-bearing elements:

.1 Obtain Contract Administrator’s written approval before cutting, boring or sleeving structural or load-bearing members including roof decks, floor assemblies or load bearing walls and columns.

.2 Electronically scan structural elements to confirm location of structural steel and reinforcing before starting work. Record locations on record drawings.

.3 Mark out exact locations and dimensions prior to inspection.

.4 Do not proceed with the work until the Contract Administrator has reviewed and confirmed proposed work.

.2 Prevent movement, settlement or damage of structures, services, parts of existing building to remain.

.1 Provide bracing, shoring and underpinning as required.

.2 Repair damage caused by demolition as directed by Contract Administrator.

.3 Support affected structures and, if safety of structure being demolished appears to be endangered, take preventative measures, stop Work and immediately notify Contract Administrator.

1.13 SELECTIVE DEMOLITION FOR ALTERATION WORK

.1 Specialists familiar with the materials affected shall perform selective demolition work.

.2 Perform in a manner to neither damage nor endanger any part of the existing building or work in progress.

.3 Demolition work indicated on drawings is schematic only. Verify all dimensions and conditions on site.

.4 Do not damage or deface existing construction, equipment or finishes indicated to remain or items indicated for salvage.

.5 Keep cutting to no more than 10% larger than outside dimensions of item penetrating another material.

.6 Make cuts with clean, true, smooth edges to minimize patchwork and to provide suitable surface for integration of new materials.

.7 Use concrete saw for cutting concrete.

.8 Use diamond core drill for cutting small diameter openings in concrete.

.9 Use of pneumatic driven jackhammers inside buildings is not permitted without Contract Administrator approval.

.10 Marking:

.1 Each Subcontractor is responsible for marking out locations of all cutting, boring, and demolition required for installation of their respective work.

.2 Extra costs for additional cutting and patching required because of errors in marking out of locations of cutting and demolition work shall be paid by the Subcontractor responsible for the error in marking.

.11 Openings and Recesses:

.1 Cut openings and recesses in foundation walls and floors as required for installation of new work and finishes.

.2 Coordinate with Mechanical, Electrical and other Subcontractors.

.3 Contractor is responsible for cutting openings larger than 150 x 150 mm or 150 mm in diameter. Openings smaller than these shall be the responsibility of the Subcontractor requiring the opening.

.4 Contractor is responsible for cutting recesses larger than 800 x 800 mm in size. Recesses smaller than these sizes shall be the responsibility of the Subcontractor requiring the recess.

1.14 PATCHING AND MAKING GOOD

.1 Patching and making good of existing materials and finishes is the responsibility of the Subcontractor whose work is affected.

.2 Patch and make good all damage to existing materials and finishes resulting from work of this Contract.

.3 Patching, unless otherwise noted, shall match existing adjacent surfaces in all respects. Make patchwork inconspicuous in final assembly.

.4 Patch and repair to standard of construction of surrounding materials, except where indicated otherwise.

.5 Fit work air tight to pipes, sleeves, ducts, conduit and other penetrations. Seal all penetrations tight with acceptable materials.

.6 Patch openings, holes, cuts and around pipes, ductwork, conduit and other work passing through fire separations and fire rated assemblies. Use materials and methods to maintain integrity of fire ratings. Use materials meeting Underwriters' Laboratories Canada (ULC) requirements and authorities having jurisdiction.

END OF SECTION

1.01 SUMMARY

.1 Section Includes:

.1 Health and safety requirements and adherence.

1.02 RELATED REQUIREMENTS

.1 Section 02 81 01 - Hazardous Materials

.2 Section 02 82 00.01 - Asbestos Abatement Requirements Type 1 Work Procedures

.3 Section 02 82 00.02 - Asbestos Abatement Requirements Type 2 Work Procedures

.4 E2 – Excavation Assessment

.5 E3 - Hazardous Materials Assessment

1.03 REFERENCE STANDARDS

.1 Government of Canada

.1 Canadian Construction Safety Code, 1997

.2 Canada Labour Code, R.S.C., 1985, c. L-2, Part II, Occupational Health and Safety

.3 Workplace Hazardous Materials Information System 2015 (WHMIS)

.2 National Research Council

.1 National Building Code of Canada 2020 (NBC)

.2 National Fire Code of Canada 2015 (NFC)

.3 Province of Manitoba

.1 Manitoba Building Code 2011 (MBC) including Manitoba amendments

.2 The Workplace Safety and Health Act, C.C.S.M. c. W210

.3 The Workers Compensation Act RSM 1987, c. W200

1.04 ADMINISTRATIVE REQUIREMENTS

.1 Meetings:

.1 Schedule and administer health and safety meeting with Contract Administrator prior to commencement of Work.

.2 Coordination:

.1 Review and coordinate hot work safety requirements as indicated in other Sections.

1.05 REGULATORY REQUIREMENTS

.1 Observe and enforce construction safety measures with construction safety measures of the following:

.1 Canadian Construction Safety Code

.2 Canada Labour Code, Part II, Occupational Health and Safety.

.3 NBC, Part 8 Safety Measures at Construction and Demolition Sites.

.4 NFC, Sections 5.2., and 5.6

.5 The Workers Compensation Act RSM 1987, c. W200

.6 The Workplace Safety and Health Act, c. W210.

.7 Municipal statutes, and authorities having jurisdiction.

.2 In event of conflict between any provisions of above authorities, the more stringent requirements to apply.

1.06 SAFETY PLAN

.1 Develop and **receive City Approval** of written site-specific health and safety plan, and fire safety plan, based on hazard assessment prior to commencing any site work and continue to implement, maintain, and enforce plan until final demobilization from site.

1.07 RESPONSIBILITY

.1 The "Prime Contractor" according applicable jurisdiction, is responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

.2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific health and safety plan, and fire safety plan.

1.08 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Informational Submittals:

.1 Provide a valid certificate of recognition (COR) as issued by the provincial construction safety association or other certifying organization authorized the province.

.2 Submit Contractor’s site-specific safety plan and fire safety plan at least five Business Days prior to the commencement of any Work on the Site.

.3 Submit two copies of Contractor's authorized representative's work site health and safety inspection reports to Contract Administrator.

.4 Submit copies of incident and accident reports

.5 Submit valid copy of WCB coverage

1.09 WORK SITE SAFETY

.1 Comply with and enforce the construction health and safety measures required by provincial legislation applicable to the Place of the Work, and applicable provisions of Federal, and municipal safety laws and ordinances.

.2 Assume full responsibility for safety and organization of Work until Final Certificate of Payment.

.3 Follow any directives from the Worker's Compensation Board and Manitoba Workplace Safety & Health and provide any safeguards required.

.4 Comply with all City of Winnipeg safety requirements.

.5 Post all necessary danger signs.

.6 Maintain on site five sets of CSA approved construction safety hats, safety vests and safety glasses for use of authorized visitors to site. Visitors are responsible for their own CSA approved footwear.

1.10 SITE CONDITIONS

.1 An Excavation Assessment of the building site has been conducted, refer to E2.

.2 A hazardous materials assessment of the building site has been conducted, refer to E3.

.3 Work at site will involve contact with:

.1 Residual petroleum hydrocarbon (PHC) in the soils.

.2 Asbestos containing cementitious drainpipes.

1.11 UNFORSEEN HAZARDS

.1 Should unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance o the Work, stop work and immediately advise Contract Administrator verbally and in writing.

1.12 CERTIFICATE OF RECOGNITION (COR) PROGRAM

.1 Contractor to possess valid Certificate of Recognition (COR™) for an accredited occupational health and safety program applicable to the Place of the Work.

.2 Subcontractors with employees doing construction work on this site must show safety program registration verified by either the Heavy Construction Association or the Construction Safety Association as applicable to the Place of the Work.

1.13 FIRE SAFETY REQUIREMENTS

.1 Conform to requirements of NFC, Section 5.2. Hot Works, Section 5.6. Construction and Demolition Sites, and as follows.

.2 Hot Works Including, Cutting, Grinding, Torch Work, and Welding:

.1 Make application for a hot works permit.

.2 If possible, hot works shall be performed in a safe area, absent of combustibles. If not possible, remove combustibles from the area of hot works.

.3 Provide and maintain at least one portable fire extinguisher in the hot work area.

.4 Ventilate area of hot work by use of approved portable supply and exhaust fans.

.5 Ventilate hot works in enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities.

.6 Provide a continuous fire watch during the hot work and for a period of not less than one hour after its completion and four hours after completion of the work.

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

1.14 OVERLOADING

.1 Do not load any part of the structure during the construction with a load greater than it is calculated to bear safely when complete. Ensure every temporary support is as strong as the permanent support. Do note place loads on concrete floors until they have obtained their permanent set.

1.15 HAZARDOUS WORK

.1 Blasting or other use of explosives is not permitted.

.2 Use powder actuated devices only after receipt of written permission from Contract Administrator.

1.16 SMOKING PRECAUTIONS

.1 Observe smoking and vaping regulations.

END OF SECTION

1.01 DEFINITIONS

.1 Environmental Pollution and Damage: Presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.

.2 Environmental Protection: Prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.02 SUBMITTALS

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

.2 Two weeks prior to commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review by Contract Administrator. Environmental Protection Plan is to present comprehensive overview of known or potential environmental issues which must be addressed during construction.

.3 Address topics at level of detail commensurate with environmental issue and required construction tasks.

.4 Environmental Protection Plan: Include:

- .1 Name(s) of person(s) responsible for ensuring adherence to Environmental Protection Plan.
- .2 Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from site.
- .3 Name(s) and qualifications of person(s) responsible for training site personnel.
- .4 Descriptions of environmental protection personnel training program.
- .5 Erosion and sediment control plan which identifies type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.
- .6 Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.
- .7 Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plans include measures to minimize amount of mud transported onto paved public roads by vehicles or runoff.
- .8 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use. Plan to include measures for marking limits of use areas including methods for protection of features to be preserved within authorized work areas.
- .9 Spill Control Plan: including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
- .10 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.

.11 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, do not become air borne and travel off project site.

.12 Contaminant prevention plan that: identifies potentially hazardous substances to be used on job site; identifies intended actions to prevent introduction of such materials into air, water, or ground; and details provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.

.13 Waste water management plan that identifies methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.

.14 Historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.

.15 Pesticide treatment plan: to be included and updated, as required.

1.03 FIRES

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

.2 Where fires or burning permitted, prevent staining or smoke damage to structures, materials, or vegetation that is to be preserved. Restore, clean and return to new condition stained or damaged work.

.3 Provide supervision, attendance and fire protection measures as directed.

1.04 DISPOSAL OF WASTES

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

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

1.05 DRAINAGE

.1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.

.2 Do not pump water containing suspended materials into waterways, sewer, or drainage systems.

.3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.06 POLLUTION CONTROL

.1 Maintain temporary erosion and pollution control features installed under this contract.

.2 Control emissions from equipment and plant to local authority’s emission requirements.

.3 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.

.4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.07 NOTIFICATION

.1 Contract Administrator will notify Contractor in writing of observed non-compliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.

.2 Contractor: After receipt of such notice, inform Contract Administrator of proposed corrective action and take such action for approval by Contract Administrator.

.3 Contract Administrator will issue stop order of work until satisfactory corrective action has been taken.

.4 No time extensions granted, or equitable adjustments allowed to Contractor for such suspensions.

.5 Contract Administrator will notify City of Winnipeg project and safety representatives of notification procedures **END OF SECTION**

1.01 SUMMARY

.1 Section Includes:

.1 Inspection and testing, administrative, and enforcement requirements.

.2 Tests.

1.02 RELATED REQUIREMENTS

.1 Submission of tests to confirm product quality, Section 01 33 00 - Submittal Procedures.

.2 Material and workmanship quality, reference standards, Section 01 61 00 - Common Product Requirements.

1.03 REVIEW OF THE WORK

.1 Allow Contract Administrator access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

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

.4 If Contractor covers or permits to be covered Work that has been designated for special tests, surveys, inspections or approvals before such is made, uncover such Work, have tests, surveys or inspections satisfactorily completed and make good such Work.

.5 Contract Administrator will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, the City shall pay cost of examination and replacement.

1.04 ACCESS TO WORK

.1 Allow inspection/testing agencies access to the Work, offsite manufacturing, and fabrication plants.

.2 Cooperate to provide reasonable facilities for such access.

1.05 PROCEDURES

.1 Notify the appropriate agency and Contract Administrator in advance of the requirement for tests, in order that attendance arrangements can be made.

.2 Submit test reports requested in Specification sections or as may be requested by Contract Administrator. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in the Work.

.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide enough space to store and cure test samples.

1.06 DAMAGED OR DEFECTIVE WORK

.1 Promptly make good the City’s property damaged by removals made under this Contract.

.2 If in opinion of Contract Administrator, it is not expedient to make good damage to property attributable to the course of the Work, the City will deduct from Contract price the difference in value between Work performed and that called for by repair or remediation to damaged buildings or property, amount of which will be determined by Contract Administrator.

1.07 REPORTS

.1 Submit four copies of inspection and test reports promptly to the Contract Administrator.

.2 Provide copies to Subcontractor of work being inspected/tested and manufacturer/ fabricator of Material being inspected/tested.

1.08 TESTS

.1 Furnish test results as may be requested.

.2 The cost of tests and mix designs beyond those called for in the Drawings and Specifications or beyond those required by the Law of the Place of Work shall be appraised by the Contract Administrator.

END OF SECTION

1.01 INSTALLATION AND REMOVAL

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

.2 Remove from site all such work after use.

1.02 WATER SUPPLY

.1 A limited amount of water from the existing building supply will be made available for construction use.

.2 Provide, install and maintain temporary lines and connections at own expense.

.3 The City will pay utility charges.

1.03 TEMPORARY HEATING AND VENTILATION

.1 Maintain temperatures of minimum 10°C in areas in which construction is in progress.

.2 During dust generating procedures within bus lift hoarding, ventilate air particulates directly to exterior.

.1 Continue ventilation continuously for a minimum 24-hour period after concrete slab demolition work has stopped.

.2 Only stop ventilation when hoarding is confirmed free of demolition dust particulates.

.3 Contractor to engage and pay for an independent testing agency to ensure hoarding area is free of demolition dust particulates prior to stopping ventilation.

.4 Provide to Contract Administrator written report confirming zero level of demolition dust particulates attained prior to stopping ventilation.

.5 Obtain written approval from Construction Manager to terminate ventilation procedures.

.3 Remove hoarding in a careful manner so as not to recharge the interior environment with demolition dust particulates.

1.04 TEMPORARY POWER AND LIGHT

.1 Provide and pay for temporary power required during construction for temporary lighting and the operating of power tools.

.2 Arrange for connection with Manitoba Hydro. Pay all costs for installation, maintenance and removal.

.3 Temporary power for electric cranes and other equipment requiring in excess of the supply required for temporary lighting and power tools is the responsibility of Contractor.

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

1.05 TEMPORARY COMMUNICATIONS FACILITIES

.1 Provide and pay for temporary telephone fax and internet hook up, lines and equipment necessary for own use and use of Contract Administrator.

1.06 FIRE PROTECTION

.1 Provide and maintain adequate temporary fire protection equipment during performance of Work, as required by insurance companies having jurisdiction and governing Codes, regulations and By-Laws.

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

END OF SECTION

1.01 SUMMARY

.1 Section Includes:

.1 Construction aids.

.2 Office.

1.02 REFERENCE STANDARDS

.1 Canadian Standards Association (CSA)

.1 CAN/CSA-Z321, Signs and Symbols for the Occupational Environment.

1.03 SITE STORAGE/LOADING

.1 Confine work and operations of employees by Drawings and Specifications. Do not unreasonably encumber premises with products.

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

1.04 CONSTRUCTION PARKING

.1 Parking will be provided on Site subject to the approval of the Contract Administrator and provided it does not disrupt performance of Work. Parking in the area is limited.

.2 Provide and maintain adequate access to project site.

1.05 CONSTRUCTOR'S SITE OFFICE

.1 Area for site office provided by City; Location to be approved by Contract Administrator.

.2 Site office area heated to ambient conditions, lighting approx 750 lx, ventilated, secure and of sufficient size to host site meetings and furnished with drawing lay-down table.

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

.4 Subcontractors to provide their own offices as necessary, subject to the approval of the Contract Administrator. Direct location of these offices.

1.06 EQUIPMENT, TOOL AND MATERIAL STORAGE

.1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.

1.7 SANITARY FACILITIES

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances. Location subject to approval of the Contract Administrator.

.2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

.3 Existing facilities not to be used.

1.8 CONSTRUCTION SIGNAGE

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

.2 Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.

.3 Maintain approved signs and notices in good condition for duration of project and dispose of offsite on completion of project or earlier if directed by Contract Administrator.

1.9 PROTECTION AND MAINTENANCE OF TRAFFIC

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

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

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

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

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

.6 Dust control: Adequate to ensure safe operation at all times.

END OF SECTION

1.01 SUMMARY

.1 Section Includes:

.1 Barriers.

.2 Environmental Controls.

.3 Traffic Controls.

.4 Fire Routes.

1.02 REFERENCE STANDARDS

.1 Canadian Standards Association (CSA)

.1 CSA-O121, Douglas Fir Plywood

.2 CAN/CSA O141 - Softwood Lumber

.3 CSA O151 - Canadian Softwood Plywood

1.03 INSTALLATION AND REMOVAL

.1 Provide temporary controls to execute Work expeditiously.

.2 Remove from site all such work after use and make good to adjacent surfaces and finishes.

1.01 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 Erect temporary dust tight screens using 38 by 89 mm steel studs at maximum 610 mm centres, polyethylene sheet, and 1 219 by 2 438 by 13 mm exterior grade plywood (CSP or DFP) or 13 mm gypsum wall board. Extend to underside of existing roof and make air tight.

.3 Provide access to hoarding areas with temporary hollow metal doors and knock down metal frames and hardware.

.4 Polyethylene Sheet: Reinforced, fire-resistive sheet, 0.25 mm (10 mil) minimum thickness, with flame-spread rating of 15 or less per ASTM E84 and passing NFPA 701 Test Method.

.5 Dust-Control Adhesive-Surface Walk-Off Mats: Provide mats minimum 914 by 1 524 mm (36 by 60 inches).

.6 Maintain and relocate protection until such work is complete.

.7 Confirm locations and installation with Contract Administrator at least three days prior to installation.

.8 Where screens restrict access to emergency exits review security requirements with Contract Administrator prior to erection.

.9 Refer to Section 01 51 00 – Temporary Utilities for ventilation of bus lift hoarding area.

1.02 ACCESS TO SITE

.1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

1.03 PUBLIC TRAFFIC FLOW

.1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect the public.

1.04 FIRE ROUTES

.1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.5 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect adjacent private and public property from damage during the performance of work.

.2 Be responsible for all damage incurred.

.3 Provide necessary screens, covers and hoardings.

.4 Confirm locations and installation with Contract Administrator at least five days prior to installation.

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

END OF SECTION

1.01 SUMMARY

.1 Section Includes:

.1 Product quality, availability, storage, handling, protection, and transportation.

.2 Manufacturer's instructions.

.3 Substitution procedures.

.4 Quality of Work, coordination and fastenings.

.5 Prevention of dust and mould contamination of products and materials during delivery, storage and handling.

1.02 REFERENCE STANDARDS

.1 Within text of each Specification section, reference may be made to reference standards.

.2 Conform to these reference standards, in whole or in part as specifically requested in Specifications.

.3 If there is question as to whether any product or system is in conformance with applicable standards, Contract Administrator reserves right to have such products or systems tested to prove or disprove conformance.

.4 Cost for such testing will be borne by the City in event of conformance with Drawings and Specifications or by Contractor in event of non-conformance.

.5 Conform to latest date of issue of referenced standards in effect on date of submission of Bids, except where specific date or issue is specifically noted.

1.03 QUALITY ASSURANCE

.1 Products, Materials, equipment and articles (referred to as products throughout specifications) 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 Contract Administrator based upon requirements of Drawings and Specifications.

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

.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.

1.04 AVAILABILITY

.1 Immediately upon receiving Letter of Intent, review product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of materials, equipment or articles are foreseeable, notify Contract Administrator within two days discovery 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 the event of failure to notify the Contract Administrator at commencement of Work, and should it subsequently appear that Work may be delayed for such reason, the Contract Administrator reserves the right to substitute more readily available products of similar character, at no increase in Contract Price or contract time.

1.05 SUBSTITUTIONS

.1 The Work is based on the materials and methods specified in the Specifications.

.2 Substitutions are permitted during Bid period only, make application in accordance with B6 Substitutes.

1.06 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 sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.

.5 Remove and replace damaged products at own expense and to satisfaction of Contract Administrator.

.6 Touch-up damaged factory finished surfaces to Contract Administrator's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.07 TRANSPORTATION

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

.2 Transportation costs of products supplied by the City will be paid for by the City unless specified otherwise. Unload, handle and store such products, unless otherwise specified.

1.08 MANUFACTURERS' INSTRUCTIONS

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

.2 Notify Contract Administrator in writing of any conflicts between the Specifications and manufacturer's instructions so that the Contract Administrator may establish the course of action to follow.

.3 Improper installation or erection of products due to failure in complying with these requirements authorizes the Contract Administrator to require any removal and re-installation that may be considered necessary, at no increases in Contract price or Contract time.

1.09 QUALITY OF WORK

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

.2 Enforce discipline and good order among workers.

.3 Do not employ anyone unskilled in their required duties. Contract Administrator 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 Contract Administrator, whose decision is final.

1.10 COORDINATION

.1 Ensure cooperation of workers during the Work. Maintain efficient and continuous supervision.

.2 Ensure Work of various Subcontractors does not conflict or create interference.

.3 Be responsible for the proper coordination and placement of openings, sleeves, and accessories.

.4 Supply all items required to be built in as and when required, together with templates, measurements and shop drawings.

.5 Ensure all workers examine the drawings and specifications covering the Work of others that may affect the performance of their own Work. Examine the Work of others and report to the Contract Administrator, in writing, any defects, or deficiencies that may affect the Work. In the absence of any report, the Contractor shall be held to have waived all claims for damage to or defects in such Work.

.6 Ensure that components openings that are required for the installation of Work is coordinated. Furnish the necessary information to the sections concerned in ample time to permit allowance for such items. Failure to comply with this requirement does not relieve the party at fault of the cost of cutting or drilling at a later date and subsequent patching.

1.11 CONCEALMENT

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

.2 Before installation, inform Contract Administrator if there is interference. Install as directed by Contract Administrator.

1.12 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.

1.13 PROTECTION OF WORK IN PROGRESS

.1 Protect Work completed or in progress.

.2 Prevent overloading of any part of the building. Do not cut, drill, or otherwise sleeve any load bearing structural member unless specifically indicated on drawings or in Specifications without written approval of the Contract Administrator.

1.14 EXISTING UTILITIES

.1 When connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and 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.

END OF SECTION

1.01 MATERIALS

.1 Required for original installation.

.2 Change in materials or products not permitted unless previously approved by Contract Administrator during Bid period.

1.02 PREPARATION

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

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

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

.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.5 Provide protection from elements for areas which are to be exposed by uncovering work.

1.03 EXECUTION

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

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

.3 Uncover Work to install ill-timed Work.

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

.5 Remove samples of installed Work for testing.

.6 Restore damaged work with new products in accordance with requirements of Drawings and Specifications.

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

1.04 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse, recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

1.01 REFERENCE STANDARDS

.1 Canadian Standards Association:

.1 CAN/CSA-Z317.2, Special Requirements for Heating, Ventilation and Air Conditioning (HVAC) Systems in Health Care Facilities.

.2 CAN/CSA-Z317.13, Infection Control during Construction, Renovation, and Maintenance of Health Care Facilities.

1.02 GENERAL

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

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

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

.4 Remove waste materials and debris from the site at regularly scheduled times or dispose of as otherwise directed by the Contract Administrator. Do not burn or bury waste materials or debris on site.

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

1.03 MATERIALS

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

1.04 CLEANING DURATION DEMOLITION

.1 Provide on-site containers for collection of waste materials, and debris.

.2 Dispose of waste materials and debris off site at regularly scheduled intervals.

.3 Maintain the Work in tidy condition, free from accumulation of waste products and debris.

.4 Clean interior areas prior to start of finish work; maintain areas free of dust and other contaminants during finishing operations.

1.05 FINAL CLEANING

.1 Refer to General Conditions.

.2 When the Work is complete, remove surplus products, tools, construction machinery and equipment. Remove waste products and debris and leave the Work clean and suitable for occupancy by the City.

.3 Leave the work 'broom clean' before the inspection process commences.

.4 Remove debris and surplus materials from site.

END OF SECTION

1.01 SUMMARY

.1 Section Includes:

.1 Requirements for waste management goals, waste management plan and waste management plan implementation.

1.02 DEFINITIONS

.1 Construction Waste: Solid wastes such as building materials, packaging and rubble resulting from construction, paving and infrastructure.

.2 Dangerous Goods: Product, substance, or organism specifically listed or meets hazard criteria established in Transportation of Dangerous Goods Regulations.

.3 Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.

.4 Hazardous Material: Product, substance, or organism used for its original purpose; and is either dangerous goods or material that will cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into the environment.

.5 Hazardous Waste: Hazardous material no longer used for its original purpose and that is intended for recycling, treatment or disposal.

.6 Recyclable Waste: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

.7 Recycling Facility: A business that specializes in collecting, handling, processing, distributing, or remanufacturing waste materials generated by new construction projects, into products or materials that can be used for this project or by others.

.8 Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

.9 Salvage and Reuse: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

1.03 SUSTAINABILITY OBJECTIVES

.1 The Contractor shall use all means available to divert the greatest extent practical and economically feasible, construction waste from landfills and incinerators. Develop and implement a demolition waste management plan.

1.04 ACTION SUBMITTALS

.1 Submit draft waste management plan to the Contract Administrator prior to project start up meeting.

1.05 INFORMATIONAL SUBMITTALS

.1 Waste Reduction Progress Reports: Submit a monthly report to the Contract Coordinator and include the following information:

.1 Material category.

.2 Generation point of waste.

.3 Total quantity of waste in tons (tonnes)

.4 Quantity of waste salvaged, both estimated and actual in tons (tonnes).

.5 Quantity of waste recycled, both estimated and actual in tons (tonnes).

.6 Total quantity of waste recovered (salvaged plus recycled) in tons (tonnes).

.7 Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

.2 Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

.3 Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

.4 Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

1.06 WASTE MANAGEMENT PLAN

.1 General: Develop a waste management plan according to requirements in this Section. Plan shall consist of waste identification, waste reduction work plan. Distinguish between demolition and construction waste. Indicate quantities by weight or volume but use same units of measure throughout waste management plan.

.2 Goals: Establish waste diversion goals for the project by identifying at least five materials targeted for diversion.

.3 Waste: Identification: Indicate anticipated types and quantities of demolition, site-clearing, and construction waste generated by the Work.

.4 Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

.1 Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.

.2 Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.

.3 Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.

.5 Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1.07 STORAGE, HANDLING AND PROTECTION

.1 Store, materials to be reused, recycled and salvaged in locations as directed by Contract Administrator.

.2 Unless specified otherwise, materials for removal do not become Contractor's property.

.3 Use the following paragraph if material is to be turned over to Consultant.

.4 Protect, stockpile, store and catalogue salvaged items.

.5 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.

.6 Use the following paragraph for demolition projects.

.7 Protect structural components not removed for demolition from movement or damage.

.8 Use the following paragraph for demolition projects.

.9 Support affected structures. If safety of building is endangered, cease operations and immediately notify Contract Administrator.

.10 Protect surface drainage, storm sewers, sanitary sewers, and utility services from damage and blockage.

1.08 SCHEDULING

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

1.09 PREPARATION

.1 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

1.10 USE OF SITE AND FACILITIES

.1 Execute work with least possible interference or disturbance to normal use of adjacent property owners and public roadways.

.2 Maintain security measures established by the City.

.3 Provide temporary security measures as approved by Contract Administrator.

1.11 WASTE MANAGEMENT PLAN IMPLEMENTATION

.1 Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

.2 Minimize waste disposal to landfills, employ processes that ensure the generation of as little waste as possible, including the prevention of damage due to mishandling, improper storage, contamination, inadequate protection or other factors, as well as minimizing over packaging and poor quantity estimating.

.3 Of the inevitable waste that is generated, as many of the waste materials as economically feasible are to be salvaged for reuse and or recycled. However, the Contractor is to abide by any direction from Contract Administrator regarding recyclable waste. Use of waste disposal in landfills or incinerators is to be minimized.

.4 Provide and pay for the proper disposal and salvage of construction materials and waste.

.5 Provide completely enclosed garbage containers.

.6 Use only brokerage, storage, transfer and disposal facilities licensed by authorities having jurisdiction for the recycling and disposal of waste material.

.7 Material Handling Procedures: Prevent contamination of material to be recycled and salvaged, and handle material consistent with requirements for acceptance by designated facilitates; where space permits, source separation is recommended; where material must be co-mingled, they must be taken to a processing facility for separation off site.

.8 Manager: Designate an on-site party responsible for instructing workers and overseeing and documenting results of the waste management plan for Project.

.9 Distribution: Distribute copies of the waste management plan to the Job Site Foreman, each Subcontractor, and the Contract Administrator.

.10 Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by parties at appropriate stages of Project.

.11 Separation Facilities: Lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, and return. Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.

.12 Hazardous Wastes: Hazardous wastes shall be separated, stored, and disposed of according to local regulations.

.13 Application for Progress Payments: Submit with each Application for Progress Payment a Summary of Waste Generated by the Project:

.1 Failure to submit information shall render Application for Payment incomplete and delay Progress Payment.

.2 Submit summary on a form acceptable to City containing the following information:

.1 Amount in tonnes or cubic metres (tons or cubic yards) of material land filled from the Project.

.2 Identity of the landfill.

.3 Total disposal cost. Include manifests, weight tickets, receipt, and invoices.

.4 Each material recycled, reused, or salvaged from the Project.

.5 Amount tonnes or cubic metres (tons or cubic yards).

.6 Date removed from the job site, the receiving party, and the transportation cost.

.7 Amount of any money paid or received for the recycled or salvaged material.

.8 Net total cost or savings of salvage or recycling each material.

.3 Attach manifests, weight tickets, receipts, and invoices.

.4 The City will pay all tipping fees for non-recyclable material disposal at City owned landfill.

1.12 DISPOSAL OF WASTE

.1 Burying of rubbish and waste materials is prohibited unless approved by the Contract Administrator.

.2 Disposal of waste volatile materials, mineral spirits, oil, paint thinner, into waterways, storm, or sanitary sewers is prohibited.

1.13 CLEANING

.1 Remove tools and waste materials on completion of work, leave work area in clean and orderly condition.

.2 Clean-up work area as work progresses.

.3 Source separate materials to be reused/recycled into specified sort areas.

1.14 SPECIAL PROGRAMS

.1 Be responsible for final implementation of programs involving tax credits or rebates or similar incentives related to recycling, if applicable to the Project.

.2 A current listing of recyclers specializing in specific categories of materials may be obtained from applicable government agencies. Most provinces have an Internet web site which offers information and suggested recycling sites.

.3 Obtain information packets relevant to all the above listed programs prior to starting work on the Project and confirm facility's ability to accept waste from Project.

.4 Document work methods, recycled materials, alternate disposal methods that qualify for tax credits, rebates, and other savings under programs listed by authority having jurisdiction.

END OF SECTION

1.01 SUMMARY

.1 Section Includes:

.1 Administrative procedures preceding Substantial Performance of the Work and Ready-for-Takeover.

1.02 PREREQUISITES TO SUBSTANTIAL COMPLETION OF THE WORK

.1 The prerequisites to, and the procedures for, attaining Substantial Performance of the Work, or similar such milestone as provided for in the lien legislation applicable to the Place of the Work, shall be:

.1 independent of those for attaining Ready-for-Takeover of the Work, and

.2 in accordance with the lien legislation applicable to the Place of the Work.

.2 Submittals Prior to Substantial Performance: Complete the following and submit to Consultant a minimum of ten days prior to requesting review for Substantial Performance. List items below that are incomplete at time of request.

.1 Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

.2 Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, property surveys, and similar final record information.

.3 Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

.4 Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Owner. Label with manufacturer's name and model number.

.1 Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Consultant's signature for receipt of submittals.

.5 Submit testing, adjusting, and balancing records.

.6 Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

.3 Procedures Prior to Substantial Performance: Complete the following and submit to Consultant a minimum of ten days prior to requesting review for Substantial Performance. List items below that are incomplete at time of request.

.1 Advise Owner of pending insurance changeover requirements.

.2 Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.

.3 Complete start-up and testing of systems and equipment.

.4 Perform preventive maintenance on equipment used prior to Substantial Performance.

.5 Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training

video recordings specified in Section 01 79 00 - Demonstration and Training.

.6 Advise Owner of changeover in utility services.

.7 Participate with Owner in conducting inspection and walkthrough with local emergency responders.

.8 Terminate and remove temporary facilities from Project site, along with mock-ups, construction tools, and similar elements.

.9 Complete final cleaning requirements.

.10 Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

1.03 INSPECTION AND REVIEW FOR SUBSTANTIAL COMPLETION OF THE WORK

.1 Contractor's Inspection: Before applying for the Consultant's review to establish Substantial Completion of the Work:

.1 Contractor and all Subcontractors shall conduct an inspection of the Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.2 Notify Consultant in writing of satisfactory completion of Contractor's inspection and that corrections have been made and that the building is clean and in condition ready for occupancy.

.3 Request Consultant's Inspection.

.2 Consultant's Review: Upon receipt of the Contractor's application for review, together with the Contractor's list of items to be completed or corrected, the Consultant and the Contractor shall arrange a mutually satisfactory agreed date and time to jointly review the Work. The Consultant will advise the Contractor whether or not the Work is Substantially Complete. Add additional items, if any, to the Contractor's list of items to be completed or corrected. Provide the Consultant with a copy of the revised list.

.3 Maintain the list of items to be completed or corrected and promptly correct or complete defective, deficient and incomplete work. The Contractor's inspection and Consultant's review procedures specified above shall be repeated until the Work is Substantially Complete and no items remain on the Contractor's list of items to be completed or corrected.

.4 Declaration of Substantial Performance of the Work: When Consultant considers deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, Contractor shall make application for certificate of Substantial Performance of the Work.

.5 Commencement of Lien Period: Date of Owner's acceptance of submitted declaration of Substantial Performance shall be date for commencement of lien period unless required otherwise by lien statute of Place of Work.

.6 Payment of Holdback: After issuance of certificate of Substantial Performance of Work, submit an application for payment of holdback amount in accordance with GC 5.4

1.04 PREREQUISITES TO READY-FOR-TAKEOVER

.1 The prerequisites to attaining Ready-for-Takeover of the Work are described in the General Conditions of the Contract GC 12.1.

1.05 INSPECTION AND REVIEW BEFORE READY-FOR-TAKEOVER

.1 Contractor's Inspection: Before applying for the Consultant's review to establish Ready-for-Takeover of the Work:

.1 Ensure that the specified prerequisites to Ready-for-Takeover of the Work are completed.

.2 Conduct an inspection of the Work to identify defective, deficient, or incomplete work.

.3 Prepare a comprehensive and detailed list of items to be completed or corrected.

.4 Provide an anticipated schedule and costs for items to be completed or corrected.

.2 Consultant's Review: Upon receipt of the Contractor's application for review, together with the Contractor's list of items to be completed or corrected, the Consultant and the Contractor shall arrange a mutually satisfactory agreed date and time to jointly review the Work. The Consultant will advise the Contractor whether or not the Work is Ready-for-Takeover. Add additional items, if any, to the Contractor's list of items to be completed or corrected. Provide the Consultant with a copy of the revised list.

.3 Maintain the list of items to be completed or corrected and promptly correct or complete defective, deficient and incomplete work. The Contractor's inspection and Consultant's review procedures specified above shall be repeated until the Work is Ready-for-Takeover and no items remain on the Contractor's list of items to be completed or corrected.

.4 When the Consultant determines that the Work is Ready-for-Takeover, the Consultant will notify the Contractor and the Owner in writing to that effect.

1.06 PREREQUISITES TO FINAL PAYMENT

.1 After Ready-for-Takeover of the Work and before applying for final payment in accordance with the General Conditions of Contract:

.1 Correct or complete all remaining defective, deficient, and incomplete work.

.2 Remove from the Place of the Work all remaining surplus Products, Construction Equipment, and Temporary Work.

.3 Perform final cleaning and waste removal necessitated by the Contractor's work performed after Ready-for-Takeover, as specified in Section 01 74 00 – Cleaning and Waste Management.

1.07 INSPECTION AND DECLARATION FOR FINAL COMPLETION

.1 Refer to General Conditions of the Contract GC 5.5.

1.08 PARTIAL OWNER OCCUPANCY

.1 If partial Owner occupancy of a part of the Work is required before the date of Substantial Completion or Ready-for-Takeover of the entire Work of the Contract, the provisions of this Section, and General Conditions of the Contract GC 12.2, shall apply, to the extent applicable to that part of the Work that the Owner intends to occupy.

END OF SECTION

1.01 SUMMARY

.1 Section Includes:

.1 As-built, samples, and specifications.

.2 Equipment and systems.

.3 Product data, materials, and related information.

.4 Operation and maintenance data.

.5 Warranties and bonds.

.6 Warranty Management Plan.

1.02 SUBMISSION

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

1.03 FORMAT

.1 Three hard copy (binders), one electronic format (PDF). Organize data in the form of an instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf, letter size format 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 systems, process flow, under Section numbers and sequence of Table of Contents.

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

.7 Text: Manufacturer's printed data, or typewritten data.

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

1.04 CONTENTS – EACH VOLUME

.1 Table of Contents: provide title of project;

.1 Date of submission; names.

.2 Addresses and telephone numbers of Contract Administrator 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 clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.

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

.5 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.

1.05 AS-BUILTS AND SAMPLES

.1 Conform to D17 - As-Built Drawings and as follows.

.2 Maintain at the site for Contract Administrator one record copy of:

.1 Drawings.

.2 Specifications.

.3 Addenda.

.4 Change Orders and other modifications to the Contract.

.5 Reviewed shop drawings, product data, and samples.

.6 Field test records.

.7 Inspection certificates.

.8 Manufacturer's certificates.

.3 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.

.4 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.

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

.6 Keep record documents and samples available for review by Contract Administrator.

1.06 RECORDING ACTUAL SITE CONDITIONS

.1 Record information on three (3) sets of black line opaque drawings, and within copy of Specifications. Make arrangements of black line opaque copies.

.2 Annotate with coloured felt tip marking pens, maintaining separate colours for each major system, for recording changed information.

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

.4 Contract Drawings and Shop Drawings: Legibly mark each item to record actual construction, including:

.1 Measured locations of utilities and appurtenances referenced to visible and accessible features of construction.

.2 Field changes of dimension and detail.

.3 Changes made by change orders.

.4 Details not on original Contract Drawings.

.5 References to related shop drawings and modifications.

.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.

1.07 WARRANTIES AND BONDS

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

.2 List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principals.

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

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

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

.6 Co-execute submittals when required.

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

1.08 WARRANTY MANAGEMENT PLAN

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

.2 Submit warranty management plan, 30 days before planned pre-warranty conference, to Contract Administrator for review.

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

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

.5 Submit, warranty information made available during construction phase, to Contract Administrator for review prior to each monthly pay estimate.

.6 Assemble approved information in binder and submit upon acceptance of work.

.7 Except for items put into use with The City's permission, leave date of beginning of time of warranty until Date of Total Performance is determined.

.8 Conduct joint four-month and nine-month warranty inspection, measured from time of acceptance, by Contract Administrator.

.9 Include information contained in warranty management plan as follows:

.1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractor, Subcontractors, manufacturers or suppliers involved.

.2 Contractor's plans for attendance at four and nine-month post-construction warranty inspections.

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

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

.11 Written verification will follow oral instructions. Failure to respond will be cause for the Contract Administrator to proceed with action against Contractor.

1.09 PRE-WARRANTY CONFERENCE

.1 Meet with Contract Administrator, to develop understanding of requirements of this section. Schedule meeting prior to contract completion, and at time designated by Contract Administrator.

.2 Contract Administrator will establish communication procedures for:

.1 Notification of construction warranty defects.

.2 Determine priorities for type of defect.

.3 Determine reasonable time for response.

.3 Provide name, telephone number and address of licensed and bonded company that is authorized to initiate and pursue construction warranty work action.

.4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

END OF SECTION

1.01 SUMMARY

.1 Section includes demonstration and training provided to Owner's personnel on operation and maintenance of equipment and systems prior to scheduled date of Substantial Performance of the Work.

.2 Owner will provide list of personnel to receive training and will coordinate their attendance at agreed upon times.

.3 Coordinate and schedule demonstration and training provided by Subcontractors and Suppliers

1.02 ADMINISTRATIVE REQUIREMENTS

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

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

.3 Preparation:

.1 Verify conditions for demonstration and instructions comply with requirements.

.2 Verify designated personnel are present.

.3 Ensure testing, adjusting, and balancing has been performed, and equipment and systems are fully operational.

.4 Demonstration and Instructions:

.1 Demonstrate start-up, operation, control, adjustment, troubleshooting, servicing, and maintenance of each item of equipment at agreed upon times, at the equipment location.

.2 Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.

.3 Review contents of manual in detail to explain aspects of operation and maintenance.

.4 Prepare and insert additional data in operations and maintenance manuals when needed during instructions.

.5 Time Allocated for Instructions: Ensure amount of time required for instruction of each item of equipment or system as indicated in article 1.12.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

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

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

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

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

.6 Submit proposed dates, times, durations, and locations for demonstration and training of each item of equipment and each system for which demonstration and training is required. Allow sufficient time for training and demonstration for each item of equipment or system, or time as may be specified in technical Specifications.

.7 Consultant and Owner will review submittal and advise Contractor of any necessary revisions.

1.04 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Demonstration and Training Video Recordings: Submit two copies with Operation and Maintenance Manuals.

.1 Identification: On each copy, provide an applied label with the following information:

.1 Name of Project.

.2 Name and address of videographer.

.3 Name of Consultant.

.4 Name of Contractor.

.5 Date of video recording

1.05 QUALITY ASSURANCE

.1 When specified in individual Sections requiring manufacturer to provide authorized representative to demonstrate operation of equipment and systems:

.1 Instruct Owner's personnel.

.2 Provide written report that demonstration and instructions have been completed.

.2 Instructor Qualifications: A factory-authorized service representative experienced in operation and maintenance procedures and training.

1.06 PREREQUISITES TO DEMONSTRATION AND TRAINING

.1 Testing, adjusting, and balancing has been performed in accordance with Contract Documents.

.2 Equipment and systems are fully operational.

.3 Copy of completed operation and maintenance manual is available for use in demonstration and training.

.4 Conditions for demonstration and training comply with requirements specified in technical Specifications.

1.07 DEMONSTRATION AND TRAINING

.1 Demonstrate start up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment and system.

.2 In addition to start-up supervision and start-up instruction of Owner’s personnel required of individual equipment manufacturers and systems as noted, instruct Owner’s personnel to whatever depth necessary to fully understand operation and maintenance of all equipment and systems provided.

.3 Review instruction with Owner’s representative to ensure a thorough understanding of equipment and its operation.

1.08 ORIENTATION

.1 Provide orientation sessions to Owner's personnel to familiarize personnel with the theory of operation and sequence of operations of major pieces of equipment and systems (e.g. electrical, mechanical, etc.)

.2 Orientation to consist of both classroom and on-site sessions.

.3 Instructors: Fully prepared to provide a minimum of two four-hour sessions of intensive training for each major system. For smaller systems and equipment, shorter training sessions are acceptable.

.1 Provide additional training as required to ensure trainees have thorough understanding of system and equipment operation and trouble shooting.

.4 Instructors to provide necessary audio-visual equipment, and education training aids (literature, drawings, schematics, etc.) to convey thorough understanding of system or equipment operation and troubleshooting.

.5 Instructors to briefly review proposed training material and format with Owner prior to commencement.

1.9 ORIENTATION AND TRAINING

.1 Qualifications of Suppliers' Representatives:

.1 Instructor of equipment supplier or manufacturer must be technical person fully versed in design criteria and be fully qualified to give instruction in operation and maintenance of the equipment.

.1 Persons receiving orientation will be composed of Facilities manager who operate equipment directly. They do not carry out any maintenance or repair. They call a service technician to address any problems encountered.

1.10 ORIENTATION SESSION FORMAT

.1 Facilities Manager:

.1 Identify and explain purpose of installation.
.2 Identify and explain all controls including remote controls and alarms,
.3 identifying their locations and purpose.
.4 Explain sequence of operation and identify setpoints.
.5 Hands on try-outs for each person.
.6 Discuss most common failures and faults requiring technician support.
.7 Questions and answers.

1.11 PRESENTATION PREPARATION

.1 Orientation shall be carefully planned prior to presentation to ensure thorough coverage in limited time periods available.

.2 Provide a presentation outline and sample presentation visual, and handout materials to Owner before confirming presentation dates and locations.

.3 Orientation to include visual materials such as drawings, diagrams, and printed handouts.

.4 Instructors to provide the necessary audio-visual equipment and other aids necessary to convey thorough understanding of system and/or equipment operation and troubleshooting.

1.12 TIME ALLOCATED FOR INSTRUCTION

.1 Ensure amount of time required for instruction of each item of equipment or system as follows:

.1 Section 08 71 00 - Door Hardware:

.1 One 1/2-hour session to review and instruct personnel on specific operation of door hardware.

.2 Section 10 44 20 - Fire Extinguishers and Safety Blankets:

.1 One 1/2-hour session to review and instruct personnel on specific operation of fire extinguishers and safety blankets.

.3 Division 23 – HVAC:

.1 Two 4-hour sessions for heating/cooling systems.

.2 Two 4-hour sessions for building automation systems.

.3 Two 4-hour sessions for operators' interface for DDC system.

.4 Two 4-hour sessions for variable frequency drive systems.

.4 Division 26 – Electrical:

.1 One 4-hour session for electrical systems.

.5 Division 27 – Communications:

.1 Section 27 50 01 - Distributed Communications System:

.1 One 2-hour session.

.2 Section 27 51 23 Intercommunications and Program System:

.1 One 2-hour session for personnel, and one 4-hour session for maintenance and IT staff.

.6 Division 28 – Electronic Safety and Security

.1 Section 28 13 23 Access Control Remote Devices:

.1 One 2-hour session.

END OF SECTION

Part 1 General

1.01 SUMMARY

.1 Section Includes:

.1 Selective demolition for interior alterations.

.2 Salvage existing material, specialties, and equipment and turn over to City or reincorporated into the finished work where indicated.

1.02 DEFINITIONS

.1 Demolition: Rapid destruction of building or parts of building, following removal of hazardous materials.

1.03 REFERENCE STANDARDS

.1 American National Standards Institute (ANSI)

.1 ANSI/ASSP A10.6-2006 (R2016), Safety and Health Program Requirements for Demolition Operations

.2 Canadian Standards Association (CSA International)

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

.3 Government of Canada

.1 Canadian Environmental Protection Act, 1999 (CEPA)

.2 Canadian Environmental Assessment Act, 2012 (CEAA)

.3 Transportation of Dangerous Goods Act, 1992 (TDGA)

.4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.5 National Fire Protection Association (NFPA)

.1 NFPA 241 (2019), Standard for Safeguarding Construction, Alteration, and Demolition Operations

1.04 MATERIALS OWNERSHIP

.1 Unless otherwise indicated, demolition waste does not property of Contractor.

1.05 ADMINISTRATIVE REQUIREMENTS

.1 Site Meetings:

.1 Convene pre-demolition meeting two weeks prior to beginning work of this Section in accordance with Section 01 31 19 - Project Meetings to:

.1 Verify project requirements.

.2 Review site conditions, including requirements for photographic documentation of existing conditions.

.3 Coordination with other Subcontractors.

.2 Arrange for site visit with Contract Administrator to examine existing site conditions adjacent to demolition work, prior to start of Work.

.3 Ensure site demolition is on the meeting agenda of regularly scheduled job meetings specified in Section 01 31 19 - Project Meetings.

.4 Ensure key personnel attend.

.5 Provide written report on status of waste diversion activity at each project meeting.

.2 Scheduling: Meet project timelines without compromising specified minimum rates of material diversion.

.1 Notify Contract Administrator in writing when unforeseen delays occur.

1.06 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Certificates:

.1 Written authorization from Contract Administrator is required to deviate from haulers, facilities, receiving organizations.

1.07 QUALITY ASSURANCE

.1 Regulatory Requirements: ensure Work is performed in compliance with CEPA, CEAA, TDGA, applicable Provincial/Territorial regulations.

1.08 DELIVERY, STORAGE, AND HANDLING

.1 Store and manage hazardous materials in accordance with Section 01 35 43 - Environmental Procedures.

.2 Storage and Protection:

.1 Protect in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

.2 Protect existing items designated to remain and items designated for salvage. In event of damage to such items, immediately replace or make repairs to approval of Contract Administrator and at no cost to Contract.

.3 Remove and store materials to be salvaged, in manner to prevent damage.

.4 Store and protect in accordance with requirements for maximum preservation of material.

.5 Handle salvaged materials as new materials.

1.9 SITE CONDITIONS

.1 If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Contract Administrator. Hazardous materials will be removed by the City under a separate contract.

.1 Do not proceed until written instructions have been received from Contract Administrator.

.2 On-site storage or sale of removed items or materials is not permitted.

.3 Notify Contract Administrator before disrupting building access or services.

Part 2 Products

2.01 PERFORMANCE REQUIREMENTS

.1 Regulatory Requirements:

.1 Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

.2 Comply with ANSI/ASSE A10.6, CSA S350, and NFPA 241.

2.02 EQUIPMENT

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

Part 3 Execution

3.01 PREPARATION

.1 Inspect site with Contract Administrator and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage, and items to remain.

.2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.

.3 Notify and obtain approval of Contract Administrator two days before starting demolition.

3.02 PREPARATION

.1 Inspect site with Contract Administrator Departmental Representative DCC Representative and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage, and items to remain. Record an inventory of items and provide a copy to Contract Administrator.

.2 Disconnect, cap, plug or divert, as required, existing utilities within the building where they interfere with the execution of the work, in conformity with the requirements of the authorities having jurisdiction. Mark the location of these and previously capped or plugged services in the building and indicate location (horizontal and vertical) on the record drawings. Support, shore up and maintain pipes and conduits encountered.

.1 Immediately notify Contract Administrator of damage to any utility or service, designated to remain in place.

.2 Immediately notify the Contract Administrator should uncharted utility or service be encountered and await instruction in writing regarding remedial action.

3.03 PROTECTION

.1 Prevent movement, settlement, or damage to parts of building to remain in place. Provide bracing and shoring required.

.2 Keep noise, dust, and inconvenience to occupants to minimum.

.3 Protect building systems, services and equipment.

.4 Provide temporary dust screens, covers, railings, supports and other protection as required.

3.04 EXISTING EQUIPMENT

.1 Existing equipment shall be relocated by the City as indicated in Section 01 35 16 - Alteration Project Procedures.

3.05 SALVAGE

.1 Refer to demolition drawings and specifications for items to be salvaged for reuse and items to be turned over to the City.

.2 Items salvaged and reinstalled in Contract:

.1 Existing steel cover and steel support frame for center draining trench next to drive isle to be reused.

.2 Remove items to be reused, store as directed by Contract Administrator.

.3 Coordinate with electrical Subcontractor for disconnection of electrical services where applicable.

.3 Provide all labour and transportation equipment such as carts, dollies, and hand trucks to complete the work.

.4 Remove items carefully to prevent damage. Transport items to temporary storage areas as directed by Contract Administrator.

.5 Surplus items remain the property of the City.

3.06 REMOVAL OPERATIONS

.1 Remove elements of existing building to permit new construction.

.2 Perform demolition work in a manner to neither damage nor endanger any part of the existing building or work in progress.

.3 Demolition work indicated on drawings is schematic only. Verify all dimensions and conditions on site.

.4 Do not damage or deface existing construction, equipment or finishes indicated to remain or items indicated for salvage.

.5 Keep cutting to no more than 10% larger than outside dimensions of item penetrating another material.

.6 Trim edges of partially demolished building elements to tolerances as defined by Contract Administrator to suit future use.

.7 Make cuts with clean, true, smooth edges to minimize patchwork and to provide suitable surface for integration of new materials.

.8 Use concrete saw for cutting concrete and masonry.

.9 Use diamond core drill for cutting small diameter openings in concrete and masonry.

.10 Use of pneumatic driven jackhammers inside buildings with approval of Contract Administrator.

3.07 RESTORATION

.1 Restore areas and existing works outside areas of demolition to match condition of adjacent, undisturbed areas.

3.8 CLEANING

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

.1 Leave Work area clean at end of each day.

.2 Remove debris, trim surfaces and leave work site clean, upon completion of Work

.3 Use cleaning solutions and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

.2 Final Cleaning: Upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning.

.3 Waste Management: Separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.9 PROTECTION

.1 Repair damage to adjacent materials or property caused by selective demolition.

END OF SECTION

Part 1 General

1.01 RELATED REQUIREMENTS

.1 Section 02 41 19.14 - Selective Demolition for Minor Works

.2 Section 02 82 00.01 - Asbestos Abatement – Type 1 Precautions

.3 Section 02 82 00.02 - Asbestos Abatement – Type 2 Precautions

1.02 DEFINITIONS

.1 Dangerous Goods: Product, substance, or organism specifically listed or meets hazard criteria established in Transportation of Dangerous Goods Regulations.

.2 Hazardous Material: Product, substance, or organism used for its original purpose; and is either dangerous goods or material that will cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into the environment.

.3 Hazardous Waste: Hazardous material no longer used for its original purpose and that is intended for recycling, treatment or disposal.

.4 Hazardous Building Material: Component of a building or structure that will cause adverse impact to environment or adversely affect health of persons, animals, or plant life when altered, disturbed or removed during maintenance, renovation or demolition.

.5 Workplace Hazardous Materials Information System (WHMIS): Canada-wide system to provide 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. Provide physical and digital site copies of Safety Data Sheets. WHMIS combines federal/provincial laws.

1.03 REFERENCE STANDARDS

.1 Canadian Construction Association

- .1 Mould Guidelines for the Canadian Construction Industry, CCA 82-2004
- .2 Standard Construction Document CCA 82 “Mould Guidelines for the Canadian Construction Industry” (2004 – further referred to herein as “CCA 82”).

.2 Department of Justice, Government of Canada

- .1 Halocarbon Regulations, 2003 (FHR 2003)
- .2 PCB Regulations (SOR/2008-273)
- .3 Transportation of Dangerous Goods Act, 1992
- .4 Transportation of Dangerous Goods Regulations (SOR/2001-286)

.3 Health Canada / Workplace Hazardous Materials Information System (WHMIS)

- .1 Material Safety Data Sheets (MSDS)

.4 Government of of Manitoba

- .1 The Dangerous Goods Handling and Transportation Act C.C.S.M. c. D12
  - .1 Hazardous Waste Regulation, M.R. 195/2015
- .2 The Workplace Safety and Health Act, RSM 1987, c.W210
- .3 Workplace Safety and Health Regulation, M.R. 217/2022

1.04 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data for hazardous materials to be used by Contractor to complete the Work:

.1 Submit manufacturer's instructions, printed product literature and data sheets, and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit two copies of WHMIS SDS in accordance with Section 01 35 29 - Health and Safety Requirements to Contract Administrator for each hazardous material required prior to bringing hazardous material on site.

.3 Submit Hazardous Materials Management plan to Contract Administrator that identifies hazardous materials, usage, location, personal protective equipment requirements, and disposal arrangements.

.4 Construction/Demolition Waste Management:

.1 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating percentage of construction/demolition wastes were recycled or salvaged

.5 Low-Emitting Materials: Submit listing of adhesives and sealants used in building, comply with VOC and chemical component limits or restrictions requirements.

1.05 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle hazardous materials to complete the Work in accordance with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: Deliver hazardous materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Transport hazardous materials and wastes in accordance with Transportation of Dangerous Goods Act, Transportation of Dangerous Goods Regulations, Manitoba’s The Dangerous Goods Handling and Transportation Act and other applicable provincial regulations.

.4 Storage and Handling Requirements:

.1 Co-ordinate storage of hazardous materials to be used to complete the Work with Contract Administrator and abide by internal requirements for labelling and storage of materials and wastes.

.2 Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.

.3 Store and handle flammable and combustible materials in accordance with National Fire Code of Canada requirements.

.4 Keep no more than 45 litres of flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use.

.1 Store flammable and combustible liquids in approved safety cans bearing the Underwriters' Laboratory of Canada or Factory Mutual seal of approval.

.2 Storage of quantities of flammable and combustible liquids exceeding 45 litres for work purposes requires the written approval of the Contract Administrator.

.5 Transfer of flammable and combustible liquids is prohibited within buildings.

.6 Transfer flammable and combustible liquids away from open flames or heat-producing devices.

.7 Solvents or cleaning agents must be non-flammable or have flash point above 38 degrees C.

.8 Store flammable and combustible waste liquids for disposal in approved containers located in safe, ventilated area. Keep quantities to minimum.

.9 Observe smoking regulations, smoking is prohibited in areas where hazardous materials are stored, used, or handled.

.10 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 stored in separate containers.

.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.

.11 When hazardous waste is generated on site:

.1 Co-ordinate transportation and disposal with Contract Administrator.

.2 Comply 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 Before shipping material obtain written notice from intended hazardous waste treatment or disposal facility it will accept material and it is licensed to accept this material.

.5 Label containers with legible, visible safety marks as prescribed by federal and provincial regulations.

.6 Only trained personnel handle, offer for transport, or transport dangerous goods.

.7 Provide photocopy of shipping documents and waste manifests to Contract Administrator

.8 Track receipt of completed manifest from consignee after shipping dangerous goods. Provide photocopy of completed manifest to Contract Administrator

.9 Report discharge, emission, or escape of hazardous materials immediately to Contract Administrator and appropriate provincial authority. Take reasonable measures to control release.

.12 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.

.13 Report spills or accidents immediately to Contract Administrator, with spill report submitted within 24 hours of incident. City to be advised immediately.

.5 Include provisions for Work of this Section in Waste Reduction Workplan as outlined in Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.01 MATERIALS

.1 Description:

.1 Bring on site only quantities hazardous material required to perform Work.

.2 Maintain SDS in proximity to where materials are being used. Communicate this location to personnel who may have contact with hazardous materials.

Part 3 Execution

3.01 HAZARDOUS MATERIALS ABATEMENT

.1 Unexpected Discovery of Hazardous Materials:

.1 If materials which are required to be handled, altered, removed and/or disposed, are suspected to contain hazardous materials, all work in the areas that may disturb the material shall be stopped.

.2 Samples of the suspect material will be collected and submitted for laboratory analysis.

.3 Requirements for special precautions will be assessed by the Contract Administrator and if hazardous building materials are discovered, abatement procedures will be communicated to the Contractor.

.4 Abatement procedures will be administered by cash allowance.

.5 Contractor to provide updates on test results and remediation plans.

.2 Contractor is responsible for reviewing plans, specifications and reports to effectively manage quantity and location of hazardous materials impacting Work of this contract and such that appropriate plans and budgets are included in their bid.

3.02 CLEANING

.1 Progress Cleaning: Clean in accordance with Section 01 74 11 – Cleaning. Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 – Cleaning.

.3 Waste Management: Separate waste materials for reuse and recycling.

.1 Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.

.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 federal and 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

Part 1 General

1.01 SUMMARY

.1 Abatement shall be conducted in accordance with applicable regulations, guidelines, standards and/or best practices for such work, including, but not limited to, the following:

.1 Government of Manitoba:

.1 Manitoba Workplace Safety and Health Act and Regulation, including amendments to date of work.

.2 Manitoba Hazardous Waste Regulation MR 55/2003.

.2 SAFE Work Manitoba:

.1 Guide for Asbestos Management, 2020.

.2 Inclusion of a particular ACM in this specification is not necessarily confirmation that it will require disturbance, alteration, handling, removal or disposal. The actual methods to be used by the Contractor to complete the general Work of this Project may impact how and to what extent various ACMs will require disturbance, alteration, handling, removal or disposal.

.3 Unless otherwise determined through risk assessment conducted by the Contractor's competent person, comply with requirements of this section when performing Work that would be considered "Type 1" asbestos abatement work as defined in the SAFE Work Manitoba 2020 "Guide for Asbestos Management" for tasks involving non-friable ACMs handled in conjunction with recognized control measures, including, but not limited to:

.1 Removing non-friable products manufactured with asbestos without cutting, breaking, sanding or vibrating the materials, provided such materials are in a non-friable condition and are not rendered friable by such work.

.2 Using non-powered hand tools designed to cut, drill or abrade a non-friable manufactured product containing asbestos, as long as water is used to control fibre release and waste products disposed of as an ACM.

.3 Cutting, grinding, drilling or sanding non-friable ACMs with a power tool as long as the power tool is equipped with a HEPA filter, and water is used to control fibre release for the packaging of waste ACMs.

.4 The transportation or handling of ACM in asbestos waste containers.

.4 Deviation from the procedures outlined in this specification must be approved by the Contract Administrator prior to implementation.

.1 The Contractor may choose to combine tasks outlined in this specification section with other tasks being completed under more stringent procedures, provided that the procedures of the more stringent section will prevail for all "combined" work.

1.02 SECTION INCLUDES

.1 Requirements, applicable procedures and personal protective equipment to be utilized during abatement of ACMs of the types described herein.

1.03 RELATED REQUIREMENTS

.1 Section 02 81 01 – Hazardous Materials Use and Abatement.

.2 Section 02 41 19.14 - Selective Demolition for Minor Works

.3 Section 02 82 00.02 Asbestos Abatement Requirements Type 2 Work Procedures.

1.04 REFERENCE STANDARDS

.1 Department of Justice Canada (Jus)

.1 Canadian Environmental Protection Act, 1999 (CEPA).

.2 Transport Canada (TC)

.1 Transportation of Dangerous Goods Act, 1992 (TDG Act) 1992, (c. 34).

.2 Transportation of Dangerous Goods Regulations (T-19.01-SOR/2001-286).

.3 Government of Manitoba

.1 Manitoba Workplace Safety and Health Act and Regulation, including amendments to date of work (MB 217/2022).

.3 Manitoba Hazardous Waste Regulation MR 55/2015.

.4 SAFE Work Manitoba

.1 Guide for Asbestos Management, 2020.

1.05 DEFINITIONS

.1 Amended Water: water with non-ionic surfactant wetting agent added to reduce water tension to allow thorough wetting of fibres.

.2 Asbestos-Containing Materials (ACMs): materials that contain asbestos in amounts as listed below, and are identified under Existing Conditions including fallen materials and settled dust:

.1 A friable material containing 0.1% or greater asbestos,

.2 A non-friable material containing 1.0% or greater asbestos, and

.3 All vermiculite insulation must be treated as an ACM.

.3 Asbestos Work Area: area where work takes place which will, or may, disturb ACMs.

.4 Competent Worker: in relation to specific work, means a worker who:

.1 Is qualified because of knowledge, training and experience to perform the work.

.4 Is familiar with the provincial and federal laws and with the provisions of the regulations that apply to the work.

.5 Has knowledge of all potential or actual danger to health or safety in the work.

.5 Friable Material: means material that:

.1 When dry, can be crumbled, pulverized or powdered by hand pressure, or

.6 Is crumbled, pulverized or powdered.

.6 HEPA Vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.

.7 Non-Friable Material: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.

.8 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide protection and isolation.

.9 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must have appropriate capacity for work.

1.06 SUBMITTALS

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

.2 Submit Provincial and/or local requirements for Notice of Project Form.

.3 Submit proof of Contractor's Asbestos Liability Insurance.

.4 Submit proof satisfactory to Contract Administrator that suitable arrangements have been made to dispose of asbestos-containing waste in accordance with requirements of authority having jurisdiction.

.5 Submit to Contract Administrator necessary permits for transportation and disposal of asbestos-containing waste and proof that asbestos-containing waste has been received and properly disposed.

.6 Submit proof that all asbestos workers and/or supervisor have received appropriate training and education by a Competent Worker in the hazards of asbestos exposure, good personal hygiene and work practices while working in Asbestos Work Areas, and the use, cleaning and disposal of respirators and protective clothing.

.7 Submit proof satisfactory to Contract Administrator that employees have respirator fitting and testing. Workers must be fit tested (irritant smoke test) with respirator that is personally issued.

1.07 QUALITY ASSURANCE

.1 Regulatory Requirements: comply with Federal, Provincial and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications, more stringent requirement applies. Comply with regulations in effect at time Work is performed.

.2 Health and Safety:

.1 Perform construction occupational health and safety in accordance with applicable provincial occupational health and safety regulations.

.1 Safety Requirements: worker protection.

.1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area include:

.1 Air purifying half-mask respirator with P-100 particulate filter, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Provincial Authority having jurisdiction. The respirator to be fitted so that there is an effective seal between the respirator and the worker's face, unless the respirator is equipped with a hood or helmet. The respirator is to be cleaned, disinfected and inspected after use on each shift, or more often if necessary, when issued for the exclusive use of one worker, or after each use when used by more than one worker. The respirator to have damaged or deteriorated parts replaced prior to being used by a worker; and, when not in use, to be stored in a convenient, clean and sanitary location. The employer to establish written procedures regarding the selection, use and care of respirators, and a copy of the procedures to be provided to and reviewed with each worker who is required to wear a respirator. A worker not to be assigned to an operation requiring the use of a respirator unless he or she is physically able to perform the operation while using the respirator.

.2 Disposable-type protective clothing that does not readily retain or permit penetration of asbestos fibres. Protective clothing to be provided by the Contractor and worn by every worker who enters the work area, and the protective clothing shall consist of a head covering and full body covering that fits snugly at the ankles, wrists and neck, in order to prevent asbestos

fibres from reaching the garments and skin under the protective clothing to include suitable footwear, and to be repaired or replaced if torn.

.2 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.

.3 Before leaving Asbestos Work Area, the worker can decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing, or, if the protective clothing will not be reused, place it in a container for dust and waste. The container to be dust tight, suitable for asbestos waste, impervious to asbestos, identified as asbestos waste, cleaned with a damp cloth or a vacuum equipped with a HEPA filter immediately before removal from the work area, and removed from the work area frequently and at regular intervals.

.4 Facilities for washing hands and face shall be provided within or close to the Asbestos Work Area.

.5 Ensure workers wash hands and face when leaving Asbestos Work Area. Facilities for washing are to be supplied by the Contractor.

.6 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.

1.08 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials in accordance with Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

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

.3 Collect and separate for disposal packaging material in appropriate on-site bins for recycling.

.4 Separate and place in designated containers recyclable metal and plastic waste.

.5 Place materials defined as hazardous or toxic in designated containers.

.6 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.

.7 Fold up metal banding, flatten and place in designated area for metal recycling.

.8 Disposal of asbestos waste generated by Work activities must comply with Federal, Provincial and Municipal regulations. Dispose of asbestos waste in sealed double thickness 6 mil bags or leak proof drums. Label containers with appropriate warning labels.

.9 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

1.09 EXISTING CONDITIONS

.1 Notify Contract Administrator of suspected ACM discovered during Work and not apparent from drawings or specifications. Do not disturb such material pending instructions from Contract Administrator.

1.10 SCHEDULING

.1 Hours of Work: perform work during normal working hours as indicated in Contract Documents.

Part 2 Products

2.01 MATERIALS

.1 Drop Sheets:

.2 Polyethylene: 0.15 mm thick.

.3 FR Polyethylene: 0.15 mm thick woven fibre reinforced fabric bonded both sides with Polyethylene.

.2 Waste Containers: contain waste in two separate containers.

.1 Inner container: 0.15 mm thick sealable Polyethylene waste bag.

.2 Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 mm thick sealable Polyethylene bag.

.3 Labelling requirements: affix preprinted cautionary asbestos warning, in both official languages, that is visible when ready for removal to disposal site. Label containers in accordance with Asbestos Regulations 29 CFR 1910.1001. Label in both official languages.

.3 Tape: fibreglass-reinforced duct tape suitable for sealing Polyethylene under both dry conditions and wet conditions using Amended Water.

.4 Slow-drying sealer: non-staining, clear, water-dispersible type that remains tacky on surface for at least eight hours and designed for purpose of trapping residual asbestos fibres.

Part 3 Execution

3.01 PROCEDURES – GENERAL (ALL MATERIALS)

.1 Asbestos abatement work is to be completed in general accordance with the requirements of the SAFE Work Manitoba 2020 “Guide for Asbestos Management”. Where discrepancies exist between that document and these specifications, the more stringent will apply.

.2 Perform construction in accordance with the provisions of the applicable provincial occupational health and safety regulations.

.3 Notification to Manitoba Workplace Safety and Health to be completed prior to work resulting in the potential release of ACMs.

.4 If electrical isolations are conducted or become required during the work, then Lock Out Tag Out will be conducted in accordance with applicable regulations. All affected persons will be notified, including any facility staff, users or contractors present.

.5 Before beginning Work, isolate Asbestos Work Area using, minimum, preprinted cautionary asbestos warning signs in both official languages that are visible at access routes to Asbestos Work Area.

.4 Remove visible dust from surfaces in the work area where dust is likely to be disturbed during course of work.

.5 Use HEPA Vacuum or damp cloths where damp cleaning does not create a hazard and is otherwise appropriate.

.6 Do not use compressed air to clean up or remove dust from any surface.

.6 Prevent spread of dust from Asbestos Work Area using measures appropriate to work to be done.

.1 Use FR Polyethylene drop sheets over flooring such as carpeting that absorbs dust (or attic insulation if work is within ceiling spaces) and over flooring/surfaces in Asbestos Work Area where dust and contamination cannot otherwise be safely contained. Drop sheets are not to be reused.

.7 Wet materials containing asbestos to be abraded, cut, drilled in localized areas, scraped or otherwise disturbed unless wetting creates hazard or causes damage.

.1 Use garden reservoir type low-velocity fine-mist Sprayer.

.2 Perform Work to reduce dust creation to lowest levels practicable.

.3 Contamination of surrounding areas indicated by visual inspection by the Contract Administrator will require complete enclosure and clean-up of affected areas.

.8 Frequently and at regular intervals during Work and immediately on completion of work:

.1 Dust and waste to be cleaned up and removed using a vacuum equipped with a HEPA filter, or by damp mopping or wet sweeping and placed in a waste container; and

.2 Drop sheets to be wetted and placed in a waste container as soon as practicable.

.9 Cleanup:

.1 Place dust and asbestos-containing waste in sealed dust-tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste; wet and fold these items to contain dust, and then place in plastic bags.

.2 Clean exterior of each waste-filled bag using damp cloths or HEPA Vacuum and place in second clean waste bag immediately prior to removal from Asbestos Work Area.

.3 Seal waste bags and remove from site. Dispose of in accordance with requirements of Provincial and Federal Authority having jurisdiction. Supervise dumping and ensure that dump operator is fully aware of hazardous nature of material to be dumped and that the appropriate guidelines and regulations for asbestos disposal are followed.

.4 Perform final thorough clean-up of Work areas and adjacent areas affected by Work using HEPA Vacuum.

3.02 PROCEDURES – TASK-SPECIFIC – LOCALIZED DISTURBANCE TO ASBESTOS-CONTAINING MATERIALS USING A DRILL WITH HEPA-FILTERED DUST COLLECTION

.1 In addition to the general procedures noted in 3.1 of this Section, proceed as follows when drilling through drywall (with asbestos-containing joint compound) or asbestos-containing flooring using a drill equipped with a HEPA-filtered dust collection system:

.1 Attach dust collection attachment (shroud) to the drill.

.2 Turn on HEPA vacuum.

.3 Drill through the material. If any dust is escaping from the dust collection attachment, immediately stop work and inspect the dust attachment connection. Clean up released dust with HEPA vacuum and/or wet wiping.

.4 Place any waste generated into the asbestos waste bag.

.5 Seal all rough edges of surfaces of any remaining asbestos containing material with an ecapsulant once abatement work is completed.

3.03 PROCEDURES – Material-Specific – Removal Of Small Amounts Of Drywall (Up To 0.5 m^2)

.1 In addition to the general procedures noted in 3.1 of this Section, proceed as follows when removing small amounts (up to 0.5 m^2):

.1 Mist the drywall to be removed with the spray bottle containing amended water. Concentrate the mist on areas where seams are visible or suspected to be present and exposed edges of drywall.

.2 Turn on the HEPA vacuum and hold the hose nozzle immediately near the cut line in order to vacuum up the drywall dust as it is being cut (to prevent it from becoming airborne).

.3 Make straight cuts through the drywall using a utility knife and drywall hand saw. Do not use power tools to cut the drywall.

.4 Place the piece of drywall in the asbestos waste bag.

.5 Seal all rough edges of surfaces of any remaining asbestos containing material with an ecapsulant once abatement work is completed.

3.04 AIR MONITORING

.1 Although not anticipated to be necessary to comply with the requirements of the SAFE Work Manitoba 2020 “Guide for Asbestos Management” for Type 1 asbestos abatement work, if deemed necessary as part of the Contractor’s work program, then the Contractor shall retain an independent, competent (as described in the SAFE Work Manitoba 2020 “Guide for Asbestos Management”) third party to take air samples inside and outside of Asbestos Work Area.

.2 Air monitoring will be paid by cash allowance, refer to Section 01 21 00 – Allowances.

.3 If and when air sampling is conducted:

.1 Air sample analysis will be conducted by Phase Contrast Microscopy (PCM) using the NIOSH 7400 method: Asbestos and Other Fibers by PCM for airborne asbestos exposure analysis as per regulatory guidelines.

.2 Air sample results will be provided to the Contractor and the Contract Administrator within 8-hours of sample collection.

.3 Analysis will be conducted by qualified persons or laboratories that take part in a documented QA/QC program for such analysis.

.4 Contractor will be notified to Stop Work when airborne fibre measurements exceed 0.05 fibres/cubic centimetre, when PPE and protection factors are considered, and to correct procedures.

.1 Additional monitoring will be conducted, where possible, to verify procedural corrections were effective.

.5 If air monitoring shows that areas outside Asbestos Work Area are contaminated as determined by the Contract Administrator, Contractor will be notified to maintain and clean these areas in same manner as that applicable to Asbestos Work Area, at no additional cost to the Contract.

.4 When asbestos leakage from Asbestos Work Area has occurred, or is likely to occur, Contract Administrator may order Work shutdown and correction of deficiencies.

.5 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

3.05 INSPECTION

.1 Perform random inspection of Asbestos Work Area to confirm compliance with specification and governing authority requirements. Deviation[s] from these requirements that have not been approved in writing by Contract Administrator may result in Work stoppage, at no cost to Owner.

.2 Contract Administrator may inspect Work for:

.1 Daily adherence to specific procedures and materials.

.2 Final cleanliness and completion.

.3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

.3 When asbestos leakage from Asbestos Work Area has occurred, or is likely to occur, Contract Administrator may order Work shutdown.

.1 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

END OF SECTION

Part 1 General

1.01 SUMMARY

.1 Section Includes:

.1 Wood blocking and nailers.

.2 Wood furring and grounds.

.3 Plywood backing panels.

1.01 RELATED REQUIREMENTS

.1 Section 09 22 16 – Non-Structural Metal Framing: For and blocking in partitions.

1.02 REFERENCE STANDARDS

.1 ASTM

.1 ASTM F1667-18a, Standard Specification for Driven Fasteners: Nails, Spikes and Staples

.2 Canadian Standards Association (CSA)

.1 CAN/CSA O141-05 (R2019), Softwood Lumber

.2 CSA O151-17, Canadian Softwood Plywood

.3 National Lumber Grades Authority (NLGA)

.1 Special Products Standard for Finger-joined Structural Lumber SPS

.2 Standard Grading Rules for Canadian Lumber

1.03 QUALITY ASSURANCE

.1 Lumber Identification: By grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

1.04 WASTE MANAGEMENT AND DISPOSAL

.1 Comply with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.01 FRAMING AND STRUCTURAL MEMBERS

.1 Lumber: Unless specified otherwise, softwood, S4S, moisture content 19% (S-dry) or less, SPF western species, in accordance with following standards:

.1 CAN/CSA-O141 - Softwood Lumber.

.2 NLGA Standard Grading Rules for Canadian Lumber.

.2 Furring, Blocking and, Rough Bucks:

.1 S2S is acceptable.

.2 Board Sizes: SPF species, “Standard” or better grade.

.3 Dimension Sizes: SPF species, “Standard” light framing or better grade.

2.02 PANEL MATERIALS

.1 Canadian Softwood Plywood (CSP): CSA 0151, standard construction.

2.03 ACCESSORIES

.1 Nails, Spikes and Staples: ASTM F1667.

.2 Bolts: 12 mm diameter unless indicated otherwise, complete with nuts and washers. Hot dipped galvanized.

Part 3 Execution

3.01 INSTALLATION

.1 Comply with requirements of NBC, Part 9 supplemented by following paragraphs.

.2 Refer to Structural drawings for additional requirements.

.3 Install members true to line, levels and elevations. Space uniformly.

.4 Construct continuous members from pieces of longest practical length.

.5 Install spanning members with “crown-edge” up.

.6 Select exposed framing for appearance. Install lumber and panel materials so that grade-marks and other defacing marks are concealed or are removed by sanding where materials are left exposed. Sanding is acceptable only in locations where defacement will not be evident after finishing.

.7 Install continuous air seal under sill plates of exterior wall framing, and elsewhere indicated. Air seals of same width as sill plates.

3.02 ERECTION

.1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

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

.3 Use nailing disks for soft sheathing as recommended by sheathing manufacturer.

.4 Use fastenings of following types, except where specific type is indicated or specified:

.1 To hollow masonry, plaster and panel surfaces use toggle bolt.

.2 To solid masonry and concrete use expansion shield with lag screw, lead plug with wood screw.

.3 To structural steel use bolts through drilled hole, or welded stud-bolts or power driven self-drilling screws, or welded stud-bolts or explosive actuated stud-bolts.

3.03 FURRING AND BLOCKING

.1 Install furring and blocking as required to space-out and support casework, cabinets, surface applied fixtures and equipment, and other work as indicated.

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

3.04 ELECTRICAL EQUIPMENT BACKBOARD

.1 Install plywood backboards on 2” x 2” wood strapping along vertical edges and at 2’-0” on center for large boards.

.2 Equipment backboards:

.1 Plywood, CSP or DFP, veneer core, G1S grade, square edge, 5/8” thick.

END OF SECTION

Part 1 General

1.01 SUMMARY

.1 Section Includes Interior Finish Carpentry:

- .1 Architectural cabinet casework drawers and doors.
- .2 Edge banding for architectural cabinet casework and doors.
- .3 Stainless steel countertops with integral sink.
- .4 Architectural cabinet casework hardware.
- .5 Other shop-fabricated wood, laminate-clad, and simulated wood fabrications, veneers and flitches.

1.02 RELATED REQUIREMENTS

.1 Section 05 50 00 - Metal Fabrications: brackets and supports for millwork.

.2 Section 06 20 00 - Finish Carpentry.

.3 Section 06 41 93 - Cabinet and Drawer Hardware.

1.03 REFERENCE STANDARDS

.1 American National Standards Institute (ANSI)

- .1 ANSI A208.1 – 2016, Particleboard
- .2 ANSI/HPVA HP-1-2016, American National Standard for Hardwood and Decorative Plywood

.2 ASTM

- .1 ASTM A167, Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- .2 ASTM A653 / A653 M-[15e1], Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- .3 ASTM E1333-[14], Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates From Wood Products Using a Large Chamber
- .4 ASTM D2369-10 [(2015)e1], Standard Test Method for Volatile Content of Coatings
- .5 ASTM D2832-92 [(2016)], Standard Guide for Determining Volatile and Nonvolatile Content of Paint and Related Coatings
- .6 ASTM D5116-[10], Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products
- .7 ASTM F1667-[11e1], Standard Specification for Driven Fasteners: Nails, Spikes and Staples

.3 Architectural Woodwork Institute/Architectural Woodwork Manufacturers Association of Canada (AWI/AWMAC)

- .1 NAAWS 4.0, North America Architectural Woodwork Standards

.4 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB-71.88, Adhesive, Contact, Brushable.

.5 CSA Group

- .1 CSA B111-74 (R2003), Wire Nails, Spikes and Staples
- .2 CSA O112-M Series 1977 (R2006), Standards for Wood Adhesives

.3 CSA O112.10-08 (R2017), Evaluation of Adhesives for Structural Wood Products (Limited Moisture Exposure)

.4 CSA O115-M1982 (R2001) Hardwood and Decorative Plywood

.5 CSA O121-17, Douglas Fir Plywood

.6 CSA O141-05 (R2014), Softwood Lumber

.7 CSA O151-17, Canadian Softwood Plywood

.8 CSA O153-13, Poplar Plywood

.6 The Engineered Wood Association (APA)

.1 PS 1-[09], Structural Plywood

.7 Forest Stewardship Council (FSC)

.1 FSC-STD-01-001 [V-2], FSC Principle and Criteria for Forest Stewardship.

.8 International Organization for Standardization (ISO)

.1 ISO 14040: [2006], Environmental Management-Life Cycle Assessment - Principles and Framework

.9 National Electrical Manufacturers Association (NEMA)

.1 ANSI/NEMA LD 3-[2005] High Pressure Decorative Laminates (HPDL)

.10 National Hardwood Lumber Association (NHLA)

.1 Rules for the Measurement and Inspection of Hardwood and Cypress [V1.]1

.11 National Lumber Grades Authority (NLGA)

.1 Standard Grading Rules for Canadian Lumber [2014]

.12 Scientific Equipment and Furniture Association (SEFA)

.1 SEFA 8, Laboratory Furniture

.13 South Coast Air Quality Management District (SCAQMD), California State (SCAQMD)

.1 SCAQMD Rule 1113-[16], Architectural Coatings

.2 SCAQMD Rule 1168-[17], Adhesives and Sealants Applications

1.04 ACTION AND INFORMATION SUBMITTALS

.1 Submit in accordance with Section [01 33 00 - Submittal Procedures].

.1 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for architectural woodwork and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Shop Drawings:

.1 Indicate details of construction, profiles, jointing, fastening and other related details.

.1 Scales: Elevations (1/4” = 1’-0”), Details (1” = 1’-0”).

.2 Indicate materials, thicknesses, finishes and hardware.

.3 Indicate locations of service outlets in casework, [typical and special installation conditions], and connections, attachments, anchorage and location of exposed fastenings.

.3 Samples:

.1 Submit duplicate colour samples of laminated plastic for colour selection.

.2 Submit duplicate samples of laminated plastic joints, edging, cutouts and profiles.

1.05 CLOSEOUT SUBMITTALS

.1 Provide maintenance data for plastic laminate work for incorporation into Operation and Maintenance Manual specified in Section 01 78 00 - Closeout Submittals.

1.06 QUALITY ASSURANCE

.1 Materials:

.1 Lumber Identification: By grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

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

.2 Fabricator Qualifications:

.1 Company shall be member in good standing with the Architectural Woodwork Manufacturers Association of Canada (AWMAC) or the Architectural Woodwork Institute (AWI).

.2 Company specializing in performing work of this section with minimum [three] years documented experience.

.3 Installer Qualifications: Company specializing in performing the work of this section with minimum [three] years documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, handle, store and protect materials of this section in accordance with Section 01 61 00 - Common Product Requirements and AWMAC Architectural Woodwork Standards.

.2 Protect materials against dampness and damage during and after delivery.

.3 Store materials in ventilated areas, protected from extreme changes of temperature or humidity.

.4 Maintain relative humidity between 25 and 60% at 22°C during storage and installation.

1.08 WASTE MANAGEMENT AND DISPOSAL

.1 Comply with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.9 SITE CONDITIONS

.1 Ambient Conditions:

.1 Maintain relative humidity between 25 and 60% at 22°C during storage and installation.

.2 During and after installation of work of this section, maintain the same temperature and humidity conditions in building spaces as will occur after occupancy.

.2 Do not deliver or install casework until building is enclosed, wet work is complete, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.

1.10 WARRANTY

.1 Provide manufacturer’s warranty for laminated plastic work against defects in materials and workmanship in accordance with General Conditions, but for [two] years.

Part 2 Products

2.01 LUMBER MATERIALS

.1 Softwood Lumber: Unless specified otherwise, S4S, moisture content 4 - 9% (S-dry) or less in accordance with following standards: CAN/CSA-O141, NLGA, AWMAC/AWI.

.2 Machine stress-rated lumber is acceptable for all purposes.

.3 The manufacturing process must adhere to Lifecycle Assessment (LCA) Standards in accordance with ISO 14040/14041 LCA Standards, CSA Z760 94 Life Cycle Assessment.

.4 Hardwood Lumber: Moisture content 4 - 9 % or less in accordance with following standards: NHLA; AWMAC/AWI.

2.02 PANEL MATERIALS

.1 Douglas Fir Plywood (DFP): CSA O121, standard construction. Urea-formaldehyde free.

.2 Canadian Softwood Plywood (CSP): CSA O151, standard construction. Urea-formaldehyde free.

.3 Hardwood Plywood: CSA O115. Urea-formaldehyde free.

.4 Poplar Plywood (PP): CSA O153, standard construction. Urea-formaldehyde free.

.5 Interior Mat-Formed Wood Particleboard: ANSI A208.1.

.1 Grade: Industrial M3.

.2 Density (Minimum): 753 kg/m^3 [(47 lbs./ft^3).

.3 Moisture Content: < 8%.

.4 Formaldehyde Emissions: Not to exceed 0.15 ppm ([180] g/m) when tested in accordance with ASTM E1333.

.5 Recycled Content: [100%] recycled wood; [100%] post-consumer wood waste.

.6 SCS Certified: Post-industrial recycled wood fiber. No added urea formaldehyde.

.7 Acceptable Products: SierraPine Encore, Columbia Forest Products PBC w/Purebond, Uniboard NuGreen 2.

2.03 HIGH PRESSURE DECORATIVE LAMINATES (HPDL)

.1 As specified in Section 06 47 00 - Plastic Laminate Finishing.

2.04 ACCESSORIES

.1 Sealer: Water resistant sealer or glue acceptable to laminate manufacturer.

.2 Sealants: Mildew resistant silicone as specified in Section 07 92 00 - Joint Sealing.

.3 Draw Bolts and Splines: As recommended by fabricator.

.4 Adhesive: Recommended by manufacturer.

.5 Nails and Staples: ASTM F1667, type and size to suit application.

.6 Wood Screws: steel plain, type and size to suit application.

.7 Splines: Wood, plastic or metal.

2.05 MANUFACTURED UNITS: DECORATIVE LAMINATE CASEWORK

.1 Fabricate decorative laminate casework to AWMAC/AWI Architectural Woodwork Standards, Section 10 - Casework, with HPDL faces, custom quality grade, flush overlay style, supplemented as follows.

.2 Laminate Colours and Patterns:

.1 Selected by Consultant. Allow for three different colours or patterns.

.2 Colours for semi-exposed surfaces, regardless casework grade specified shall be selected by Consultant.

.3 Grain direction for simulated woodgrain patterned laminates shall be vertical regardless of casework grade specified.

.3 Decorative Laminate Casework:

.1 Case Bodies (Ends, Divisions and Bottoms): Particleboard, 3/4-inch thick. Laminated with HPDL [VGS] grade, self edge.

.2 Backs: Particleboard, 5/8-inch thick. Laminated with HPDL VGS grade.

.3 Shelving: Particleboard, not less than 3/4” thick. Laminated with HPDL grade, 3 mm PVC edge. Edge band all four edges of adjustable shelves.

.4 Toe Kicks: Concealed behind finish flooring unfinished at mill option. Where exposed laminate with matching HPDL.

.4 Drawers:

.1 Sides and Backs: Particleboard, 1/2” thick. Laminated with HPDL, VGS grade thermofused melamine.

.2 Bottoms: Particleboard, 1/2” thick. Laminated with HPDL, VGS grade thermofused melamine.

.3 Fronts: Particleboard 3/4” thick. Laminated with HPDL VGS grade, 3 mm PVC edge.

.5 Casework Doors:

.1 Particleboard 3/4” thick. Laminated with HPDL, VGS grade, 3 mm PVC edge.

2.06 COUNTERTOPS

.1 High Pressure Decorative Laminate (HPDL) Countertops - Self-Edge:

.1 Countertops and Splashbacks: AWMAC/AWI Architectural Woodwork Standards, Section 11, premium grade

.2 Type: One piece, factory laminated.

.3 Finish: HPDL, HGS grade.

.4 Core: particleboard 3/4” thick.

.5 Core: veneer core plywood at sinks, Grade B or better, sanded, 3/4” thick.

.6 Front Edge: self-edge with narrow build-up.

.7 Splash-To-Top Joint: self-edge with butt splash.

.8 Splash Top: square.

.2 Sheet Metal Tops:

.1 Core: Veneer core plywood, 3/4” thick.

.2 Sheet Metal: stainless steel sheet, 1.59 mm thick.

.3 Clad countertops indicated with sheet metal bonded to core with adhesive, ensuring full bond without voids or air bubbles. Brake form sheet metal to follow profile of formed edges. Wrap edges and fold under minimum 1/2”.

.4 Fabricate splashback, top, and front edge in single piece. Provide sheet metal in lengths up to 8'-0". Provide tight, butt joints sealed with silicone sealant where joints are required.

.5 Seal underside of tabletops and long span countertops to prevent warping. Provide balance construction.

2.07 CABINET FABRICATION

.1 Set nails and countersink screws apply plain wood filler to indentations, sand smooth and leave ready to receive finish.

.2 Shop install cabinet hardware for doors, shelves and drawers.

.3 Shelving to cabinetwork to be adjustable unless otherwise noted.

.4 Space gables, legs or brackets supporting countertops at not more than 42" on centre, unless otherwise indicated.

.5 Provide equal width filler panels at both ends of cabinet runs; maximum width 2".

.6 Provide cut outs for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.

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

.8 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.

.9 Ensure adjacent parts of continuous work match in colour, pattern, and grain direction.

Part 3 Execution

3.01 INSTALLATION

.1 Do architectural woodwork to AWMAC Architectural Woodwork Standards, except where specified otherwise.

.2 Install millwork at locations shown on drawings. Position accurately, level, plumb straight. Install work plumb, true and square, neatly scribed to adjoining surfaces.

.3 Fasten and anchor millwork securely. Provide heavy-duty fixture attachments for wall mounted cabinets.

.4 Use draw bolts in countertop joints. Make flush, level hairline joints.

.5 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, columns, fixtures, outlets or other projecting, intersecting or penetrating objects.

.6 Provide cut outs for inserts, grilles, appliances, outlet boxes and other penetrations. Round internal corners, chamfer edges and seal exposed core.

.7 Make allowances around perimeter where fixed objects pass through or project into laminated plastic work to permit normal movement without restriction.

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

3.02 CABINET HARDWARE

.1 Fit hardware accurately and securely in accordance with manufacturer's written instructions.

3.03 CLEANING

.1 Clean millwork and cabinet work inside cupboards and drawers and outside surfaces.

.2 Remove excess glue from surfaces.

.3 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.4 Perform care and cleaning of plastic laminate surfaces with NEMA LD 3, Annex B.

.5 Remove traces of primer, caulking, epoxy and filler materials; clean doors and frames.

3.04 PROTECTION

.1 Protect millwork and cabinet work from damage until final inspection.

.2 Cover finished surfaces with heavy kraft paper or put in cartons during shipment. Protect surfaces by approved means. Do not remove until immediately before final inspection.

END OF SECTION

Part 1 General

1.01 SUMMARY

.1 Section Includes:

.1 Plastic-laminate-clad architectural cabinets.

1.02 RELATED REQUIREMENTS

.1 Section 06 10 00 - Rough Carpentry: For wood furring, blocking, shims, and hanging strips required for installing cabinets that are concealed within other construction before cabinet installation.

.2 Section 06 41 93 – Cabinet and Miscellaneous Hardware.

1.03 ABBREVIATIONS AND ACRONYMS

.1 BKL: Backing Sheet Grade, intended for non-decorative surfaces; light duty use backing sheet for minimizing warpage and moisture control of laminate panels,

.2 HGS: General Purpose Grade, recommended for horizontal and vertical interior applications.

.3 PVC: Polyvinyl Chloride

.4 VGS: Vertical surface.

1.04 REFERENCE STANDARDS

.1 ASTM International

.1 ASTM E84-21a, Standard Test Method for Surface Burning Characteristics of Building Materials

.2 American National Standards Institute (ANSI)

.1 ANSI A208.2-2022, Medium Density Fiberboard (MDF) Standard for Interior Applications

.3 North American Architectural Woodwork Standards (NAAWS), jointly sponsored by the Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada (AWI/AWMAC)

.1 NAAWS 4.0, North America Architectural Woodwork Standards

.4 International Code Council – Evaluation Services (ICC-ES)

.5 National Electrical Manufacturers Association (NEMA)

.1 ANSI/NEMA LD 3 2005, High-Pressure Decorative Laminates

.6 The Engineered Wood Association (APA)

1.05 ADMINISTRATIVE REQUIREMENTS

.1 Preinstallation Meetings

.1 Preinstallation Conference: Conduct conference at Project site.

.2 Coordination:

.1 Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to support loads imposed by installed and fully loaded cabinets.

.3 Hardware Coordination:

.1 Distribute copies of approved hardware schedule specified in Section 08 71 00 - Door Hardware to manufacturer of architectural cabinets; coordinate Shop Drawings and fabrication with hardware requirements.

1.06 ACTION SUBMITTALS

.1 Product Data: For each type of product.

.1 Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

.2 Shop Drawings:

.1 Include plans, elevations, sections, and attachment details.

.2 Show large-scale details.

.3 Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.

.4 Show locations and sizes of cutouts and holes for items installed in plastic-laminate architectural cabinets.

.3 Samples: For each exposed product and for each colour and texture specified, in manufacturer's or manufacturer's standard size.

.4 Samples for Initial Selection: For each type of exposed finish.

.5 Samples for Verification: For the following:

.1 Plastic Laminates: 8 by 10 inches, for each type, colour, pattern, and surface finish required.

.1 Provide one sample applied to core material with specified edge material applied to one edge.

.2 Thermoset Decorative Panels: 8 by 10 inches for each colour, pattern, and surface finish.

.1 Provide edge banding on one edge.

.3 Exposed Cabinet Hardware and Accessories: One full-size unit for each type and finish.

1.07 INFORMATIONAL SUBMITTALS

.1 Qualification Data: For manufacturer and Installer.

.2 Product Certificates: For the following:

.1 Thermoset decorative panels.

.2 High-pressure decorative laminate.

.3 Adhesives.

.3 Evaluation Reports: For fire-retardant-treated materials, from ICC-ES.

.4 Field quality-control reports.

1.8 QUALITY ASSURANCE

.1 Manufacturer's Qualifications: Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

.1 Manufacturer's Certification: Licensed participant in AWI's Quality Certification Program.

.2 Installer Qualifications: Licensed participant in AWI's Quality Certification Program.

1.9 DELIVERY, STORAGE, AND HANDLING

.1 Do not deliver cabinets until painting and similar finish operations that might damage architectural cabinets have been completed in installation areas. Store cabinets in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" article.

1.10 SITE CONDITIONS

.1 Environmental Limitations: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

.2 Environmental Limitations: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F and relative humidity between 43 and 70 percent during the remainder of the construction period.

.3 Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

.1 Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed/concealed by construction and indicate measurements on Shop Drawings.

.4 Established Dimensions: Where cabinets are indicated to fit to other construction, establish dimensions for areas where cabinets are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

Part 2 Products

2.01 WOOD MATERIALS

.1 Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.

.1 Wood Moisture Content: 8 to 13 percent.

.2 Composite Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.

.1 Particleboard (Medium Density): ANSI A208.1, Grade M-2, Grade M-2-Exterior Glue.

.2 Softwood Plywood: DOC PS 1, medium-density overlay.

.3 Thermoset Decorative Panels: Particleboard or MDF finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for Test Methods 3.3, 3.4, 3.6, 3.8, and 3.10.

2.02 MISCELLANEOUS MATERIALS

.1 Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber kiln-dried to less than 15 percent moisture content.

.2 Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

.3 Adhesive for Bonding Plastic Laminate: Unpigmented contact cement.

.1 Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.

.4 Cabinet Hardware and Accessories

.1 Provide cabinet hardware in accordance with Section 06 41 93.

2.03 PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

.1 Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of cabinets indicated for construction, finishes, installation, and other requirements.

.1 [Provide labels and certificates from AWI certification program indicating that woodwork and installation complies with requirements of grades specified.]

.2 The Contract Documents contain requirements that are more stringent than the referenced quality standard. Comply with requirements of Contract Documents in addition to those of the referenced quality standard.

.2 Architectural Woodwork Standards Grade: Custom.

.3 Type of Construction: Frameless.

.4 Door and Drawer-Front Style: Flush overlay.

.5 High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by quality standard.

.1 Acceptable Products:

.1 PLAM-1:

.2 PLAM-2:

.6 Laminate Cladding for Exposed Surfaces:

.1 Horizontal Surfaces: Grade HGS.

.2 Vertical Surfaces: Grade HGS.

.3 Edges: PVC edge banding, 3 mm thick, matching laminate in colour, pattern, and finish.

.4 Pattern Direction: As indicated.

.7 Materials for Semi Exposed Surfaces:

.1 Surfaces Other Than Drawer Bodies: High-pressure decorative laminate, NEMA LD 3, Grade VGS

.1 Edges of Plastic-Laminate Shelves: PVC tape, 2 mm thickness at front edge, matching laminate in colour, pattern, and finish

.2 Edges of Thermoset Decorative Panel Shelves: PVC or polyester edge banding.

.3 For semi exposed backs of panels with exposed plastic-laminate surfaces, provide surface of high-pressure decorative laminate, NEMA LD 3, Grade VGS.

.2 Drawer Sides and Backs: Thermoset decorative panels with PVC or polyester edge banding.

.3 Drawer Bottoms: ½" Thermoset decorative panels.

.8 Concealed Backs of Panels with Exposed Plastic-Laminate Surfaces: High-pressure decorative laminate, NEMA LD 3, Grade BKL.

.9 Drawer Construction: Fabricate with exposed fronts fastened to sub front with mounting screws from interior of body.

.1 Join sub fronts, backs, and sides with [glued rabbeted joints supplemented by mechanical fasteners or glued dovetail joints.

.10 Colours, Patterns, and Finishes: Provide materials and products that result in colours and textures of exposed laminate surfaces complying with the following requirements:

.1 As indicated by laminate manufacturer's designations.

.2 Match Consultant's sample.

.3 As selected by Consultant from laminate manufacturer's full range in the following categories:

.1 Solid colors, matte finish.

.2 Wood grains, matte finish.

.3 Patterns, matte finish.

2.04 FABRICATION

.1 Fabricate architectural cabinets to dimensions, profiles, and details indicated.

.2 Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

.1 Notify Consultant seven days in advance of the dates and times architectural cabinet fabrication will be complete.

.2 Trial fit assemblies at manufacturer's shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements before disassembling for shipment.

.3 Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

.4 Install glass to comply with applicable requirements in Section 08 80 00 "Glazing" and in GANA's "Glazing Manual."

.1 For glass in frames, secure glass with removable stops.

.2 For exposed glass edges, polish and grind smooth.

Part 3 Execution

3.01 PREPARATION

.1 Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.

3.02 INSTALLATION

.1 Architectural Woodwork Standards Grade: Install cabinets to comply with quality standard grade of item to be installed.

.2 Assemble cabinets and complete fabrication at Project site to extent that it was not completed in the shop.

.3 Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with wafer-head cabinet installation screws.

.4 Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches using concealed shims.

.1 Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

.2 Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.

.3 Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches o.c. with No. 10 wafer-head screws sized for not less than 1-1/2-inch penetration into wood framing, blocking, or hanging strips] [No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish] [toggle bolts through metal backing or metal framing behind wall finish].

3.03 FIELD QUALITY CONTROL

.1 Inspections: Provide inspection of installed Work [through AWI's Quality Certification Program] certifying that woodwork, including installation, complies with requirements of the [specifications] [Architectural Woodwork Standards] for the specified grade.

.1 Inspection entity shall prepare and submit report of inspection.

3.04 ADJUSTING AND CLEANING

.1 Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects. Where not possible to repair, replace architectural cabinets. Adjust joinery for uniform appearance.

.2 Clean, lubricate, and adjust hardware.

.3 Clean cabinets on exposed and semi -surfaces.

END OF SECTION

Part 1 General

1.01 RELATED REQUIREMENTS

.1 Section 06 40 00 - Architectural Woodwork: Cabinets and finish carpentry.

.2 Section 06 41 16 – Plastic Laminate Clad Architectural Cabinets.

1.02 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data: Provide manufacturer's printed product literature, specifications and data sheets for each item.

.3 Hardware List: Indicate specified hardware, including make, model, material, function, finish and other pertinent information.

.4 Manufacturer's Instructions: Submit manufacturer's installation instructions.

.5 Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.

.6 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.03 CLOSEOUT SUBMITTALS

.1 Provide maintenance data, parts list, and manufacturer's instructions for incorporation into maintenance manual specified in Section 01 78 00 - Closeout Submittals.

1.04 EXTRA MATERIALS

.1 Provide extra materials in accordance with Section 01 78 00 – Closeout Submittals consisting of the following:

.1 Cabinet hardware: 5% of stock specified.

.2 Extra materials to be of same production run and dye lot as installed materials.

.3 Wrap each separately and protect with plastic or heavy-duty craft paper. Identify contents. Leave unopened packages in original condition.

.4 Deliver to site and store where directed. Provide written receipt, signed by Contractor, verifying delivery.

1.05 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Package items of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.

.3 Store cabinet hardware in locked, clean and dry area.

1.06 WASTE MANAGEMENT AND DISPOSAL

.1 Comply with Section 01 74 21 - Construction/Demolition Waste Management and Disposal, and Waste Reduction Work Plan.

Part 2 Products

2.01 SOURCE QUALITY CONTROL

.1 Use one manufacturer's product for all similar items.

2.02 CABINET HARDWARE

.1 Cabinet Door Hinges:

.1 Concealed Hinge (frameless cabinets, flush overlay doors): Steel nickel plated, self-closing, adjustable, 170° opening.

.1 Acceptable Product: Hettich Intermat; Blum Clip Top; Mepla CST Twin NT.

.2 Cabinet Pulls

.1 Cabinet Door and Drawer Pulls: Modern Metal Pull - 873, 10 mm square, 160 mm centre-to-centre, brushed nickel finish.

.1 Acceptable Product: Richelieu BP873160195.

.3 Cabinet Drawer Slides:

.1 Medium duty telescoping slide for drawers up to 16 inch wide, telescoping, steel zinc plated, steel ball bearings, side mount, load rating 100 lbs/pr, full extension, self-closing, detent out.

.1 Acceptable Product: Accuride 3832DO; Hettich KA5632.

.2 Medium duty telescoping slide for drawers over up to 24 inch wide, steel zinc plated, steel ball bearings, load rating 100 lbs/pr, side mount, full extension, self-closing.

.1 Acceptable Product: Accuride 7432.

.4 Cabinet Shelf Supports:

.1 Cabinet Shelf Support and Sleeve: Metal with steel pin for 5 mm diameter hole, nickel finish.

.1 Acceptable Product: Richelieu 5834180.

2.03 FASTENINGS

.1 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.

.2 Exposed fastening devices to match finish of hardware.

.3 Use fasteners compatible with material through which they pass.

2.04 MISCELLANEOUS

.1 Floating Wall Mount Bracket:

.1 Steel bracket mechanically fastened to side of steel stud with blocking by GC. Length to suit.

.1 Acceptable Product: Centerline Brackets.

.2 Location: Boardroom 111, Lunchroom / Meeting Room 122.

.2 Heavy-Duty Bracket:

.1 Steel bracket, textured powder-coat finish, colour white, 1,000 lb load capacity per pair, size 21" length.

.1 Acceptable Product: Kolossus Heavy-Duty Workstation Bracket.

.2 Location: Kitchen 103, Lunchroom 104

Part 3 Execution

3.01 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.02 INSTALLATION

.1 Install hardware to standard hardware location dimensions in accordance with manufacturer's recommendations and to project design requirements.

.2 Install key control cabinet and establish key control set-up.

3.03 ADJUSTING

.1 Adjust cabinet hardware for optimum, smooth operating condition.

.2 Lubricate hardware and other moving parts.

.3 Adjust cabinet door hardware to provide tight fit at contact points with frames.

3.04 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturers' instructions.

.3 Remove protective material from hardware items where present.

.4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.05 DEMONSTRATION

.1 Maintenance Staff Briefing.

.1 Brief Maintenance Staff Regarding:

.1 Proper care, cleaning, and general maintenance of projects complete hardware.

.2 Description, use, handling, and storage of keys.

.2 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

END OF SECTION

Part 1 General

1.01 RELATED REQUIREMENTS

.1 Section 06 40 00 - Architectural Woodwork: For cabinet and base units requiring plastic laminate finishing.

1.02 REFERENCE STANDARDS

.1 ASTM
- .1 ASTM D2369-10(2015)e1, Standard Test Method for Volatile Content of Coatings
- .2 ASTM D2832-92(R2011), Standard Guide for Determining Volatile and Nonvolatile Content of Paint and Related Coatings
- .3 ASTM D5116-17, Standard Guide For Small-Scale Environmental Chamber Determinations of Organic Emissions From Indoor Materials/Product

.2 Canadian Standards Group (CSA)
- .1 CSA O121-08, Douglas Fir Plywood
- .2 CSA O151-09, Canadian Softwood Plywood
- .3 CSA O153-M1980(R2008), Poplar Plywood

.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
- .1 Safety Data Sheets (SDS).

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

.5 Scientific Equipment and Furniture Association (SEFA)
- .1 SEFA 8, Laboratory Furniture.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section [01 33 00 - Submittal Procedures].

.2 Product Data:
- .1 Submit manufacturer's instructions, printed product literature and data sheets for [laminate, adhesive, and core materials] and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Samples:
- .1 Submit for review and acceptance of each unit.
- .2 Samples will be returned for inclusion into work.
- .3 Submit duplicate samples of joints, edging, cutouts and postformed profiles.

.4 Certifications: Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.5 Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.

.6 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.04 CLOSEOUT SUBMITTALS

.1 Provide maintenance data for laminate work for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.05 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect laminate, adhesive, and core materials from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

1.06 WASTE MANAGEMENT AND DISPOSAL

.1 Comply with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.07 EXTENDED WARRANTY

.1 Contractor warrants that laminated plastic work will not warp, bubble, blister or delaminate in accordance with General Conditions, but for two years.

Part 2 Products

2.01 MANUFACTURERS

.1 Source Limitations

.1 Obtain plastic laminate finishing components from single manufacturer.

.2 Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

.1 Arborite as manufactured by Arborite High Pressure Laminates

.2 Wilsonart as manufactured by Wilsonart LLC.

.3 Nevamar and Pionite as manufactured by Panolam Industries International, Inc.

2.02 HIGH PRESSURE DECORATIVE LAMINATES (HPDL)

.1 Laminated Plastic for Flatwork: To NEMA LD 3

.1 Type: General purpose.

.2 Grade and thickness: VGS 0.7 mm (0.028 inches) as specified by item.

.3 Pattern: woodgrain.

.4 Finish: textured.

.2 Laminated Plastic for Backing Sheet: To NEMA LD 3.

.1 Type: Backer

.2 Grade: BKH as specified by item.

.3 Size (thickness): Same thickness as face laminate but not less than 0.5 mm (0.020”).

2.03 ACCESSORIES

.1 PVC Edge Banding: Extruded, thermoplastic, solid colour through PVC, 2 mm or 3 mm thick, simulated woodgrain pattern selected by Consultant.

.1 Acceptable products: Woodtape.

.2 Laminated Plastic Adhesive: urea resin adhesive to CSA O112.10, contact adhesive to CAN/CGSB-71.20, resorcinol resin adhesive to CSA O112.10, polyvinyl adhesive to CSA O112.10, two component epoxy thermosetting adhesive.

.1 Test for acceptable VOC emissions in accordance with ASTM D2369 and ASTM D2832.

.2 VOC limit maximum to SCAQMD Rule 1168 GS-36.

.3 Sealer: Water resistant sealer or glue acceptable to laminate manufacturer.

.1 Test for acceptable VOC emissions to ASTM D2369 and ASTM D2832.

.2 VOC limit: maximum to SCAQMD Rule 1113.

.3 Chemical restrictions to SCAQMD Rule 1113.

.4 Sealants:

.1 Test for acceptable VOC emissions to ASTM D2369 and ASTM D2832.

.2 VOC Limit: 5% by weight.

.1 Chemical restrictions to SCAQMD Rule 1113.

.3 Draw Bolts and Splines: As recommended by fabricator.

2.04 FABRICATION

.1 Comply with NEMA LD3, Annex A.

.2 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.

.3 Ensure adjacent parts of continuous laminate work match in colour and pattern.

.4 Veneer laminated plastic to core material in accordance with adhesive manufacturer's instructions. Ensure core and laminate profiles coincide to provide continuous support and bond over entire surface. Use continuous lengths up to 10'-0".

.5 Keep joints 2'-0" from sink cutouts.

.6 Use straight self-edging laminate strip for flat work to cover exposed edge of core material. Chamfer exposed edges uniformly at approximately 20 degrees. Do not miter laminate edges.

.7 Form shaped profiles and bends as indicated using post-forming grade laminate to laminate manufacturer's instructions.

.8 Use PVC edging to cover exposed edge of core material where indicated.

.9 Apply laminate backing sheet to reverse side of core of plastic laminate work, except where specified otherwise.

Part 3 Execution

3.01 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: Comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.02 INSTALLATION

.1 Install work plumb, true and square, neatly scribed to adjoining surfaces.

.2 Make allowances around perimeter where fixed objects pass through or project into laminated plastic work to permit normal movement without restriction.

.3 Use draw bolts and splines in countertop joints. Maximum spacing 450 mm on centre, 75 mm from edge. Make flush hairline joints.

.4 Provide cutouts for inserts, grilles, appliances, outlet boxes and other penetrations. Round internal corners, chamfer edges and seal exposed core.

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

3.03 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
- .1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .1 Clean to NEMA LD3, Annex B.
- .2 Remove traces of primer, caulking, epoxy and filler materials and clean doors and frames.

3.04 PROTECTION

.1 Cover finished laminated plastic veneered surfaces with heavy kraft paper or put in cartons during shipment.

.2 Protect installed laminated surfaces in accordance with manufacturer's written recommendations.
- .1 Remove protection only immediately before final inspection.

.3 Protect installed products and components from damage during construction.

.4 Repair damage to adjacent materials caused by laminate, adhesive, and core materials installation.

END OF SECTION

Part 1 GENERAL

1.01 SUMMARY

.1 Section Includes:

.1 Partial tear-off of select roof at areas for roof top equipment as indicated on Drawings.

.2 Temporary roofing.

1.02 RELATED REQUIREMENTS

.1 Section 06 10 00 - Rough Carpentry: For blocking and plywood.

1.03 DEFINITIONS

.1 Partial Roof Tear-Off: Removal of selected components and accessories from existing roofing system.

.2 Roofing Terminology: Definitions in ASTM D1079 and glossary of NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" apply to work of this Section.

1.04 REFERENCE STANDARDS

.1 ASTM International

.1 ASTM C1177/C1177M-17, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing

.2 ASTM D41/D41M-11 (2016), Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing

.3 ASTM D312/D312M-16a, Standard Specification for Asphalt Used in Roofing

.4 ASTM D1079-20, Standard Terminology Relating to Roofing and Waterproofing

.5 ASTM D2178/D2178M-15a (2021), Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing

.6 ASTM D4601/D4601M-04 (2020), Standard Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing

.2 Canadian Standards Association (CSA)

.1 CSA O437 Series-93 (R2011), Standards on OSB and Waferboard

.3 CRCA (Canadian Roofing Contractors' Association)

.1 CRCA Roofing Specifications Manual.

.4 Underwriters Laboratory Canada (ULC)

.1 CAN/ULC-S701.1-2017, Standard for Thermal Insulation, Polystyrene, Boards

1.05 PREINSTALLATION MEETINGS

.1 Preliminary Roofing Conference: Before starting removal Work, conduct conference at Project site.

.2 Meet with Owner, Consultant, roofing Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.

.3 Review methods and procedures related to partial roofing tear-off, including, but not limited to, the following:

.1 Reroofing preparation, including roofing system manufacturer's written instructions.

.2 Temporary protection requirements for existing roofing system components that are to remain.

.3 Existing roof drains and roof drainage during each stage of reroofing, and roof-drain plugging and plug removal.

.4 Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to avoid delays.

.5 Existing roof deck conditions requiring Consultant notification.

.6 Existing roof deck removal procedures and Owner notifications.

.7 Condition and acceptance of existing roof deck and base flashing substrate for reuse.

.8 Structural loading limitations of roof deck during reroofing.

.9 Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that affect reroofing.

.10 HVAC shutdown and sealing of air intakes.

.11 Shutdown of fire-suppression, -protection, and -alarm and -detection systems.

.12 Governing regulations and requirements for insurance and certificates if applicable.

.13 Existing conditions that may require Consultant notification before proceeding.

1.06 ACTION SUBMITTALS

.1 Product Data: For each type of product.

.2 Temporary Roofing Submittal: Product data and description of temporary roofing system.

.1 If temporary roof remains in place, include surface preparation requirements needed to receive permanent roof, and submit a letter from roofing manufacturer stating acceptance of the temporary roof and that its inclusion does not adversely affect the new roofing system's resistance to fire and wind rating.

1.07 INFORMATIONAL SUBMITTALS

.1 Qualification Data: For Installer.

.1 Include certificate that Installer is approved by warrantor of existing roofing system.

.2 Include certificate that Installer is licensed to perform asbestos abatement.

.2 Field Test Reports:

.1 Fastener pull-out test report.

.3 Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, that might be misconstrued as having been damaged by reroofing operations.

.1 Submit before Work begins.

1.08 QUALITY ASSURANCE

.1 Regulatory Requirements:

.1 Comply with governing EPA notification regulations before beginning roofing removal.

.2 Comply with hauling and disposal regulations of authorities having jurisdiction.

1.09 SITE CONDITIONS

.1 Existing Roofing System: SBS-modified bituminous.

.1 As indicated on Drawings

.2 Owner will occupy portions of building immediately below reroofing area.

.1 Coordinate work activities daily with Owner so Owner has adequate advance notice to place protective dust and water-leakage covers over sensitive equipment and furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below work area.

.2 Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below affected area.

.1 Verify that occupants below work area have been evacuated before proceeding with work over impaired deck area.

.3 Protect building to be reroofed, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.

.4 Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

.5 Conditions existing at time of inspection for bidding will be maintained by Owner as far as practical.

.6 Limit construction loads on existing roof areas to remain, and existing roof areas scheduled to be reroofed for rooftop equipment wheel loads and for uniformly distributed loads.

.7 Existing roof will be left no less watertight than before removal.

.8 Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.

.1 Remove only as much roofing in one day as can be made watertight in the same day.

.9 Hazardous Materials: It is not expected that hazardous materials, such as asbestos-containing materials, will be encountered in the Work.

.1 If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Consultant and Owner.

.2 Hazardous materials will be removed by Owner under a separate contract.

1.10 WARRANTY

.1 Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during reroofing, by methods and with materials so as not to void existing roofing system warranty.

.1 Notify warrantor before proceeding with the Work.

.2 Notify warrantor of existing roofing system on completion of reroofing, and obtain documentation verifying that existing roofing system has been inspected and warranty remains in effect.

.1 Submit documentation at Project closeout.

Part 2 Products

2.01 TEMPORARY PROTECTION MATERIALS

.1 Expanded Polystyrene Sheathing: CAN/ULC-S701, Type 4.

.1 Douglas Fir Plywood (DFP): CSA 0121, standard construction.

.2 Canadian Softwood Plywood (CSP): CSA 0151, standard construction.

.3 Poplar Plywood (PP): CSA 0153, standard construction.

.4 Mat-Formed Structural Panelboards (OSB Wafer): CSA O437.

2.02 TEMPORARY ROOFING MATERIALS

.1 Design and selection of materials for temporary roofing are Contractor's responsibilities.

.2 Sheathing Paper: Red-rosin type, minimum 0.16 kg/sq. m.

.3 Base Sheet: ASTM D4601/D4601M, Type II, nonperforated, asphalt-impregnated and -coated, glass-fiber sheet.

.4 Glass-Fiber Felts: ASTM D2178/D2178M, Type IV, asphalt-impregnated, glass-fiber felt.

.5 Asphalt Primer: ASTM D41/D41M.

.6 Roofing Asphalt: ASTM D312/D312M, Type III or IV.

.7 Base Sheet Fasteners: Capped head, factory-coated steel fasteners, listed in FM Approvals' RoofNav.

2.03 INFILL REPLACEMENT MATERIALS

.1 Roofing System Infill Materials:

.1 SBS Membrane Roof Type:

.1 Cap Sheet Membrane: Non-woven polyester reinforcement and thermofusible elastomeric asphalt mix of selected bitumen and SBS.

.1 Acceptable Products:

.1 IKO Torchflex TP-HD-Cap

.2 SopraPly Traffic Cap.

.2 Thickness: 4.0 mm.

.3 Weight: 4.8 kg/m^2.

.4 Selvedge Width: 75 to 90 mm.

.5 Surface: Granules.

.6 Underface: Thermofusible plastic film.

.7 Performance Characteristics:

.1 Compliance: CSA A123.23, Type C, Grade 1.

.2 Fire Rated: CAN/ULC-S107 Class A standard.

.2 Fibre Board:

.1 Semi-rigid roofing support panel composed of a mineral-reinforced asphaltic core between two asphalt-saturated fibreglass liners. Length of 1.2 m, width of 1.5 m and thickness of 6.4 mm.

.1 Acceptable Products:

.1 IKO Protectoboard

.2 Soprema Sopraboard.

.3 Rigid Insulation Tapered Shapes (Above Field Layer): Rigid Closed Cellular Polyisocyanurate Insulation (ISO) as specified in paragraph 2.03.1.4.

.4 Rigid Insulation (Field):

.1 Rigid Closed Cellular Polyisocyanurate Insulation (Field Lower Layer) (ISO): CAN/ULC-S704.

.1 Acceptable Products:

.1 IKO Therm III

.2 Soprema Sopra ISO Plus.

.2 Surface: Polymer coated glass fibres.

.3 Underface: Polymer coated glass fibres.

.4 Board Size: 1 219 by 1 219 mm thickness indicated.

.5 Edges: Shiplapped.

.2 Performance Characteristics:

.1 Thermal Resistance (LTTR) 25.40 mm: RSI 1.00.

.2 Compressive Strength ASTM D1621: 138 kPa (Type II).

.3 Density ASTM D1622: 32 kg/m3.

.4 Water Absorption ASTM C209: 1.0 to 3.5 %.

.5 Flame Spread: less than 500.

.5 Vapour Retarder:

.1 Self Adhesive Vapour Retarder: Membrane composed of SBS and a tri-laminated woven polyethylene facer. The underface is covered with a silicone release film.

.1 Acceptable Products:

.1 IKO MVP

.2 Soprema Sopravap'R

.2 Thickness: 0.8 to 1.2 mm minimum.

.3 Surface: Tri-laminate woven polyethylene.

.4 Underface: Silicone release film.

.5 Selvage Edge: 75 mm.

.2 Performance Characteristics:

.1 Water Vapour Transmission: 2.5 to 4.00 ng/Pa s m²·s tested to ASTM E96 (Procedure B).

.2 Air permeability (ASTM E2178): < 0.001 L/s•m2

.2 Deck Covering:

.1 Glass Mat, Gypsum Board - Type X: ASTM C1177/C1177M, Type X, water resistant treated core, glass matt facing with treated surface, thickness 16 mm.

.1 Acceptable Products: GP Gypsum DensDeck DuraGuard Fireguard Type X Roof Board.

.3 Wood blocking, curbs, and nailers are specified in Section 06 10 00.

.4 Plywood roof sheathing is specified in Section 06 10 00.

.5 Fasteners: Factory-coated steel fasteners with metal or plastic plates.

1.01 PRIMERS, SEALERS, ADHESIVES

.1 Waterproofing Flashings:

.1 Single-component, polyurethane- and bitumen-based waterproofing coating.

.1 Acceptable Products: Manufacturers standard for roof assembly specified.

.2 Pitch Pocket Filler: Aluminum coloured, solvent and SBS modified bitumen-based mastic.

.3 Roofing Adhesive: Low-rise, two-part polyurethane adhesive used to adhere insulation boards and cover panels.

.1 Acceptable Products: Manufacturers standard for roof assembly specified.

Part 3 Execution

3.01 WORKMANSHIP

.1 Do roofing work in accordance with applicable, standard in Canadian Roofing Contractors Association (CRCA) Roofing Specifications Manual

.2 Prepare surfaces and complete waterproofing work in conformance with roofing manufacturer's instructions.

.3 Install roofing elements on clean and dry surfaces, in conformance with manufacturer's instructions and recommendations.

.4 Roofing work must be completed in a continuous fashion as surfaces are readied and weather conditions permit.

.5 Seal all seams not covered by cap sheet membrane in the same day. Do not install cap sheet if any moisture is present at/in the base sheet seams.

.6 Whenever Membranes are Torch-Applied:

.1 Ensure a continuous and even bead of molten bitumen is visible as the membrane is unrolled and torched.

.2 Use only torch equipment recommended by the roofing manufacturer.

.3 During application, simultaneously melt both designated contact surfaces so a bead of bitumen is apparent as cap sheet unrolls.

.4 Avoid overheating. Avoid excessive bitumen bleed-out at joints.

.5 Make sure joints between the two layers are staggered by at least 300 mm.

.6 De-granulate overlap surfaces.

.7 Complete perfect welds between two membranes. Leave no zone un-welded. In cold weather, adjust welding time to obtain homogenous seam.

.8 Inspect seams and overlapped joints and repair defective work.

3.02 PREPARATION

.1 Protection of In-Place Conditions:

.1 Protect existing roofing system that is not to be reroofed.

.2 Loosely lay 25 mm minimum thick, EPS insulation over work areas and traffic pathways over existing roofing in areas not to be reroofed.

.1 Loosely lay 12 mm plywood or OSB panels over EPS. Extend EPS past edges of plywood or OSB panels a minimum of 25 mm.

.3 Limit traffic and material storage to areas of existing roofing that have been protected.

.4 Maintain temporary protection and leave in place until replacement roofing has been completed. Remove temporary protection on completion of reroofing.

.5 Comply with requirements of existing roof system manufacturer's warranty requirements.

.2 Seal or isolate windows that may be exposed to airborne substances created in removal of existing materials.

.3 Shut off rooftop utilities and service piping before beginning the Work.

.4 Test existing roof drains to verify that they are not blocked or restricted.

.1 Immediately notify Consultant of any blockages or restrictions.

.5 Coordinate with Owner to shut down air-intake equipment in the vicinity of the Work.

.1 Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.

.6 During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.

.7 Maintain roof drains in functioning condition to ensure roof drainage at end of each workday.

.1 Prevent debris from entering or blocking roof drains and conductors.

.1 Use roof-drain plugs specifically designed for this purpose.

.2 Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.

.2 If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new roofing system, provide alternative drainage method to remove water and eliminate ponding.

.1 Do not permit water to enter into or under existing roofing system components that are to remain.

3.03 FIRE PROTECTION

.1 Conform to requirements of NFCC, Section 5.2 Hot Works, and as indicated in this article.

.2 Fire Watch: Maintain fire watch for roofing operations for one hour after each days roofing operations cease.

.1 Use an electronic thermometer to check for hot spots.

.3 Fire Extinguishers: maintain one cartridge operated type or stored pressure rechargeable type with hose and shut-off nozzle, ULC labeled for A, B and C class protection. Size 9 kg (20 lbs) on roof for each torch applicator, within 10 m of torch applicator.

.4 Prior to the start of work, conduct a site inspection to establish safe working practices. Respect all safety measures outlined by the membrane manufacturer as well as local roofing association recommendations. Provide a written hot work permit to the Consultant and Owner prior to any work commencing.

.5 Throughout roofing installation, maintain a clean site and have one approved ABC fire extinguisher within 6 metres of each roofing torch. Respect all safety measures described in technical data sheets. Torches must never be placed near combustible or flammable products. Torches should never be used where the flame is not visible or cannot be easily controlled.

.6 At the end of each workday, conduct a fire watch by using a heat detector gun to spot any smouldering or concealed fire. Ensure the fire watch is in effect for a minimum of four hours after any hot work is performed.

.7 Never apply the torch directly to old and wood surfaces.

.8 Make application for a hot works permit where required.

3.04 ROOF TEAR-OFF

.1 Roof Areas Affected by Tear-Off Operations:

.1 Roof Type – Partial Tear-Off for New Roof Top Unit Installation: Infill roofing requirements as specified in this Section.

.2 Notify Owner each day of extent of roof tear-off proposed for that day and obtain authorization to proceed.

.3 Lower removed roofing materials to ground and onto lower roof levels, using dust-tight chutes or other acceptable means of removing materials from roof areas.

.4 Remove pavers and accessories from roofing.

.1 Store and protect pavers and accessories for reuse in manner not to exceed structural loading limitations of roof deck.

.2 Discard cracked pavers.

.5 Partial Roof Tear-off: Where indicated on Drawings, remove existing roofing down to existing metal deck and immediately check for presence of moisture.

.6 Remove existing roofing assembly down to existing deck. Make tear off size approximately 600 mm wider than footprint of new roof top unit, adjust size to allow for proper roof membrane tie-in.

.1 Remove wet or damp materials below existing roofing and above deck as directed by Consultant.

.2 Inspect wood blocking, curbs, and nailers, for deterioration and damage.

.1 If wood blocking, curbs, and nailers have deteriorated, immediately notify Consultant.

3.05 TEMPORARY ROOFING

.1 Install temporary roofing over area to be reroofed.

.1 Adhere base sheet and install a glass-fiber felt, lapping each sheet 483 mm over preceding sheet.

.2 Remove temporary roofing before installing new roofing.

.3 Prepare temporary roof to receive new roofing by patching and repairing temporary roofing.

.1 Restore temporary roofing to watertight condition.

.2 Obtain approval for temporary roof substrate from roofing manufacturer and Consultant before installing new roof.

3.06 DECK PREPARATION

.1 Inspect deck after tear-off of roofing system.

.2 If broken or loose fasteners that secure deck panels to one another or to structure are observed, or if deck appears or feels inadequately attached, immediately notify Consultant.

.1 Do not proceed with installation until directed by Consultant.

.3 If deck surface is unsuitable for receiving infill materials or new roofing or if structural integrity of deck is suspect, immediately notify Consultant.

.1 Do not proceed with installation until directed by Consultant.

.4 Provide additional deck securement.

.5 Replace roof sheathing.

3.07 ROOF RE-COVER PREPARATION

.1 Remove blisters, ridges, buckles, and other substrate irregularities from existing roofing that inhibit new recover boards from conforming to substrate.

.1 Broom clean existing substrate.

.2 Verify that existing substrate is dry.

.1 Spot check substrates with an electrical capacitance moisture-detection meter.

.3 Remove materials that are wet or damp.

3.08 INFILL MATERIALS INSTALLATION

.1 Immediately after roof tear-off, and inspection and repair, if needed, of deck, tear-off areas to match existing roofing system construction.

.2 Installation of wood blocking, curbs, and nailers is specified in Section 06 10 00

.3 Install new roofing patch around roof top unit roof infill areas.

.4 If new roofing is installed the same day tear-off is made, roofing patch is not required.

3.9 INDEPENDENT INSPECTION AND TESTING

.1 Comply with Section 01 45 00 - Quality Control.

.2 Engage an independent inspection agency to test and inspect and roofing tie-in installation.

.1 Cost for inspection and testing to be paid by Contractor.

.2 Acceptable Independent Inspection Agencies:

.1 D. K. Bennett & Associates Ltd.: 1118 Lorette Avenue, Winnipeg, Manitoba; Tel.: 204-452-6795; URL: http://dkbennett.com.

.2 Intertek Group; 356 Saulteaux Crescent, Winnipeg, Manitoba R3J 3T2; Tel:. 204 885 9300; URL: http://www.intertek.com.

.3 Pinchen Ltd.; 54 Terracon Place, Winnipeg, Manitoba R2J 4G7; Tel.: 204-452-0983; URL: https://www.pinchin.com.

.3 QCA Building Envelope Ltd.; Box 23119, 1925 Pembina Hwy, Winnipeg, Manitoba R3T 2B3; Tel:. 204-371-0996; URL: https://buildingenvelope.biz.

.3 Notify Consultant and Owner 48 hours in advance of date and time of tests and inspections.

.3 Vapour Retarders - Inspection and Testing:

.1 Inspections: Vapour retarder materials, accessories, and installation are subject to inspection for compliance with requirements. [Inspections may include the following:]

.1 Continuity of vapour retarder system has been achieved throughout the work with no gaps or holes.

.2 Continuous structural support of vapour retarder system has been provided.

.3 Site conditions for application temperature and dryness of substrates have been maintained.

.4 Maximum exposure time of materials to UV deterioration has not been exceeded.

.5 Surfaces have been primed.

.6 Laps in sheet materials have complied with the minimum requirements and have been shingled in the correct direction (or mastic applied on exposed edges), with no fishmouths.

.7 Termination mastic has been applied on cut edges.

.8 Vapour retarder has been firmly adhered to substrate.

.9 Compatible materials have been used.

.10 Transitions at changes in direction and structural support at gaps have been provided.

.11 Connections between assemblies (vapour retarder and sealants) have complied with requirements for cleanliness, surface preparation and priming, structural support, integrity, and continuity of seal.

.12 All penetrations have been sealed.

.2 Tests: As determined by testing agency from among the following tests.

.1 Air leakage location testing of membrane seams, T-joints, and penetrations through the membrane, in general accordance with ASTM E1186.

.2 Membrane-to-substrate tensile adhesion testing conducted in general accordance with ASTM D4541 for each 56 sq. m (600 sq. ft.) of installed air barrier or part thereof.

.1 When the product manufacturer has established a minimum adhesion level for the product on the particular substrate, the inspection report to indicate whether this requirement has been met.

.2 Where the material manufacturer has not declared a minimum adhesion value for their product/substrate combination, the value shall simply be recorded.

.3 Vapour Retarders will be considered defective if they do not pass inspections and testing.

.1 Apply additional vapour retarder material, according to manufacturer's written instructions, where inspection results indicate insufficient thickness.

.2 Remove and replace deficient vapour retarder components for retesting as specified above.

.4 Repair damage to vapour retarder caused by testing; follow manufacturer's written instructions.

.4 Roofing - Inspection and Testing:

.1 Electrical Capacitance/Impedance Testing: Testing agency shall survey new roof tie-in areas for entrapped water within roof assembly according to ASTM D7954.

.1 Perform tests before overlying construction is placed.

.2 After testing, repair leaks, repeat tests, and make further repairs until roofing and flashing installations are watertight.

.1 Cost of retesting is Contractor's responsibility.

.3 Testing agency shall prepare survey report indicating locations of entrapped moisture, if any.

.5 Frequency and timing of testing and inspections as determined by the independent inspection agency.

.1 Repair or remove and replace components of vapour retarder and roofing system where inspections indicate that they do not comply with specified requirements.

.2 Vapour retarder and roofing systems will be considered defective if they do not pass tests and inspections.

.1 Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

.3 Prepare test and inspection reports.

3.10 CLEANING

.1 Remove bituminous markings from finished surfaces.

.2 In areas where finished surfaces are soiled caused by work of this section, consult manufacturer of surfaces for cleaning advice and complying with their documented instructions.

.3 Repair or replace defaced or disfigured finishes caused by work of this section.

.4 Check drains to ensure cleanliness and proper function, and remove debris, equipment and excess material from site.

3.11 DISPOSAL

.1 Collect demolished materials and place in containers.

.1 Promptly dispose of demolished materials.

.2 Do not allow demolished materials to accumulate on-site.

.3 Storage or sale of demolished items or materials on-site is not permitted.

.2 Transport and legally dispose of demolished materials off Owner's property.

END OF SECTION

Part 1 General

1.01 RELATED REQUIREMENTS

.1 Fire stopping and smoke seals within mechanical assemblies (i.e. inside ducts, dampers) and electrical assemblies (i.e. inside cable trays) are specified in mechanical and electrical sections respectively.

1.02 DEFINITIONS

.1 Fire Stop Material: Device intended to close off opening or penetration during fire or materials that fill openings in wall or floor assembly where penetration is by cables, cable trays, conduits, ducts and pipes and poke-through termination devices, including electrical outlet boxes along with their means of support through wall or floor openings.

.2 Single Component Fire Stop System: Fire stop material that has Listed Systems Design and is used individually without use of high temperature insulation or other materials to create fire stop system.

.3 Multiple Component Fire Stop System: Exact group of fire stop materials that are identified within Listed Systems Design to create on site fire stop system.

.4 Tightly Fitted; (ref: NBC Part 3.1.9.1.1 and 9.10.9.6.1): Penetrating items that are cast in place in buildings of non-combustible construction or have "0" annular space in buildings of combustible construction.

.1 Words "tightly fitted" should ensure that integrity of fire separation is such that it prevents passage of smoke and hot gases to unexposed side of fire separation.

1.03 REFERENCE STANDARDS

.1 ASTM

.1 ASTM E2174-19, Standard Practice for On-Site Inspection of Installed Fire Stops

.2 ASTM G21-15, Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi

.3 ASTM E2393-10a (2015), Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers

.2 FM Approvals

.1 Class 4991 (2013), Approval Standards for Firestop Contractors

.3 Firestop Contractors International Association (FCIA)

.4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Safety Data Sheets (SDS)

.5 National Research Council of Canada (NRCC)

.1 National Building Code of Canada (2015)

.6 Standards Council of Canada

.1 CAN / ULC - S101 – 07, Standard Methods of Fire Endurance Tests of Building Construction and Materials

.2 CAN / ULC - S102.2: 2018, Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies

.3 CAN / ULC S115-2018, Standard Method of Fire Tests of Firestop Systems

.7 Underwriters Laboratories

.1 UL 2079 (2015), Standard for Tests for Fire Resistance of Building Joint Systems

1.04 ADMINISTRATIVE REQUIREMENTS

.1 Pre-Installation Meetings: Convene pre-installation meeting one week prior to beginning work of this Section, with Contractor's representative, Consultant independent inspection and testing agency and manufacturer's representative to:

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordination with other building subcontractors.

.4 Review manufacturer installation instructions and warranty requirements.

.2 Site Meetings: As part of Manufacturer's Services described in Article 3.05, schedule site visits, to review Work, at stages listed.

.1 After delivery and storage of products, and when preparatory Work is complete, but before installation begins.

.2 Twice during progress of Work at 25% and 60% complete.

.3 Once during deficiency review.

.4 Once upon completion of Work, after cleaning is carried out.

1.05 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Action Submittals:

.1 Product Data:

.1 Manufacturer's product data for materials and prefabricated devices, providing descriptions are sufficient for identification at job site. Include manufacturer's installation instructions and special handling criteria, installation sequence.

.2 Shop Drawings:

.1 Show proposed material, reinforcement, anchorage, fastenings and method of installation. Construction details should accurately reflect actual job conditions.

.3 Samples: Submit duplicate 300 x 300 mm samples showing actual fire stop material proposed for project.

.3 Informational Submittals:

.1 Test Reports: In accordance with CAN-ULC-S101 for fire endurance and CAN-ULC-S102 for surface burning characteristics.

.1 Submit certified test reports from approved independent testing laboratories, indicating compliance of applied fire stopping with specifications for specified performance characteristics and physical properties.

.2 Certificates: Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.1 The certification documents must be received by the Consultant prior to the Consultant issuing the certificate for Substantial Performance of the Work.

.3 Manufacturer's Field Reports: Submit to manufacturer's written reports within three days of review, verifying compliance of Work, as described Article 3.05.

1.06 QUALITY ASSURANCE

.1 A manufacturer's direct representative (not distributor or agent) to be on-site during initial installation of fire stop systems to train appropriate contractor personnel in proper selection and installation procedures in accordance with manufacturer's written recommendations published in their literature and drawing details.

.2 Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by the firestopping manufacturer based on testing and field experience.

.3 Provide components for each firestopping system that are needed to install fill material. Use only components specified by the firestopping manufacturer and approved by the qualified testing agency for the designated fire-resistance-rated systems.

.4 Qualifications:

.1 Company: Specializing in fire stopping installations with at least one of the following qualifications:

.1 FM 4991 Approved Contractor.

.2 ULC Approved Contractor.

.3 Manufacturer accredited fire stop specialty applicator.

.2 Installers: Person with not less than three years documented experience with fire stop installation and approved/trained by manufacturer.

1.07 DELIVERY, STORAGE AND HANDLING

.1 Packing, shipping, handling and unloading:

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.3 Deliver materials to the site in undamaged condition and in original unopened containers, marked to indicate brand name, manufacturer, ULC markings.

.2 Storage and Protection:

.1 Store materials in dry location indoors, in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Replace defective or damaged materials with new.

1.08 WASTE MANAGEMENT AND DISPOSAL

.1 Comply with Section 01 74 11 - Construction/Demolition Waste Management and Disposal, and Waste Reduction Work Plan.

1.9 SITE CONDITIONS

.1 Do not use materials that contain flammable solvents.

.2 Scheduling

.1 Schedule installation of cast-in-place firestop devices after completion of floor formwork, metal form deck, or composite deck but before placement of concrete.

.2 Schedule installation of drop-in firestop devices after placement of concrete but before installation of the pipe penetration. Diameter of sleeved or cored hole to match the listed system for the device

.3 Schedule installation of other fire stopping materials after completion of penetrating item installation but prior to covering or concealing of openings.

.3 Verify existing conditions and substrates before starting work. Correct unsatisfactory conditions before proceeding.

.4 Weather Conditions: Do not proceed with installation of firestop materials when temperatures exceed the manufacturer's recommended limitations for installation printed on product label and product data sheet.

.5 During installation, provide masking and drop cloths to prevent fire stopping materials from contaminating any adjacent surfaces.

Part 2 Products

2.01 FIRE STOP SYSTEMS - GENERAL

.1 Use only fire stop materials that have been ULC or cUL tested for specific fire-rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements, and fire-rating involved for each separate instance.

.2 Provide fire stopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the fire stopping under conditions of service and application, as demonstrated by the fire stopping manufacturer based on testing and field experience.

.3 Provide components for each fire stopping system that are needed to install fill material. Use only components specified by the fire stopping manufacturer and approved by the qualified testing agency for the designated fire-resistance-rated systems.

.4 Firestopping materials are either “cast-in-place” (integral with concrete placement) or “post installed.” Provide cast-in-place firestop devices prior to concrete placement.

.5 Penetrations in Smoke Barriers: Provide fire stopping with ratings determined in accordance with ULC S115.

.1 L-Rating: Not exceeding 5.0 cfm/sq. ft. of penetration opening at both ambient and elevated temperatures.

.6 Mold Resistance: Provide penetration firestoppping with mold and mildew resistance rating of 0 as determined by ASTM G21.

2.02 MATERIALS

.1 Firestopping and Smoke Seal Systems: ULC S115.

.1 Asbestos-free materials and systems capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of ULC-S115 and not to exceed opening sizes for which they are intended and conforming to special requirements specified.

.2 Fire Stop System Rating: Meeting requirements in ULC-S115.

.2 Service Penetration Assemblies: Certified by ULC in accordance with ULC S115 and listed in ULC Guide No. 40 U19.

.3 Service Penetration Fire Stop Components: Certified by ULC in accordance with ULC-S115 and listed in ULC Guide No. 40 U19.13 and ULC Guide No. 40 U19.15 under the Label Service of ULC.

.4 Fire-resistance rating of installed fire stopping assembly in accordance with NBC.

.5 Fire stopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal.

.6 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal.

.7 Primers: To manufacturer's recommendation for specific material, substrate, and end use.

.8 Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.

.9 Damming and Backup Materials, Supports, and Anchoring Devices: To manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.

.10 Sealants for Vertical Joints: Non-sagging.

.11 Pre-installed firestop devices for use with non-combustible and combustible pipes (closed and open systems), conduit and/or cable bundles penetrating concrete floors and/or gypsum walls:

.1 Cast-in-place firestop device.

.2 Tub box kit for use with tub installations.

.3 Cast-in-place firestop device for use with noncombustible penetrants.

.4 Speed sleeve for use with cable penetrations.

.5 Firestop drop-in device for use with noncombustible and combustible penetrants.

.6 Firestop block.

.12 Re-penetrable, round cable management devices for use with new or existing cable bundles penetrating gypsum or masonry walls:

.1 Speed sleeve with integrated smoke seal fabric membrane.

.2 Firestop sleeve

.3 Retrofit sleeve for use with existing cable bundles.

.4 Gangplate for use with multiple cable management devices.

.5 Gangplate cap for use at blank openings in gangplate for future penetrations.

.13 Sealants or caulking materials for use with non-combustible items including steel pipe, copper pipe, rigid steel conduit and electrical metallic tubing (EMT):

.1 Intumescent firestop sealant.

.2 Firestop silicone sealant self-leveling.

.3 Fire foam.

.4 Flexible firestop sealant.

.5 Firestop silicone sealant gun grade.

.14 Sealants or caulking materials for use with sheet metal ducts, the following products are acceptable:

.1 Firestop silicone sealant gun grade.

.2 Flexible firestop sealant.

.3 Intumescent firestop sealant.

.4 Firestop silicone sealant self-leveling.

.15 Sealants, caulking or spray materials for use with fire-rated construction joints and other gaps, the following products are acceptable:

.1 Firestop joint spray.

.2 Firestop silicone sealant gun grade.

.3 Flexible firestop sealant

.4 Firestop silicone sealant self-leveling

.16 Pre-formed mineral wool designed to fit flutes of metal profile deck; as a backer for spray material.

.1 Speed plugs.

.2 Speed strips.

.17 Intumescent sealants or caulking materials for use with combustible items (penetrants consumed by high heat and flame) including insulated metal pipe, PVC jacketed, flexible cable or cable bundles and plastic pipe, the following products are acceptable:

.1 Intumescent firestop sealant.

.18 Foams, intumescent sealants, or caulking materials for use with flexible cable or cable bundles, the following products are acceptable:

.1 Intumescent firestop sealant.

.2 Fire foam.

.3 Firestop silicone sealant gun grade.

.4 Flexible firestop sealant.

.19 Non curing, re-penetrable intumescent putty or foam materials for use with flexible cable or cable bundles, the following products are acceptable:

.1 Firestop putty stick

.2 Firestop plug

.20 Wall opening protective materials for use with cUL /ULC listed metallic and specified non-metallic outlet boxes, the following products are acceptable:

.1 Firestop putty pad

.2 Firestop box insert

.21 Firestop collar or wrap devices attached to assembly around combustible plastic pipe (closed and open piping systems) tested to 50 pa. Differential, the following products are acceptable:

.1 Firestop collar

.2 Firestop collar

.3 Wrap strips

.22 Materials used for large size/complex penetrations made to accommodate cable trays, multiple steel and copper pipes, electrical busways in raceways, the following products are acceptable:

.1 Firestop mortar

.2 Firestop block

.3 Fire foam

.4 Firestop board

.23 Non curing, re-penetrable materials used for large size/complex penetrations made to accommodate cable trays, multiple steel and copper pipes, electrical busways in raceways, the following products are acceptable:

.1 Firestop block

.2 Firestop board

.24 Sealants or caulking materials used for openings between structurally separate sections of wall and floors, the following products are acceptable:

.1 Firestop joint spray

.2 Elastomeric firestop sealant

.3 Flexible firestop sealant

.4 Self-leveling firestop sealant

.25 For blank openings made in fire-rated wall or floor assemblies, where future penetration of pipes, conduits, or cables is expected, the following products are acceptable:

.1 Firestop block (for walls and floors)

.2 Firestop plug (for walls and floors)

.3 Cast-in place firestop device (for floors only)

.26 For penetrations through a Fire Wall or horizontal Fire Separation provide a firestop system with a “FT” Rating as determined by ULC or cUL which is equal to the fire resistance rating of the construction being penetrated.

.27 For penetrations through a fire separation wall provide a firestop system with a "F" rating as determined by ULC or cUL as indicated below:

Time	Required ULC or cUL “F” Rating of Fire stopping Assembly
30 minutes	20 minutes
45 minutes	45 minutes
1 hour	45 minutes
1.5 hours	1 hour
2 hours	1.5 hours
3 hours	2 hours
4 hours	3 hours

.28 For combustible pipe penetrations through a Fire Separation provide a firestop system with a “F” Rating as determined by ULC or cUL which is equal to the fire resistance rating of the construction being penetrated.

.29 For penetrations through a Fire Wall or horizontal Fire Separation provide a firestop system with a “FT” Rating as determined by ULC or cUL which is equal to the fire resistance rating of the construction being penetrated.

.30 Provide a firestop system with an Assembly Rating as determined by UL 2079 which is equal to the time rating of construction joint assembly.

2.03 IDENTIFICATION

.1 Provide warning sign or self-adhesive sticker at each fire stop location, containing the following information:

.1 The words “Fire Rated Assembly” or similar warning that the opening has been fire stopped.

.2 Fire stop system used (ULC or cUL).

.3 Fire stop system rating.

.4 Product(s) used.

.5 Name and phone number of initial installer.

.6 Date of initial installation.

.7 Date, name and phone number of person or company responsible for re-penetration of assembly (allow several lines).

Part 3 Execution

3.01 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: Comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.02 PREPARATION

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

.2 Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer's instructions.

.3 Maintain insulation around pipes and ducts penetrating fire separation.

.4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces. Remove stains on adjacent surfaces.

3.03 INSTALLATION

.1 Comply with Section 01 40 00 - Quality Requirements.

.2 Install fire stopping and smoke seal material and components in accordance with ULC certification and manufacturer's instructions.

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

.4 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.

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

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

.7 Install identification plate or sticker adjacent to each fire stop system assembly. Complete all information using non-erasable ink.

3.04 SPECIAL REQUIREMENTS

.1 Acoustically rated fire stop systems:

- .1 Where fire stopping is required in acoustically (sound) rated walls, partitions, and floor assemblies use fire stopping systems with a sound transmission classification (STC) not less than the classification specified for the assembly.
- .2 Sound transmission classifications tested and certified to ASTM E 90.

3.05 FIELD QUALITY CONTROL

.1 Inspections: Notify Consultant and independent inspection and testing agency when ready for inspection and prior to concealing or enclosing fire stopping materials and service penetration assemblies.

.2 Deficiencies:

- .1 Prior to Substantial Performance of the Work inspect fire stopping work, prepare a deficiency list and submit to Consultant and independent inspection and testing agency. Repair deficiencies and request Consultant’s and independent inspection and testing agency’s review of the Work.

.2 Notify Consultant and independent inspection and testing agency when ready for review and prior to concealing or enclosing fire stopping materials and service penetration assemblies.

.3 Manufacturer's Field Services:

.1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in Article 1.05.

.2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

.3 Schedule site visits, to review Work, as directed in Article 1.04

3.06 INDEPENDENT INSPECTION AND TESTING

.1 Comply with Section 01 40 00 - Quality Requirements.

.2 Engage an independent inspection and testing agency to inspect and test fire stopping installation.

.3 Cost for inspection and testing to be paid by Contractor.

.4 Acceptable Independent Inspection Agencies:

.1 Affinity Firestop Consultants; Unit 4 - 2089 Plessis Rd., Winnipeg, Manitoba; Contact: Rob Hlady, Tel: 204-415-3625. Email: rob@infinityfirestop.com.

.2 Intertek Group; 356 Saulteaux Crescent, Winnipeg, Manitoba R3J 3T2; Tel:.204 885 9300; URL: http://www.intertek.com

.3 Pinchen Ltd.; 54 Terracon Place, Winnipeg, Manitoba R2J 4G7; Tel.: 204-452-0983; URL: https://www.pinchin.com

.4 QCA Building Envelope Ltd.; Box 23119, 1925 Pembina Hwy, Winnipeg, Manitoba R3T 2B3; Tel:. 204-371-0996; URL: https://buildingenvelope.biz.

.5 Inspections conducted by the independent inspection and testing agency for compliance with requirements. Inspections may include the following:

.1 Design Listing Reviews: Review and comment on all Design Listing (Shop Drawing) submissions including MSDS and Product Literature.

.1 Two reviews required.

.2 Start-Up Meeting: With the Contractor, Firestop Subcontractor(s), other related Subcontractors and Consultant to review firestop requirements. Independent inspection and testing agency to provide agenda, chair meeting, provide minutes of meeting, and distribute to relevant project team members. Common issues to be discussed and generic details presented and described, concluding in a question and answer period with all attendees.

.1 One meeting required.

.3 General Reviews: To be performed during the course of construction and all findings shall be photographed and noted in report format, submitted to the Contractor for distribution to all parties affected Common items reviewed are as follows:

.1 Damaged installed firestop systems

.2 Missing or incomplete firestop systems

.3 Installed firestop systems adhere to the requirements of the submitted design listed systems.

.4 Construction conditions of the fire separations (floor and wall assemblies)

.5 Environmental conditions affected.

.6 Visual appearance of exposed firestop systems

.7 Two reviews required.

.4 Destructive Reviews (Exploratory Tests): To be performed on a random selection of installed firestop systems performed in in a modified format of ASTM E2174 and ASTM E2393. All findings to be photographed, noted in a report format and marked as either 'Compliant' or 'Non-Compliant' in relation to the reviewed design listed system and submitted to the Contractor for distribution to all parties affected. All non-compliant items are to be repaired or adjusted to suit the requirements of that system.

.1 One review required.

.5 Substantial Performance Reviews: To be performed once Firestop Subcontractor(s) have completed work and Contractor has requested Substantial Performance completion. Randomly review completed areas and any issues noted in above mentioned reviews to ensure those systems meet or exceed the manufacturers' minimum requirements. Issue review report, similar to General Review format above and provide letter of certification acknowledging firestop installations meet design intent and NBC requirements.

.1 One review required.

.6 Include costs for initial exploratory investigations in Contract, including cutting, removal and replacement of materials.

.7 Additional investigations and remedial work, if required, are to be borne by the Contractor at no additional cost to the Contract.

3.07 CLEAN UP

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

.2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

.3 Remove temporary dams after initial set of fire stopping and smoke seal materials.

.4 Waste Management: Separate waste materials for recycling in accordance with Section 01 74 21- Construction/Demolition Waste Management and Disposal

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.08 SCHEDULE

.1 Fire Stop and Smoke Seal At:

.1 Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.

.2 Edge of floor slabs at curtain wall and precast concrete panels.

.3 Top of fire-resistance rated masonry and gypsum board partitions.

.4 Intersection of fire-resistance rated masonry and gypsum board partitions.

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

.6 Penetrations through fire-resistance rated floor slabs, ceilings and roofs.

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

.8 Around mechanical and electrical assemblies penetrating fire separations.

.9 Rigid ducts: greater than 129 cm² (20 in²): fire stopping to consist of bead of fire stopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

.2 Smoke Seals for Smoke Separations:

.1 Use elastomeric sealant (fire stop caulking) to provide smoke seals in smoke separations at:

.1 Penetrations (pipes, ducts, conduit, wiring and other penetrations).

.2 Intersection of smoke separations and adjacent walls, partitions, floors and ceilings.

.3 Perimeter seal around door and window frames in separations.

.2 Apply sealant on both sides of separation where applicable. Elastomeric sealant does require a fire stop system rating but is required to effectively seal smoke separations form passage of smoke in the event of a fire.

END OF SECTION

Part 1 General

1.01 SUMMARY

.1 Section includes:

.1 Caulks and sealants.

1.02 RELATED REQUIREMENTS

.1 Section 06 40 00 - Architectural Woodwork

.2 Section 08 11 13 – Hollow Metal Doors and Frames

.3 Section 09 21 16 – Gypsum Board Assemblies

.4 Section 22 40 10 - Plumbing: For sealant around sinks.

1.03 REFERENCE STANDARDS

.1 ASTM

.1 ASTM C834-17, Standard Specification for Latex Sealants

.2 ASTM C919-18, Standard Practice for Use of Sealants in Acoustical Applications

.3 ASTM C920-18, Standard Specification for Elastomeric Joint Sealants

1.04 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Action Submittals:

.1 Samples:

.1 Submit two colour samples of proposed sealants for colour selection by the Consultant.

.2 Submit two cured colour samples of exposed sealants for each colour where required to match adjacent material.

.3 Informational Submittals:

.1 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for joint sealants and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Manufacturer's product to describe:

.1 Caulking compound

.2 Primers

.3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.

.4 Installation instructions for each product used.

1.05 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: Submit operation and maintenance data for incorporation into manual.

1.06 QUALITY ASSURANCE

.1 Field Sample:

.1 Apply representative sample of sealant and joint filler installation on site as part of the finished work. The Consultant shall examine sample prior to further installation of sealant materials. Field sample, if acceptable, shall become the standard of quality for sealant work for project.

1.07 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, handle, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area. Protect from freezing.

.2 Store and protect joint sealants from damage.

.3 Replace defective or damaged materials with new.

1.08 WASTE MANAGEMENT AND DISPOSAL

.1 Comply with Section 01 74 21 - Construction/Demolition Waste Management and Disposal, and Waste Reduction Work Plan.

1.09 SITE CONDITIONS

.1 Ambient Conditions:

.1 Proceed with installation of joint sealants only when:

.2 Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4.4 degrees C.

.3 Joint substrates are dry.

.4 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

.2 Joint-Width Conditions:

.1 Proceed with installation of joint sealants only where joint widths are more than those allowed by joint sealant manufacturer for applications indicated.

.3 Joint-Substrate Conditions:

.1 Proceed with installation of joint sealants only after contaminants capable of interfering with adhesion are removed from joint substrates.

1.10 ENVIRONMENTAL REQUIREMENTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labeling and provision of material safety data sheets acceptable to Labour Canada.

.2 Ventilate area of work as directed by Consultant by use of approved portable supply and exhaust fans.

1.11 WARRANTY

.1 For Work of this Section 07 92 00 - Joint Sealing, twelve months warranty period is extended to 24 months.

.2 Warranty shall include coverage against sealant failure, delamination, discolouration, and other defects detrimental to performance, and shall include for replacement or repair of damaged materials at no cost to Owner.

Part 2 Products

2.01 SEALANT MATERIALS

.1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.

.2 VOC Content: Sealants and sealant primers shall comply with the following:

.1 Architectural sealants shall have a VOC content of 250 g/L or less.

.2 Sealants and sealant primers for nonporous substrates shall have a VOC content of 250 g/L or less.

.3 Sealants and sealant primers for porous substrates shall have a VOC content of 775 g/L or less.

.4 Sealant shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

.3 When low toxicity caulks are not possible, confine usage to areas which off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off gas time.

.4 Where sealants are qualified with primers use only these primers.

2.02 SEALANT MATERIAL DESIGNATIONS

.1 Urethane One Part, Non-Sag:

.1 ASTM C920, Type S, Grade NS, Class 25

.2 Joint movement ±25% maximum.

.3 Acceptable Products: Euclid Eucolastic 1NS; Sika Sikaflex 1a; Tremco DyMonic; Bostic Chem-Calk 900; Vulkem 931, Tremco Vulkem 116

.2 Urethanes One Part, Non-Sag:

.1 ASTM C920, Type S, Grade NS

.2 Joint movement -50% + 100%.

.3 Acceptable Products: Dow Dowsil 790, Eucolastic 1 NS; Sikaflex 15M; Vulkem 921; W.R. Meadows Pourthane NS, Tremco Spectrum 2.

.3 Urethane, One Part, Self-Leveling:

.1 ASTM C920, Type S, Grade P

.2 Joint movement ±25% maximum.

.3 Acceptable Products: Euclid Eucolastic 1 SL; Sikaflex 1C SL, Chem-Calk 950, Vulkem 45; W.R. Meadows Pourthane SL; Sonolastic SL1.

.4 Urethane, One Part, Self-Leveling:

.1 ASTM C920, Type S, Grade P. Joint movement -50% + 100%.

.2 Acceptable Products: Euclid Eucolastic 1 SL; Vulkem 45 SSL.

.5 Urethanes, Two Part, Non-Sag:

.1 ASTM C 920, Type M, Grade NS, Class 25; CAN/CGSB-19.24, Type 2, Class B.

.2 Joint movement: ±25% maximum.

.3 Acceptable Products: Euclid Eucolastic 2 NS; Sikaflex 2C NS, Dymeric, Chem-Calk 500; Sonolastic NP 2.

.6 Urethanes, Two Part, Self-Leveling:

.1 ASTM C 920, Type M, Grade P, Class 25; CAN/CGSB-19.24, Type 1, Class B.

.2 Joint movement: ±50% maximum.

.3 Acceptable Products: Eucolastic 2 SL; Sikaflex 2C SL, THC 900/901, Chem-Calk 550.

.7 Acrylic, One Part, Non-Sag:

.1 ASTM C834 Type C.

.2 Acceptable Products: Tremco Mono 555, Bostik Chem-Calk 600, Franklin International Titebond Painter's Plus.

.8 Acrylic Latex, One Part:

.1 ASTM C834.

.2 Acceptable Products: Tremco Tremflex 834, Chem-Calk 600.

.9 Acoustical Sealant:

.1 ASTM C834.

.2 Acceptable Products: Tremco Tremflex 834, Chem-Calk 600; USG Sheetrock Acoustical Sealant; CertainTeed QuietSeal Pro. Ramset Water-Based Sound-Control Sealant.

.10 Silicone, One Part:

.1 CAN/CGSB-19.13.

.2 Acceptable Products: Tremco Spectrum 1

.11 Silicone, One Part, Mildew Resistant:

.1 ASTM C920, Type S, Grade NS, Class 25.

.2 Acceptable Products: Tremsil 200.

.12 Epoxy-urethane or polyurea, two-part, self-levelling:

.1 Load bearing sealant for saw cuts, preformed joints, construction joints, cracks, in interior floor slabs.

.2 Acceptable Products: Sika Loadflex. VersaFlex SL/75.

2.03 ACCESSORIES

.1 Back-up Materials:

.1 Backer Rod: Extruded polyethylene, closed cell foam backer rod, compatible with sealant, recommended by manufacturer, diameter oversize 30 to 50% to suit joint.

.1 Acceptable Products: Dow Chemical "Ethafoam", Tremco "Sof Rod".

.2 Bond Breaker Tape: Polyethylene, pressure sensitive bond breaker tape which will not bond to sealant.

.3 Primers: Type recommended by sealant manufacturer, for appropriate sealant and corresponding substrate.

.4 Joint Cleaner: Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.

2.04 SEALANT COLOURS

.1 Sealant Colours: Selected by Consultant from manufacturers' standard colours. Generally matching the predominant material to which sealant is applied.

2.05 SEALANT SELECTION

.1 Refer to Table 07 92 00 (1) and Table 07 92 00 (2) in Part 3 of this section for use and sealant types and locations.

Part 3 Execution

3.01 EXAMINATION

.1 Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for joint sealants installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of the Consultant.

.2 Inform the Consultant of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.02 PRE-INSTALLATION TESTING

.1 Before commencing application of sealants test materials for indications of staining or poor adhesion.

.2 Ascertain that sealers and coatings applied to sealant substrates are compatible with sealant used and that full bond between the sealant and substrate is attained.

.3 Request samples of the sealed or coated substrate from their fabricators for testing of compatibility and bond, if necessary.

3.03 SURFACE PREPARATION

.1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter that may impair work.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure joint surfaces are dry and frost free.

.5 Prepare surfaces in accordance with manufacturer's directions.

3.04 PRIMING

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

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.05 BACKUP MATERIAL

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

.2 Install foam backer rod to achieve correct joint depth and shape, with approximately 30% compression.

3.06 EXPANDING FOAM SEALANTS

.1 Install expanding foam sealants in accordance with manufacturer’s instructions.

.2 Coordinate installation with work of other trades to ensure foam sealants are installed before building joints are covered.

.3 For expansion joints below grade in foundation walls and grade beams install as primary seal.

.4 For expansion joints above grade in foundation walls, grade beams, exterior walls install as secondary seal with wet caulking as primary seal.

.5 Where used as a secondary seal together with field applied wet caulking provide bond breaker tape or backer rod between foam sealant and caulking.

.6 Size preformed foam sealant to suit joint depth and width allowing for proper compression of the material:

.1 Horizontal expansion and control joints below grade: 20%

.2 Vertical and horizontal joints in building façade: 25%

.3 Watertight joints: 20%.

.7 Use adhesives recommended by manufacturer, suitable for substrate and application.

.8 Install in longest possible lengths. Keep number of joints to a minimum. Join individual strips by means of scarfe joint, cut at approximately 30°.

3.07 MIXING

.1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.08 APPLICATION

.1 Apply non-paintable sealants after adjacent surfaces have been painted and paint is fully cured and dry.

.2 Apply paintable sealant before adjacent surfaces have been painted.

.3 Sealant:

.1 Apply sealant in accordance with manufacturer's written instructions.

.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.

.3 Apply sealant in continuous beads.

.4 Apply sealant using gun with proper size nozzle.

.5 Use sufficient pressure to fill voids and joints solid.

.6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.

.7 Tool exposed surfaces before skinning begins to give slightly concave shape.

.8 Remove excess compound promptly as work progresses and upon completion.

.4 Curing.

.1 Cure sealants in accordance with sealant manufacturer's instructions.

.2 Do not cover up sealants until proper curing has taken place.

3.09 APPLICATION FLOOR JOINT FILLER

.1 Prepare joints in accordance with manufacturer’s written instructions.

.2 Ensure joints are clean, dry and sound. Remove from joints and joint edges all dirt, dust, debris, oil, grease, paint, curing compounds, sealers, residue and other materials that may act as a bond breaker.

.3 Floor Cracks: Rout-out and clean.

.4 Clean joints free of dust and particulates using compressed air with an airline equipped with an oil trap.

.5 Apply joint filler full depth (no backer rod) to control joints, saw cuts, construction joints, cracks in exposed interior concrete floors in accordance with manufacturer’s written instructions.

.6 Shave off excess sealant smooth to top of slab after sealant has cured.

3.10 CLEANING

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

.1 Leave Work area clean at end of each day.

.2 Clean adjacent surfaces immediately.

.3 Remove excess and droppings, using recommended cleaners as work progresses.

.4 Remove masking tape after initial set of sealant.

.2 Final Cleaning: Upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

.3 Waste Management: Separate waste materials for recycling in accordance with Section 01 74 21- Construction/Demolition Waste Management and Disposal

3.11 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by joint sealants installation.

3.12 TABLES

.1 Table 07 92 00 (1) Sealant Types and Locations, as attached.

Table 07 92 00 (1)
Sealant Types and Locations

Sealant Types (as specified in Article 2.01.4)	Location
Urethane One Part, Non-Sag, joint movement -50% + 100%	Expansion and control joints in exterior surfaces of poured-in-place concrete walls, joint movement: -50% + 100%
	Expansion and control joints in exterior surfaces of precast, architectural wall panels, Joint movement: -50% + 100%
	Control and expansion joints in exterior surfaces of unit masonry walls.
	Coping joints and coping-to-facade joints
	Control and expansion joints on the interior of exterior poured-in place concrete walls
	Control and expansion joints on the interior of exterior precast, architectural wall panels.
	Control and expansion joints on the interior of exterior surfaces of unit masonry walls
Urethane One Part, Non-Sag, joint movement ± 25%	Perimeters of exterior openings where frames meet exterior facade of building (i.e. brick, block, precast masonry)
	Under door thresholds
Urethane One Part, Self-leveling	Expansion joints in interior floor surfaces
	Cornice and wash (or horizontal surface joints)
	Exterior joints in horizontal wearing surfaces (as itemized)
Acrylic Latex One Part (paintable)	Joints of underside of precast beams or planks
	Exposed interior control joints in drywall
	At junction of suspended gypsum board ceilings and adjacent walls
Acrylic One Part	Perimeters of exterior openings on interior of building where frames meet interior finishes
	Perimeters of interior frames
	Interior masonry vertical control joints (block-to-block, block-to-concrete, and intersecting masonry walls)
	Joints at tops of non-load bearing masonry walls at the underside of poured concrete or steel deck or precast planks
Silicone Mildew Resistant	Perimeter of bath fixtures (e.g. sinks, tubs, urinals, stools, water closets, basins, vanities)
	As specified in specification sections
Semi-rigid two-component epoxy or polyuria sealant	Saw cuts, cracks and construction joints in exposed interior floor slabs.
Other types	As specified in specification sections

END OF SECTION

DOOR NO.	DOOR						FRAME			FIRE RATING	HDWE GROUP	REMARKS
	WIDTH	HEIGHT	THICK.	TYPE	MAT	FIN	TYPE	MAT	FIN			
Winnipeg Transit - Training / Plant and Equipment												
D101	36"	84"	1 3/4"	B	HM	PT-5	1	HM	PT-5	1 1/2 HR	01	1
D102	36"	84"	1 3/4"	B	HM	PT-5	1	HM	PT-5	1 1/2 HR	01	1
D103a	36"	84"	1 3/4"	B	HM	PT-5	1	HM	PT-5	1 1/2 HR	02	1
D103b	36"	84"	1 3/4"	C	HM	PT-5	1	HM	PT-5	—	03	
D105	36"	84"	1 3/4"	A	WD	ST-1	2	HM	PT-5	—	04	
D106	36"	84"	1 3/4"	A	WD	ST-1	2	HM	PT-5	—	04	
D107	36"	84"	1 3/4"	B	HM	PT-5	1	HM	PT-5	—	01	1
D108	36"	84"	1 3/4"	A	WD	ST-1	2	HM	PT-5	—	04	
D109	36"	84"	1 3/4"	A	WD	ST-1	2	HM	PT-5	—	04	
D111	36"	84"	1 3/4"	A	WD	ST-1	2	HM	PT-5	—	04	
D112	36"	84"	1 3/4"	A	HM	PT-5	1	HM	PT-5	1 1/2 HR	02	1
D114	36"	84"	1 3/4"	A	WD	ST-1	2	HM	PT-5	—	04	
D115a	36"	84"	1 3/4"	A	HM	PT-5	1	HM	PT-5	—	05	1
D115b	36"	84"	1 3/4"	A	HM	PT-5	1	HM	PT-5	—	01	1
D116	36"	84"	1 3/4"	C	HM	PT-5	3A	HM	PT-5	—	04	
D117A	36"	84"	1 3/4"	C	HM	PT-5	3B	HM	PT-5	—	04	
D117B	36"	84"	1 3/4"	B	HM	PT-5	1	HM	PT-5	—	09	
D118	36"	84"	1 3/4"	C	HM	PT-5	3B	HM	PT-5	—	04	
D119a	36"	84"	1 3/4"	C	HM	PT-5	3B	HM	PT-5	—	04	
D119b	36"	84"	1 3/4"	B	HM	PT-5	1	HM	PT-5	—	09	
D120A	36"	84"	1 3/4"	B	HM	PT-5	1	HM	PT-5	—	06	
D120B	2X36"	84"	1 3/4"	B	HM	PT-5	1	HM	PT-5	1 1/2 HR	10	2
Winnipeg Transit - Facilities Contracts and Maintenance												
D122	36"	84"	1 3/4"	A	WD	ST-1	2	HM	PT-5	—	04	
D124	36"	84"	1 3/4"	A	WD	ST-1	2	HM	PT-5	—	04	
D125	36"	84"	1 3/4"	A	WD	ST-1	2	HM	PT-5	—	04	

DOOR NO.	DOOR						FRAME			FIRE RATING	HDWE GROUP	REMARKS
	WIDTH	HEIGHT	THICK.	TYPE	MAT	FIN	TYPE	MAT	FIN			
D128	36"	84"	1 3/4"	A	WD	ST-1	2	HM	PT-5	—	04	
D129	36"	84"	1 3/4"	B	HM	PT-5	1	HM	PT-5	—	01	1
D130	36"	84"	1 3/4"	A	WD	ST-1	2	HM	PT-5	—	04	
D131	36"	84"	1 3/4"	A	WD	ST-1	2	HM	PT-5	—	04	
D132	36"	84"	1 3/4"	A	WD	ST-1	2	HM	PT-5	—	04	
D133	36"	84"	1 3/4"	A	WD	ST-1	2	HM	PT-5	—	04	
D134	36"	84"	1 3/4"	A	WD	ST-1	2	HM	PT-5	—	04	
D135	36"	84"	1 3/4"	A	HM	PT-5	2	HM	PT-5	—	02	1
ED135a	2 x 36"	EX	EX	EX	HM	PT-5	EX	HM	PT-5	—	07	
ED135b	EX	EX	EX	EX	HM	PT-5	EX	HM	PT-5	—	08	
ED135c	EX	EX	EX	EX	HM	PT-5	EX	HM	PT-5	—	08	
ED136a	EX	EX	EX	EX	HM	PT-5	EX	HM	PT-5	—	08	
ED136b	EX	EX	EX	EX	HM	PT-5	EX	HM	PT-5	—	08	
ED136c	EX	EX	EX	EX	HM	PT-5	EX	HM	PT-5	—	08	
ED136d	EX	EX	EX	EX	HM	PT-5	EX	HM	PT-5	—	08	

ABBREVIATIONS

ALUM	ALUMINUM
ADO	AUTOMATIC DOOR OPENER
ANOD	ANODIZED
CF	CLEAR FINISH
DA	DOUBLE ACTING
DE	DOUBLE EGRESS
DFG	DOOR FRAME GUARD
DP	DOOR PROTECTION
EP	EPOXY PAINT
EPF	ELECTRICAL POWER TO FRAME
EXIST	EXISTING
HM	HOLLOW METAL
HMI	HOLLOW METAL INSULATED
HR	HOUR
MIN	MINUTE
P	PAINT FINISH
PLAM	PLASTIC LAMINATE
PR	PAIR
PREF	PREFINISHED
PS	PRESSED STEEL
ST	STEEL
STN	STAIN FINISH
WD	WOOD
WC	WOOD HOLLOW CORE
WS	WOOD SOLID CORE
WR	WOOD RAIL & STYLE

REMARKS

1. Card Reader
2. Double doors at North end of Corridor 120 with fire shutter separating buildings.

Part 1 General

1.01 RELATED REQUIREMENTS

.1 Section 07 92 00 - Joint Sealing: Joint sealants and backer rods.

.2 Section 08 06 71 - Door Hardware Schedule.

.3 Section 08 71 00 - Door Hardware.

.4 Section 09 22 16 - Non-structural Metal Framing: Framed openings.

.5 Section 09 91 00 - Painting: Primer and field painting.

.6 Division 26 - Electrical: Power supply for electric and electronic door hardware.

1.02 REFERENCE STANDARDS

.1 ASTM

.1 ASTM A653/A653M-01a, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM E152, Methods for Fire Tests of Door Assemblies

.3 ASTM E2112-19c, Standard Practice for Installation of Exterior Windows, Doors and Skylights

.2 Canadian Standards Association (CSA)

.1 CSA-G40.20/G40.21 (R2018), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel

.2 CSA W59 (2013), Welded Steel Construction (Metal Arc Welding)

.3 Canadian Steel Door Manufacturers' Association, (CSDMA):

.1 CSDMA, Recommended Dimensional Standards for Commercial Steel Doors and Frames

.2 CSDMA, Canadian Fire Labeling Guide for Commercial Steel Doors and Frame Products

.3 CSDMA, Selection and Usage Guide for Commercial Steel Doors

.4 National Fire Protection Association (NFPA)

.1 NFPA 80-2016, Standard for Fire Doors and Other Opening Protectives

.2 NFPA 252-2017, Standard Methods of Fire Tests of Door Assemblies

.5 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S702-14, Standard for Thermal Insulation, Mineral Fibre, for Buildings.

.2 CAN4-S104-15, Standard Method for Fire Tests of Door Assemblies

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Shop Drawings:

.1 Indicate each type door and frame, materials, core thickness, mortises, reinforcements, glazed and louver opening, glazing stops, arrangement of hardware, location and methods of anchors, exposed fastenings and reinforcing, fire ratings, and finishes.

.2 Indicate details of jamb and head, frame types, meeting and stiles on pairs of doors, field splices.

.3 Indicate special features, junction boxes and conduit for electrical and electronic door hardware.

.4 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

1.04 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

1.05 WASTE MANAGEMENT AND DISPOSAL

.1 Comply with Section 01 74 19 - Construction/Demolition Waste Management and Disposal and Waste Reduction Work Plan.

Part 2 Products

2.01 REGULATORY REQUIREMENTS

.1 Steel fire rated doors and frames: Labeled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104, and NFPA 252 for ratings indicated.

.2 Provide fire labeled frames for openings requiring fire protection ratings. Test products in conformance with CAN4-S104, ASTM E152 or NFPA 252 and listed by nationally recognized agency having factory inspection services.

.3 Provide fire labeled doors and frames for those openings requiring fire protection ratings. Test products in conformance with CAN4-S104 ASTM E152 or NFPA 252 and listed by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

2.02 MATERIALS

.1 Hot Dipped Galvanized Steel Sheet: ASTM A653/A653M, coating designation for locations as follows:

.1 ZF75 (A25): Interior doors and frames.

.2 Minimum base steel thickness (gauge) in accordance with CSDMA Table 1, except as follows:

.1 Door Face Sheets: 1.2 mm (18 gauge).

.2 Frames: 1.6 mm (16 gauge).

.3 Astragals: 1.9 mm (14 gauge).

.4 Floor Anchors: 1.6 mm (16 gauge).

.5 Jamb Anchors:

.1 “T” strap type: 1.6 mm (16 gauge).

.2 “L” type: 1.2 mm (18 gauge).

.3 Stirrup-strap type: 15 x 250 x 1.6 mm (16 gauge).

.4 Stud type: 1.2 mm (18 gauge).

.5 Wire type: 4.0 mm (9 gauge).

.6 Reinforcing Steel:

.1 Locks, strikes: 1.6 mm (16 gauge).

.2 Butts, hinges: 3.4 mm (10 gauge).

.3 Surface mounted hardware: 2.7 mm (12 gauge).

.7 Flush Bolts: 3.4 mm (10 gauge).

.8 Glazing Stops: 0.9 mm (20 gauge). ULC approved for fire rated doors and frames.

.9 Channel Reinforcement for Glazed and Louvre Openings: 0.9 mm (20 gauge).

.10 Mortar Guard Boxes: 0.8 mm (22 gauge).

.11 Jamb Spreaders: 1.2 mm (18 gauge).

.3 Reinforcement Channel: CSA G40.20/G40.21, Type 44W, coating designation same as specified for door materials.

2.03 DOOR CORE MATERIALS

.1 Honeycomb Construction:

.1 Structural small cell, 25 mm maximum kraft paper 'honeycomb', weight: 36.3 kg per ream minimum, density: 16.5 kg/m^3 minimum sanded to required thickness.

.2 Stiffened: Face sheets laminated, insulated core.

.1 Fibreglass: to CAN/ULC-S702, semi-rigid Type 1 density 24 kg/m^3.

.2 Expanded polystyrene: CAN/ULC-S701, Type 1 or 2, density 16 to 32 kg/m^3.

.3 Polyurethane: to CGSB 51-GP-21M rigid, modified polyisocyanurate, closed cell board. Density 32 kg/m^3.

2.04 ADHESIVES

.1 Honeycomb Cores and Steel Components: Heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.

.2 Polystyrene and Polyurethane Cores: Heat resistant, epoxy resin based, low viscosity, contact cement.

2.05 ACCESSORIES

.1 Primer: In accordance with MPI system indicated in Section 09 10 00 – Painting.

.2 Door Silencers: Single stud rubber/neoprene type.

.3 Top Caps:
.1 Interior Doors: Steel.

.4 Glazing Stops: Fabricate as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with countersunk oval head sheet metal screws.

.5 Make provisions for glazing as indicated and provide necessary glazing stops.

.1 Provide removable steel glazing beads for use with glazing tapes and compounds and secured with countersunk stainless-steel screws.

.6 Sealant (Caulking) and Backer Rods: As specified in Section 07 92 00 - Joint Sealing.

.7 Metallic Paste Filler: To manufacturer's standard.

.8 Fire Labels: Metal riveted.

2.06 SYSTEM DESCRIPTION

.1 Regulatory Requirements:

.1 Steel fire rated doors and frames: Labeled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104, and NFPA 252 for ratings indicated.

.2 Provide fire labeled frames for openings requiring fire protection ratings. Test products in conformance with CAN4-S104, ASTM E152 or NFPA 252 and listed by nationally recognized agency having factory inspection services.

.3 Provide fire labeled doors and frames for those openings requiring fire protection ratings. Test products in conformance with CAN4-S104 ASTM E152 or NFPA 252 and listed by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

2.07 FRAMES FABRICATION GENERAL

.1 Fabricate frames in accordance with CSDMA specifications.

.2 Fabricate frames to profiles and maximum face sizes as indicated.

.3 Fabricate frames with double returns (gypsum board frames) at throat openings, including frames installed in masonry partitions.

.4 Interior Frames: Welded type construction.

.5 Blank, mortise, reinforce, drill and tap frames and reinforcements to receive hardware and electronic hardware using templates provided by door hardware supplier. Reinforce internally for surface mounted hardware.

.6 Top Hinge Reinforcement: Weld in top hinge reinforcement with 20 mm leg to hinge reinforcement, 25 mm leg to frame.

.7 Reinforce head of frames wider than 1 200 mm.

.8 Protect mortised cutouts with steel guard boxes for frames installed in masonry and concrete walls.

.9 Prepare frame for door silencers, three for single door, and two at head for double doors.

.10 Manufacturer’s nameplates on frames and screens are not permitted.

.11 Conceal fastenings except where exposed fastenings are indicated.

.12 Insulate closed frame components at exterior openings with polyurethane insulation.

2.08 FRAME ANCHORAGE

.1 Provide appropriate anchorage to floor and wall construction.

.2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.

.3 Provide two anchors for rebate opening heights up to 1 520 mm and one additional anchor for each additional 760 mm of height or fraction thereof.

.4 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm on centre maximum.

.5 Where frames are installed in prepared openings, countersink frame at screw anchor location.

2.09 FRAMES: WELDED TYPE

.1 Welding in accordance with CSA W59.

.2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile. Spot welding not acceptable.

.3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.

.4 Grind welded joints and corners to a flat plane, fill with metallic paste and sane to uniform smooth finish.

.5 Securely attach floor anchors to inside of each jamb profile.

.6 Fabrication welded frame assemblies in largest sections possible. Where field splices are required provide welded joints, ground smooth. Make field splices and joints inconspicuous after assembly. Exposed fasteners not permitted.

.7 Weld in two temporary jamb spreaders per frame to maintain proper alignment during shipment.

2.10 DOOR FABRICATION GENERAL

.1 Doors: Swing type, flush, with provision for glass and/or louvre openings as indicated.

.2 Interior Doors: Honeycomb construction.

.3 Fabricate doors with longitudinal edges welded. Seams: grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish.

.4 Construct rail and stile doors, and matching panels in same manner as flush doors.

.5 Blank, reinforce, drill doors and tap for mortised, templated hardware including electrified or electronic hardware.

.6 Reinforce doors where required, for surface mounted hardware.

.7 Make provision for glazing and door louvers where indicated and provide stops.

.8 Provide astragals for pairs of doors in accordance with ULC requirements but only where specified in Door Schedule and Section 08 71 00 - Door Hardware.

.9 Where pairs of doors are fitted with top and bottom rod exit devices, doors are to be ULC approved without the use of an astragal.

.10 Provide inverted, recessed, spot welded channels to top of interior doors.

.11 Manufacturer’s nameplates on doors permitted on hinge side of door concealed from view.

2.11 DOORS: HONEYCOMB CORE CONSTRUCTION

.1 Form each face sheet for interior doors from sheet steel of base metal thickness specified in Article 2.01 above, with honeycomb laminated under pressure to face sheets.

2.12 DOORS: HOLLOW STEEL CONSTRUCTION

.1 Form each face sheet for exterior doors from sheet steel of base metal thickness specified in Article 2.01 above.

.2 Reinforce doors with vertical stiffeners, securely laminated to each face sheet at 150 mm on centre maximum.

.3 Fill voids between stiffeners of exterior doors with insulation core.

2.13 SHOP PRIMING

.1 Provide touch-up primer at areas where zinc coating has been removed during fabrication or installation.

.2 For doors and frames fabricated of steel sheet with Z275 (G90) designation galvanized coating apply in factory one coat of zinc-rich primer CAN/CGSB-1.181 to all exposed surfaces. Properly pre-treat and prepare surfaces before application of primer to ensure good primer adhesion.

Part 3 Execution

3.01 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: Comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.02 INSTALLATION GENERAL

.1 Install labeled steel fire rated doors and frames to NFPA 80 except where specified otherwise.

.2 Install doors and frames to CSDMA Installation Guide.

3.03 FRAME INSTALLATION

.1 Set frames plumb, square, level and at correct elevation.

.2 Secure anchorages and connections to adjacent construction.

.3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1 200 mm wide. Remove temporary spreaders after frames are built-in.

.4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

.5 Maintain continuity of air barrier and vapour retarder at exterior openings.

.6 Coordinate installation with Electrical Subcontractor [Trade Contractor] for installation of junction boxes and conduit for wiring and controls for electrified and electronic hardware.

3.04 DOOR INSTALLATION

.1 Install doors in accordance with ASTM E2112.

.2 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 - Door Hardware.

.3 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows.

.1 Hinge Side: 1.0 mm.

.2 Latch Side and Head: 1.5 mm.

.3 Finished Flooring and Thresholds: 13 mm, except where doors are fitted with exit rod devices margin shall be 6 mm.

.4 Adjust operable parts for correct function.

3.05 CAULKING AND SEALING

.1 For interior frames seal joint between frames and adjacent construction with sealant (wet caulking). Apply sealant around full perimeter of frames, on both sides of opening.

.2 Apply sealants in accordance with Section 07 92 00 - Joint Sealing. Provide smooth, neat bead, tooled to slight concave profile.

3.06 FINISH REPAIRS

.1 Touch up with primer finishes damaged during installation.

.2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish. Apply primer on sanded surfaces.

3.07 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

.3 Clean adjacent surfaces.

.4 Waste Management: separate waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

Part 1 General

1.01 RELATED REQUIREMENTS

.1 Section 08 06 71 - Door Hardware Schedule.

.2 Section 08 11 13 - Hollow Metal Doors and Frames.

.3 Division 26 - Electrical: electrical service for electric and electronic hardware.

1.02 REFERENCES

.1 American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA)

.1 ANSI/BHMA A156.4, Door Controls - Closers

.2 ANSI/BHMA A156.5, Auxiliary Locks and Associated Products

.3 ANSI/BHMA A156.19, Power Assist and Low Energy Power - Operated Doors

.2 Canadian Steel Door Manufactures' Association (CSDMA)

.1 Recommended Specifications for Commercial Steel Door and Frame Products.

.2 Recommended Dimensional Standards For Commercial Steel Doors And Frames.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-69.35/ANSI/BHMA A156.19, Power Assist and Low Energy Power Operated Doors.

1.03 ADMINISTRATIVE REQUIREMENTS

.1 Pre-installation Meetings: Conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Section 01 31 19 - Project Meetings.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data: Manufacturer's printed product literature, specifications and data sheets.

.3 Hardware List:

.1 Submit itemized hardware schedule prepared by a certified Architectural Hardware Consultant, including all doors listed by number in sequence and location with details of hardware supplied.

.2 Vertical form hardware list indicating manufacturer, model, material, function, finish and other pertinent information for each different type of hardware item proposed for use.

.4 Shop Drawings:

.1 Submit shop drawings for electrified hardware. Identify manufacturer, model, function, finish, options and other pertinent information. List each item separately.

.2 Provide description of operation for each different hardware set or function.

.3 Include schematic wiring diagrams, electrical service requirements, interconnection diagrams.

.4 Include parts lists and part numbers for each item.

.5 For openings with electrified or electronic hardware provide elevation drawings and point-to-point wiring diagrams of each system. Submit with shop drawings. Include documents in electronic format (PDF) for distribution to the electrical Subcontractor and other related trades.

.6 Manufacturer's Instructions: Submit manufacturer's installation instructions.

1.05 CLOSEOUT SUBMITTALS

.1 Submit closeout submittals in accordance with Section 01 78 00 - Closeout Submittals.

.2 Maintenance Data: Provide maintenance data and for door closers, door holders, locksets, fire exit hardware, electrified hardware, for incorporation into maintenance manual specified in Section 01 78 00 - Closeout Submittals. Include manufacturer, make and model number, parts list, and information of proper care, cleaning, and general maintenance of door hardware.

.3 Spare Parts and Maintenance Materials: Supply two sets of wrenches for door closers, locksets, and fire exit hardware.

1.06 QUALITY ASSURANCE

.1 Architectural Hardware Consultant: Hardware schedule shall be prepared by an individual employed by the hardware supplier. This individual shall be a certified Architectural Hardware Consultant (AHC or DAHC) and shall be a member of the Door and Hardware Institute or shall have a minimum of five years experience in the architectural hardware trade and shall have successfully performed work similar to the size and nature of this project. Present proof to Consultant upon request.

.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.

1.07 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Package each item of hardware including fastenings, separately or in like groups of hardware. Label each package as to item definition and location.

.3 Maintain inventory list with hardware schedule.

.4 Store finishing hardware in locked, clean and dry area.

1.08 WASTE MANAGEMENT AND DISPOSAL

.1 Comply with Section 01 74 21 - Construction/Demolition Waste Management and Disposal, and Waste Reduction Work Plan.

Part 2 Products

2.01 REGULATORY REQUIREMENTS

.1 Conform to applicable code for Products requiring electrical connection. Listed and classified by CSA or ULC suitable for the purpose specified and indicated.

.2 Hardware for doors in fire separations and exit doors accredited by the Standards Council of Canada and certified with either a cUL or ULC mark.

2.02 HARDWARE ITEMS

.1 Use one manufacturer's products only for similar items.

.2 Supply hardware as specified. Substitutions not permitted without prior written approval from the Consultant.

2.03 DOOR HARDWARE

.1 Door Hardware: As specified in Section 08 06 71 - Door Hardware Schedule and in this section.

.2 Templates and Reinforcing Units: Supply all necessary templates, blueprints and reinforcing units to Subcontractors requiring such items for completion of their portion of the Work.

.3 Silencers: Equip doors in wood frames with three clear plastic or vinyl door silencers for installation stops.

.4 Locksets:

.1 Bring in locksets from factory properly itemized as to keying and location.

.2 Except where indicated otherwise provide locksets with backsets as follows:

.1 Lever handles: 70 mm

.5 Butts:

.1 Provide doors up to and including 2 150 mm in height and 900 mm in width with 1 1/2 pair butts, unless indicated otherwise.

.2 Provide doors over these sizes with two pair butts or as may be specified in Door Hardware Schedule.

.6 Kickplates and Protection Plates:

.1 Material: Finish as specified in Section 08 06 71 – Door Hardware Schedule. Metal thickness 0.50 inches.

.2 Sizes: Width of plate less 40 mm on push side of door and 25 mm on pull side. Height of plate as specified.

.3 Fasteners: Oval head screws of same material and finish as kickplate being fastened.

.4 Provide on one side of door, unless otherwise indicated.

2.04 FASTENINGS

.1 Use only fasteners supplied by manufacturer. Failure to comply may void warranties and applicable licensed labels. Substitutions not permitted.

.2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.

.3 Exposed fastening devices to match material and finish of hardware.

.4 Where pull is required on one side of door and push plate on other side, provide fastening devices, and install so pull can be secured through door from reverse side. Install push plates to cover fasteners. Include provisions for drilling push/pull plates to accept lock cylinder where both items occur on the same door.

.5 Use fasteners compatible with material through which they pass.

2.05 KEYING

.1 Locks shall be master keyed as directed. Submit keying schedule for approval.

.2 Provide three keys for every lock in this Contract.

.3 Provide three master keys for each master key system.

.4 Stamp keying code numbers on keys and cylinders.

.5 Stamp “DO NOT DUPLICATE” on all keys.

.6 Deliver all keys to Owner via registered mail.

.7 Package all keys in key gathering envelope with all information typed thereon.

2.06 CONSTRUCTION KEYS

.1 Provide construction keying for every interior keyed lock provided in Contract plus minimum ten construction keys, and two extractors.

.2 Remove construction keying inserts by use of extractor key when directed by Consultant. Check operation of lock.

Part 3 Execution

3.01 MANUFACTURER’S INSTRUCTIONS

.1 Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

.2 Furnish door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.

.3 Furnish manufacturers' instructions for proper installation of each hardware component.

3.02 INSTALLATION

.1 Install hardware to standard hardware location dimensions in accordance with CSDMA Recommended Dimensional Standards For Commercial Steel Doors And Frames, except where specified otherwise.

.2 The following dimensions are only to be used as a general guide in the placement of hardware. Where special items are concerned, or uncertainty exists, check with the Consultant before fitting. Dimensions indicated are from finish floor to centre line of item, except as noted.

.1 Locksets/passage sets: ..... 1 025 mm

.2 Push/Pull Plates: ..... 1 067 mm

.3 Guard Bars: ..... 1 092 mm

.4 Deadlock: ..... 1 220 mm

.5 Exit Device (to cross bar): ..... 1 025 mm

.3 Push and Pull Plates: Install 127 mm from edge of door to centre of plate, unless indicated otherwise. Where pulls are mounted back-to-back use #5 mounting.

.4 Where door stop contacts door pulls, mount stop to strike bottom of pull.

.5 Use only manufacturer's supplied fasteners. Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.

.6 Remove construction cores when directed by Consultant. Install permanent cores and check operation of locks. Coordinate removal of construction cores with installation of permanent cores; ensure building security is not compromised.

3.03 FIELD QUALITY CONTROL

.1 Field Inspection and Certification:

.1 The hardware supplier shall, upon completion of the work, visit the job site, check the installation and certify in writing to the Consultant that the hardware has been installed correctly and is in proper working order.

3.04 ADJUSTING

.1 Adjust door hardware, operators, closures, and controls for optimum, smooth operating condition, safety and for weather tight closure.

.2 Lubricate hardware, operating equipment and other moving parts.

.3 Adjust door hardware to ensure tight fit at contact points with frames.

3.05 CLEANING

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

.1 Leave Work area clean at end of each day.

.2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.

.3 Remove protective material from hardware items where present.

.2 Final Cleaning: Upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.06 DEMONSTRATION

.1 Install key control system.

.2 Keying System Setup and Cabinet:

.1 Set up key control system with file key tags, duplicate key tags, numerical index, alphabetical index and key change index, label shields, control book and key receipt cards.

.2 Place file keys and duplicate keys in key cabinet on their respective hooks.

.3 Lock key cabinet and turn over key to Consultant.

.3 Maintenance Staff Briefing:

.1 Brief maintenance staff regarding:

.1 Proper care, cleaning, and general maintenance of projects complete hardware.

.2 Description, use, handling, and storage of keys.

.3 Use, application and storage of wrenches for door closers, locksets and fire exit hardware.

.4 Demonstrate operation, operating components, adjustment features, and lubrication requirements.

3.07 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by door hardware installation.

END OF SECTION

Hardware Group No. 01

For use on Door #(s):
D101 D102 D107 D115B D129

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER			FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4			652	IVE
1	EA	STOREROOM LOCK	ND80PD RHO			626	SCH
1	EA	ELECTRIC STRIKE	6211 FSE CON 24 VDC			630	VON
1	EA	SURFACE CLOSER	4040XP REG			689	LCN
1	EA	KICK PLATE	8400 10" B-CS X WIDTH TO SUIT			630	IVE
1	EA	WALL STOP	WS406/407CVX			626	IVE
1	EA	GASKETING	188SBK PSA X SIZED TO SUIT			BK	ZER
1	EA	WIRE HARNESS	CON-6W				SCH
1	EA	REQ TO EXIT	REQUEST TO EXIT BY DIV 28				
1	EA	Card Reader	Card Reader by Div 28				
1	EA	DOOR POSITION SWITCH	DOOR CONTACT BY DIV 28				
1	EA	POWER SUPPLY	POWER SUPPLY BY DIV 28				

DESCRIPTION OF OPERATIONS:

-DOOR NORMALLY CLOSED AND LOCKED
-ENTRY BY VALID CARD OR MANUAL KEY OVERRIDE
-FREE EGRESS AT ALL TIMES

Hardware Group No. 02

Hardware Codes
Section 08 71 01

For use on Door #(s):
D103A D112 D135

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4		652	IVE
1	EA	STOREROOM LOCK	ND80PD RHO		626	SCH
1	EA	ELECTRIC STRIKE	6211 FSE CON 24 VDC		630	VON
1	EA	SURFACE CLOSER	4040XP EDA		689	LCN
1	EA	KICK PLATE	8400 10" B-CS X WIDTH TO SUIT		630	IVE
1	EA	WALL STOP	WS406/407CVX		626	IVE
1	EA	GASKETING	188SBK PSA X SIZED TO SUIT		BK	ZER
1	EA	WIRE HARNESS	CON-6W			SCH
1	EA	REQ TO EXIT	REQUEST TO EXIT BY DIV 28			
1	EA	Card Reader	Card Reader by Div 28			
1	EA	DOOR POSITION SWITCH	DOOR CONTACT BY DIV 28			
1	EA	POWER SUPPLY	POWER SUPPLY BY DIV 28			

DESCRIPTION OF OPERATIONS:

-DOOR NORMALLY CLOSED AND LOCKED
-ENTRY BY VALID CARD OR MANUAL KEY OVERRIDE
-FREE EGRESS AT ALL TIMES

Hardware Group No. 03

For use on Door #(s):
D103B

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4	652	IVE
1	EA	PASSAGE SET	ND10S RHO	626	SCH
1	EA	KICK PLATE	8400 10" B-CS X WIDTH TO SUIT	630	IVE
1	EA	WALL STOP	WS406/407CVX	626	IVE
1	EA	GASKETING	188SBK PSA X SIZED TO SUIT	BK	ZER

Hardware Group No. 04

Hardware Codes
Section 08 71 01

For use on Door #(s):

D105	D106	D108	D109	D111	D114
D116	D117A	D118	D119A	D122	D124
D125	D128	D130	D131	D132	D133
D134					

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4		652	IVE
1	EA	ENTRANCE LOCK	ND53P6D RHO		626	SCH
1	EA	SURFACE CLOSER	4040XP REG		689	LCN
1	EA	KICK PLATE	8400 10" B-CS X WIDTH TO SUIT		630	IVE
1	EA	WALL STOP	WS406/407CCV		626	IVE
1	EA	GASKETING	188SBK PSA X SIZED TO SUIT		BK	ZER

Hardware Group No. 05

For use on Door #(s):

D115A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4		652	IVE
1	EA	STOREROOM LOCK	ND80PD RHO		626	SCH
1	EA	ELECTRIC STRIKE	6211 FSE CON 24 VDC	✓	630	VON
1	EA	OH STOP	100S		630	GLY
1	EA	SURFACE CLOSER	4040XP EDA		689	LCN
1	EA	KICK PLATE	8400 10" B-CS X WIDTH TO SUIT		630	IVE
1	EA	GASKETING	188SBK PSA X SIZED TO SUIT		BK	ZER
1	EA	WIRE HARNESS	CON-6W	✓		SCH
1	EA	REQ TO EXIT	REQUEST TO EXIT BY DIV 28			
1	EA	Card Reader	Card Reader by Div 28	✓		
1	EA	DOOR POSITION SWITCH	DOOR CONTACT BY DIV 28	✓		
1	EA	POWER SUPPLY	POWER SUPPLY BY DIV 28	✓		

DESCRIPTION OF OPERATIONS:

-DOOR NORMALLY CLOSED AND LOCKED
-ENTRY BY VALID CARD OR MANUAL KEY OVERRIDE
-FREE EGRESS AT ALL TIMES

Hardware Group No. 06

Hardware Codes
Section 08 71 01

For use on Door #(s):
D120

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4		652	IVE
1	EA	PASSAGE SET	ND10S RHO		626	SCH
1	EA	OH STOP	100S		630	GLY
1	EA	SURFACE CLOSER	4040XP EDA		689	LCN
1	EA	KICK PLATE	8400 10" B-CS X WIDTH TO SUIT		630	IVE
1	EA	GASKETING	188SBK PSA X SIZED TO SUIT		BK	ZER

Hardware Group No. 07

For use on Door #(s):
ED135A

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	HARDWARE	EXISTING HARDWARE TO REMAIN		

Hardware Group No. 08

For use on Door #(s):
ED135B ED135C ED136A ED136B ED136C ED136D

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	HARDWARE	EXISTING HARDWARE TO REMAIN		

Hardware Group No. 09

For use on Door #(s):
D117B D119B

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4		652	IVE
1	EA	PASSAGE SET	ND10S RHO		626	SCH
2	EA	DOOR BOLT	B680		626	SCH
1	EA	KICK PLATE	8400 10" B-CS X WIDTH TO SUIT		630	IVE
1	EA	WALL STOP	WS406/407CVX		626	IVE
1	EA	GASKETING	188SBK PSA X SIZED TO SUIT		BK	ZER

↯Electrified Opening

Hardware Group No. 10

Hardware Codes
Section 08 71 01

For use on Door #
D120B (Double doors at end of Corridor 120 with fire shutter)

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER		FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5 NRP		652	IVE
1	EA	FIRE EXIT HARDWARE	9827-L-F-LBR-06-499F		626	VON
1	EA	FIRE EXIT HARDWARE	9827-L-F-LBRAFL-06-499F		626	VON
2	EA	RIM CYLINDER	20-021		626	SCH
2	EA	SURFACE CLOSER	4040XP CUSH		689	LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS		630	IVE
2	EA	MOP PLATE	8400 6" X 1" LDW B-CS		630	IVE
1	EA	SMOKE/SOUND SEAL	188S-BK (1 X DR W, 2X DR H)		BK	ZER
2	EA	MEETING STILE	328AA-S X DR HT		AA	ZER
2	EA	DOOR BOTTOM(MORTISE)	355AA X DR WIDTH UNDERCUT HM DOOR BOTTOMFOR ENGAGEMENT OF DOOR BOTTOM TO FLOOR MATERIAL		AA	ZER

Part 1 General

1.01 SUMMARY

.1 Section Includes:

.1 Transparent glass glazing for general and special purpose applications.

1.02 RELATED REQUIREMENTS

.1 Section 07 92 00 - Joint Sealants

.2 Section 08 11 13 - Hollow Metal Doors and Frames: For vision panels in doors and sidelites.

1.03 REFERENCE STANDARDS

.1 American National Standards Institute (ANSI)

.1 ANSI/ASTM E330, Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference

.2 ASTM

.1 ASTM D2240-15e1, Standard Test Method for Rubber Property - Durometer Hardness

.3 Canadian General Standards Board (CGSB)

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

.4 Consumer Product Safety Commission (CPSC)

.1 16 CFR 1201 (2012), Safety Standard for Architectural Glazing Materials

.5 Glass Association of North America (GANA)

.1 GANA Glazing Manual

1.04 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Action Submittals:

.3 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for [glass, sealants, and glazing accessories] and include product characteristics, performance criteria, physical size, finish and limitations.

.4 Informational Submittals:

.1 Certificates: Submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.2 Test Reports:

.1 Certified test reports showing compliance with specified performance characteristics and physical properties.

1.05 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: Provide maintenance data including cleaning instructions for incorporation into maintenance manual.

1.06 QUALITY ASSURANCE

.1 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.07 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: Deliver materials to site in original factory packaging, labeled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect glazing from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

1.08 WASTE MANAGEMENT AND DISPOSAL

.1 Comply with Section 07 74 21 - Construction/Demolition Waste Management and Disposal, and Waste Management Plan.

1.09 SITE CONDITIONS

.1 Ambient Requirements:

.1 Install glazing when ambient temperature is 10°C minimum. Maintain ventilated environment for 24 hours after application.

.2 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.10 WARRANTY

.1 Provide warranties in accordance with General Conditions and Section 01 78 00 – Closeout Submittals.

Part 2 Products

2.01 PERFORMANCE REQUIREMENTS

.1 Performance Requirements:

.1 Size glass to withstand normal thermal movement, wind loads, dead loads and positive and negative live loads as measured in accordance with ANSI/ASTM E330 including loss or glass breakage attributable to the following:

.1 Defective manufacture, fabrication or installation.

.2 Failure of sealants.

.3 Gaskets to remain watertight and airtight.

.4 Deterioration of glazing materials.

.5 Other defects in construction.

.2 Limit glass deflection to L/175, flexural limit of glass with full recovery of glazing materials.

.3 Delegated Design:

.1 Design glass, including comprehensive engineering analysis according to CAN/CGSB-12.20 and NBC by a qualified professional engineer.

.2 Design Wind Pressures: As indicated on Drawings.

.3 Design Snow Loads: As indicated on Drawings.

.4 Design and verify maximum glass sizes, thickness, strength, for glass types specified, to support design and maximum allowable uniform static loads using design factor of 2.5 in accordance with CAN/CSGB 12.20, but thickness shall not be less than as specified in this Section.

2.02 MATERIALS: FLAT GLASS

.1 General:

.1 Source Limitations for Glass: Obtain coated float glass and insulating glass from single source from single manufacturer for each glass type.

.2 Strength: Where float glass is indicated, provide annealed float glass, heat-strengthened heat-treated float glass, or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened glass is indicated, provide heat-strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where fully tempered glass is indicated, provide fully tempered float glass.

.2 Safety Glass: CAN/CGSB-12.1:

.1 Type 2 – Tempered.

.1 Class B - float.

.2 Category: 16 CFR 1201, Category II.

.2 Thickness: 6 mm.

.3 Edge Treatment for Exposed Edges: Ground.

.4 Edge Profile for Exposed Edges: Square with eased edges.

.3 Ceramic Rated Glass:

.1 Basis of Design: FireLite Plus, standard grade, impact safety tested.

.2 Thickness: 8 mm.

.3 Fire Rating: 90 minutes.

2.03 ACCESSORIES

.1 Primer-Sealers and Cleaners: To glass manufacturer's standard.

.2 Setting Blocks: Silicone, 80 - 90 Shore A durometer hardness to ASTM D2240, length of 25 mm for each one square meter of glazing minimum length 100 mm x width of glazing rabbet space less 1.5 mm x height. Compatible with edge sealants on insulating glass units.

.3 Spacer Shims: Silicone, Shore A durometer hardness to ASTM D2240, 75 mm long by one half height of glazing stop with thickness to suit application. Self-adhesive on one face. Compatible with edge sealants on insulating glass units.

.4 Glazing Tape:

.1 Preformed butyl, 10 - 15 Shore A durometer hardness to ASTM D2240; coiled on release paper; black colour.

.2 Closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume 2%, designed for compression of 25%, to effect an air and vapour seal.

Part 3 Execution

3.01 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.02 EXAMINATION

.1 Verify openings for glazing are correctly sized and within tolerance.

.2 Verify surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

.3 Verification of Conditions: Verify conditions of substrates previously installed under other Sections or Contracts are acceptable for glazing installation in accordance with manufacturer's written instructions.

.1 Verify that openings for glazing are correctly sized and within tolerance.

.2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

.3 Visually inspect substrate.

.4 Inform Consultant of unacceptable conditions immediately upon discovery.

.5 Proceed with installation only after unacceptable conditions have been remedied.

3.03 PREPARATION

.1 Clean contact surfaces with solvent and wipe dry.

.2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.

.3 Prime surfaces scheduled to receive sealant.

3.04 INSTALLATION: INTERIOR - DRY METHOD (PREFORMED TAPE AND PEFORMED TAPE)

.1 Perform work in accordance with GANA Glazing Manual for glazing installation methods.

.2 Cut glazing tape to length and set against permanent stops, projecting 1.6 mm above sight line.

.3 Place setting blocks at 1/4 points, with edge block maximum 150 mm from corners.

.4 Rest glazing on setting blocks and push against tape for full contact at perimeter of light or unit.

.5 Place glazing tape on free perimeter of glazing in same manner described in above.

.6 Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.

.7 Knife trim protruding tape.

3.05 CLEANING

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

.2 Leave Work area clean at end of each day.

.1 Remove traces of primer, caulking.

.2 Remove glazing materials from finish surfaces.

.3 Remove labels.

.4 Clean glass and mirrors using approved non-abrasive cleaner in accordance with manufacturer's instructions.

.3 Final Cleaning: Upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.06 PROTECTION OF FINISHED WORK

.1 Protect installed products and components from damage during construction.

.2 After installation, mark each light with an "X" by using removable plastic tape or paste.

.1 Do not mark heat absorbing or reflective glass units.

.3 Repair damage to adjacent materials caused by glazing installation.

3.07 SCHEDULE

.1 Section 08 11 13 - Hollow Metal Doors and Frames:

.1 Interior Doors and Frames - Not Fire Rated:

.1 Glass: Safety glass tempered.

.2 Glazing Method: Interior glazing dry/dry method as specified in Article 3.04.

.2 Interior Doors and Frames – Fire Rated:

.1 Glass: FireLite Plus

END OF SECTION

ROOM SCHEDULE

ROOM		FLOOR		WALLS								CEILINGS		REMARKS
				NORTH		EAST		SOUTH		WEST				
No.	NAME	FIN	BASE	MAT	FIN	MAT	FIN	MAT	FIN	MAT	FIN	MAT	FIN	
TRAINING + PLANT + EQUIPMENT														
101	CLASSROOM	RSF-1A	RCB-1	GB	PT-1	GB	PT-4	GB	PT-1	GB	PT-7	ACT-1		
102	CLASSROOM	RSF-1A	RCB-1	GB	PT-1	GB	PT-7	GB	PT-1	GB	PT-4	ACT-1		
103	KITCHEN	RSF-1B	RCB-1	GB	PT-1	GB	PT-1	GB	PT-1	GB	PT-1	ACT-1/GB	PT-8	
104	LUNCHROOM	RSF-1A	RCB-1	GB	PT-4	GB	PT-1	GB	PT-1	GB	PT-1	ACT-1/GB	PT-8	
105	OFFICE	CPT-1	RCB-1	GB	PT-1	GB	PT-6	GB	PT-1	GB	PT-1	ACT-1		
106	OFFICE	CPT-1	RCB-1	GB	PT-1	GB	PT-1	GB	PT-1	GB	PT-6	ACT-1		
107	CORRIDOR	CPT-1	RCB-1	GB	PT-1	GB	PT-1	-	-	GB	PT-1	ACT-1		
108	OFFICE	CPT-1	RCB-1	GB	PT-1	GB	PT-6	GB	PT-1	GB	PT-1	ACT-1		
109	OFFICE	CPT-1	RCB-1	GB	PT-1	GB	PT-1	GB	PT-1	GB	PT-6	ACT-1		
110	CORRIDOR	CPT-1	RCB-1	GB	PT-1	GB	PT-4	GB	PT-1	GB	PT-1	ACT-1		
111	BOARDROOM	CPT-1	RCB-1	GB	PT-1	GB	PT-3	GB	PT-1	GB	PT-3	ACT-1/GB	PT-8	
112	RECEPTION	CPT-1	RCB-1	GB	PT-1	GB	PT-1	GB	PT-1	GB	PT-1	ACT-1		
113	CORRIDOR	CPT-1	RCB-1	GB	PT-1	GB	PT-1	GB	PT-1	GB	PT-1	ACT-1		
114	SAFETY OFFICERS	CPT-1	RCB-1	GB	PT-6	GB	PT-1	GB	PT-1	GB	PT-1	ACT-1		
115	COPY	CPT-1	RCB-1	GB	PT-1	GB	PT-1	GB	PT-1	GB	PT-1	ACT-1		
116	OFFICE	CPT-1	RCB-1	GB	PT-1	GB	PT-3	GB	PT-1	GB	PT-1	ACT-1		
117	OFFICE	CPT-1	RCB-1	GB	PT-1	GB	PT-1	GB	PT-1	GB	PT-3	ACT-1		
118	OFFICE	CPT-1	RCB-1	GB	PT-1	GB	PT-3	GB	PT-1	GB	PT-1	ACT-1		
119	OFFICE	CPT-1	RCB-1	GB	PT-1	GB	PT-1	GB	PT-1	GB	PT-3	ACT-1		
120	CORRIDOR	CPT-1	RCB-1	-	-	GB	PT-2	GB	PT-2	-	-	EXP		
121	CORRIDOR	CPT-1	-	-	-	-	-	GB	PT-2	-	-	EXP		
137	CORRIDOR	CPT-1	-	-	-	-	-	-	-	GB	PT-2	EXP		
138	CORRIDOR	CPT-1	-	GB	PT-2	-	-	-	-	-	-	EXP		

ROOM SCHEDULE

ROOM		FLOOR		WALLS								CEILINGS		REMARKS
				NORTH		EAST		SOUTH		WEST				
No.	NAME	FIN	BASE	MAT	FIN	MAT	FIN	MAT	FIN	MAT	FIN	MAT	FIN	
FACILITIES CONTRACTS & MAINTENANCE														
122	LUNCHROOM / MEETING ROOM	RSF-1A	RCB-1	GB	PT-3	GB	PT-3	GB	PT-3	GB	PT-4	ACT-1/GB	PT-8	
123	COFFEE / KITCHEN	RSF-1A	RCB-1	GB	PT-6	GB	PT-1	GB	PT-1	GB	PT-1	ACT-1		
124	OFFICE	CPT-1	RCB-1	GB	PT-1	GB	PT-6	GB	PT-1	GB	PT-1	ACT-1		
125	OFFICE	CPT-1	RCB-1	GB	PT-1	GB	PT-6	GB	PT-1	GB	PT-1	ACT-1		
126	ADMIN	CPT-1	RCB-1	GB	PT-1	GB	PT-1	GB	PT-1	GB	PT-1	ACT-1		
127	CORRIDOR	CPT-1	RCB-1	GB	PT-1	-	-	GB	PT-1	GB	PT-1	ACT-1/EXP		
128	SUPERINTENDENT (CHARLIE CONG)	CPT-1	RCB-1	GB	PT-1	GB	PT-1	GB	PT-1	GB	PT-6	ACT-1		
129	CORRIDOR	CPT-1	RCB-1	GB	PT-1	GB	PT-1	GB	PT-1	GB	PT-1	ACT-1/EXP		
130	PROJECT MANAGER	CPT-1	RCB-1	GB	PT-1	GB	PT-1	GB	PT-1	GB	PT-6	ACT-1		
131	PROJECT COORDINATOR	CPT-1	RCB-1	GB	PT-1	GB	PT-1	GB	PT-1	GB	PT-6	ACT-1		
132	NEW CONTRACT OFFICER	CPT-1	RCB-1	GB	PT-1	GB	PT-1	GB	PT-1	GB	PT-6	ACT-1		
133	VISITOR CONTRACTOR	CPT-1	RCB-1	GB	PT-1	GB	PT-1	GB	PT-1	GB	PT-6	ACT-1		
134	IN-CHARGE	RSF-1A	RCB-1	GB	PT-1	GB	PT-1	GB	PT-1	GB	PT-6	ACT-1		
135	CORRIDOR	EX CONC	RCB-1	CB	PT-2	CB	EX	CB	EX	GB	PT-2	EXP		1
136	CORRIDOR	EX CONC	RCB-1	GB	PT-2	CB	EX	CB	EX	CB	EX	EXP		2

Notes:

1 RCB-1 on North, East, and West walls only.

2 RCB-1 on North wall only.

SPEC SECTION	FINISH CODE	DESCRIPTION		PRODUCT / MANUFACTURER / SPECIAL INSTRUCTIONS
05 55 00	**CG-1**	**CORNER GUARDS**	*Type:*	Stainless Steel Corner Guard
		WALL PROTECTION	*Material:*	Brushed Stainless Steel, 24 gauge
			Dimension:	3" Leg size, 8'-0" H
			Details	All edges eased, corners radiused 1/8"
			Installation:	Double sided tape
			Quantity:	As per partiton plans
06 40 00	**PLAM-1**	**PLASTIC LAMINATE**	*Manufacturer and Contact Info:*	Nevamar
			Laminate Name	Black Pearl S6014T
			finish:	Textured
			Location:	Upper and Lower Cabinets
06 40 00	**PLAM-2**	**PLASTIC LAMINATE**	*Manufacturer and Contact Info:*	Formica
			Laminate Name	Ebony Oxide 299-58
			finish:	Matte
			Location:	Countertops
06 61 16	**SOL-1**	**SOLID SURFACE**	*Manufacturer and Contact Info:*	Corian
			Type:	Solid Surface
			Colour:	Everest
			Location:	Kitchen 103 (West side)
				Coffee / Kitchen 123
06 61 16	**SOL-2**	**SOLID SURFACE**	*Manufacturer and Contact Info:*	HI-MACS
			Type:	Solid Surface
			Colour:	Black Pearl G10
			Location:	Kitchen 103 (East side)
09 30 13	**CT-1**	**CERAMIC GLAZED WALL**	*Distributor*	Olympia Tile
		TILE - MATT	*Style:*	Colour and Dimension Collection
			Colour	Arctic White Matt
			Dimension:	3 x 6 (code QT.CD.ARW.0306.MT)
			Grout:	Flextile - white to coordinate with Arctic White tile. Submit sample at time of shop drawings
			Location:	Kitchen 103
09 51 00	**ACT-1**	**NEW SUSPENSION**	*Manufacturer:*	Armstrong
		SYSTEM AND	*Acceptable Manufacture Grid*	15/16" Prelude suspension System
		NEW MINERAL FIBRE	*Style:*	Cirrus
		ACOUSTICAL TILE	*Colour:*	581 (WH) - White
			Substrate Material	Mineral Fibre
			Base bldg Tile & Grid Dimension:	2'-0" x 4'-0"
			Tile Edge Profile:	Square Lay-In
			Recycled Content:	86%
			Acoustics:	NRC 0.70 and CAC 40,
			Fire Performance:	ASTM Classification Type: III, Form: 1, Pattern: E I Class A (UL)
			Location:	Refer to Reflected Ceiling Plan
			Perimiter Trim:	Axiom Classic
				2" Straight Perimeter Trim
09 65 00	**RCB-1**	**RUBBER COVE BASE**	*Manufacturer:*	Johnsonite
			Style:	4" rubber cove base
			Colour:	20 Charcoal

SPEC SECTION	FINISH CODE	DESCRIPTION		PRODUCT / MANUFACTURER / SPECIAL INSTRUCTIONS
09 65 00	**RSF-1A**	**RESILIENT SHEET**	*Distributor and Contact Info:*	Erv Parent
		FLOORING	*Manufacturer:*	Tarkett
			Series:	IQ Optima
			Colour	873 Light Beige Grey CG
			Dimension	82.7' (25M) x 6.-6" (2M) roll goods
			Wear layer	Homogeneous Sheet Flooring
			Thickness	.080" (2.0 mm)
			Seam:	Heat weld to abutting Tarkett IQ Optima to match RSF-1A
			Subfloor:	concrete
09 65 00	**RSF-1B**	**RESILIENT SHEET**	*Distributor and Contact Info:*	Erv Parent
		FLOORING	*Manufacturer:*	Tarkett
			Series:	IQ Optima
			Colour	837 Light Olive Green
			Dimension	82.7' (25M) x 6.-6" (2M) roll goods
			Wear layer	Homogeneous Sheet Flooring
			Thickness	.080" (2.0 mm)
			Seam:	Heat weld to abutting Tarkett IQ Optima to match RSF-1B
			Subfloor:	concrete
09 65 00	**THRES-1**	**THRESHOLD**	*Manufacturer:*	Tarkett
		CARPET TILE TO	*Series*	Wheeled Traffic Transitions
		RESILIENT FLOORING	*Model:*	CTA-28-H
			colour:	28 Medium Grey
			Material:	Vinyl
09 65 00	**THRES-2**	**THRESHOLD**	*Manufacturer:*	Tarkett
		CARPET TILE TO	*Series*	Wheeled Traffic Transitions
		CONCRETE	*Model:*	CTA-20-J
			colour:	20 Charcoal
			Material:	Vinyl
09 65 00	**THRES-3**	**THRESHOLD**	*Manufacturer:*	Johnsonite
		RESILIENT FLOORING	*Series*	Reducer
		TO CONCRETE	*Model:*	SSR-28-B
			colour:	28 Medium Grey
			Material:	Vinyl
09 68 00	**CPT-1**	**CARPET TILE**	*Distributor and Contact Info:*	Lisa Kehler (431-276-1756)
			Manufacturer:	Interface
			Style:	Aerial Collection
			Colour:	AE312 Smoke Accent
			Construction:	Carpet tile
			Fiber	100% Recycled Content Type 6 Nylon
			Installation Pattern:	Quarter Turn
			Tile Size:	50 x 50cm square carpet tile
			Subfloor:	Concrete
			Adhesive:	Manufacturers recommendations

SPEC SECTION	FINISH CODE	DESCRIPTION		PRODUCT / MANUFACTURER / SPECIAL INSTRUCTIONS
09 84 13	**ACP-1**	**ACOUSTIC PANELS**	*Manufacturer:*	Hush Acoustics
			Style:	Acoustic Sheet
			Colour:	Oyster
			Construction:	100% PET
			Thickness:	9 mm
			NRC:	0.85
			Installation:	Construction adhesive
			Tile Size:	48" x 96"
09 91 00	**PT-1**	**PAINT**	*Manufacturer:*	Sherwin Williams
			Colour Name & Number:	SW 7070 Site White
			Finish:	Eggshell
09 91 00	**PT-2**	**PAINT**	*Manufacturer:*	Sherwin Williams
			Colour Name & Number:	SW 7070 Site White
			Finish:	Cashmere Low Lustre
09 91 00	**PT-3**	**PAINT**	*Manufacturer:*	Sherwin Williams
			Colour Name & Number:	SW 7662 Evening Shadow
			Finish:	Eggshell
09 91 00	**PT-4**	**PAINT**	*Manufacturer:*	Sherwin Williams
		ACCENT	*Colour Name & Number:*	SW 6250 Granite Peak
			Finish:	Eggshell
09 91 00	**PT-5**	**PAINT**	*Manufacturer:*	Sherwin Williams
		ACCENT	*Colour Name & Number:*	SW 6250 Granite Peak
			Finish:	Semi-gloss
09 91 00	**PT-6**	**PAINT**	*Manufacturer:*	Sherwin Williams
		ACCENT	*Colour Name & Number:*	SW 6708 Springtime
			Finish:	Eggshell
09 91 00	**PT-7**	**PAINT**	*Manufacturer:*	IdeaPaint
			Colour Name & Number:	CREATE White
			Finish:	Gloss
			Location:	Classrooms 101 and 102
09 91 00	**PT-8**	**PAINT**	*Manufacturer:*	Benjamin Moore
			Colour Name & Number:	CC-10 Ultra White
			Finish:	Flat
			Location:	Ceilings/bulkheads
10 28 10	**CH-1**	**COAT HOOK**	*Manufacturer:*	Bobrick
			Model:	B-542
			Finish:	Satin
			Location:	Refer to Floor Plan
10 90 00	**FE-1**	**FIRE EXTINGUISHERS**	*Manufacturer:*	Portable Fire Extinguisher - Class A
		in CABINET	*Model:*	Cabinet to suit 5lb fire extinguisher recessed into wall. Mount cabinet at 1200 max above finished floor to centre line
				5 lb fire extinguisher
			Location:	Install after painting
				Refer to partition plan and lifesafety for location

Part 1 General

1.01 RELATED REQUIREMENTS

.1 Section 07 84 00 - Firestopping

.2 Section 09 22 16 - Non-structural Metal Framing: Metal stud framing for interior walls and partitions

.3 Section 09 91 00 - Painting

1.02 REFERENCE STANDARDS

.1 Aluminum Association

.1 Designation for Aluminum Finishes

.2 ASTM

.1 ASTM C475 / C475M - 17, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board

.2 ASTM C514 - 04(2014), Specification for Nails for the Application of Gypsum Board

.3 ASTM C557 - 03(2017), Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing

.4 ASTM C665 - 17, Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing

.5 ASTM C834 - 17, Standard Specification for Latex Sealants

.6 ASTM C840 - 17a, Standard Specification for Application and Finishing of Gypsum Board

.7 ASTM C954 - 18, 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

.8 ASTM C1002 - 18, Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs

.9 ASTM C1047 – 14a, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base

.10 ASTM C1177 / C1177M - 17, Specification for Glass Mat Gypsum Substrate for Use as Sheathing

.11 ASTM C1178 / C1178M -13, Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel

.12 ASTM C1278 / C1278M - 17, Standard Specification for Fiber-Reinforced Gypsum Panel

.13 ASTM C1280 - 13, Specification for Application of Gypsum Sheathing

.14 ASTM C1396 / C1396M - 17, Standard Specification for Gypsum Board

.15 ASTM C1629 / C1629M—06 Standard Classification for Abuse-resistant Nondecorated Interior Gypsum Panel Products and Fiber-reinforced Cement Panels

.3 Canadian Standards Association (CSA)

.1 CAN/CSA-Z317.13, Infection Control during Construction, Renovation, and Maintenance of Health Care Facilities

.4 Gypsum Association (GA)

.1 GA-214 - 17, Recommended Levels of Gypsum Board Finish

.2 GA-600 - 2009, Fire Resistance Design Manual

.3 .

.5 Underwriters Laboratories of Canada (ULC

.1 CAN/ULC-S702 - 14, Standard for Mineral Fibre Thermal Insulation for Buildings

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Action Submittals:

.1 Shop Drawings: Provide shop drawings for shaft wall systems indicating materials and components, stud gauges, fire ratings, installation details. Indicate maximum limiting heights for wall applications; and maximum spans for ceiling applications, including maximum stud spacing.

.3 Informational Submittals:

.1 Product Data: Provide manufacturer's technical data and brochures for specified materials, including detail drawings and installation instructions.

.2 Certificates: Provide a letter of certification from the gypsum board manufacturer indicating that the products supplied for this project do not contain hydrogen sulphide, sulphur dioxide, sulphur or any sulphur by-products.

1.04 QUALITY ASSURANCE

.1 Gypsum board materials supplied for use on this project shall not contain hydrogen sulphide, sulphur dioxide, sulphur or any sulphur by-products.

.2 Upon request, provide certification letters from gypsum board manufacturer certifying that products meet or exceed specified requirements.

1.05 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials in original packages, containers or bundles bearing manufacturers brand name and identification.

.2 Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.

.3 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.

.4 Gypsum board that becomes damp, wet or contaminated with dust or dirt shall be considered damaged materials. Replace damaged materials at no additional cost to the Contract.

.5 Comply with CAN/CSA Z317.13.

.6 When shipping, handling and storing gypsum board protect from weather; take all precautions to prevent moisture or dust contamination.

.1 Wrap gypsum board in waterproof covers at plant or distribution centre prior to shipping.

.2 Load gypsum board in indoor facilities, and ship to project site in enclosed vehicles only. Do not use flat-bed trucks exposed to the elements.

.3 Unload at project site only during dry weather.

.4 Store gypsum board indoors in dry location, off concrete floors.

1.06 SITE CONDITIONS

.1 Maintain temperature minimum 10º C, maximum 21º 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.

1.07 WASTE MANAGEMENT AND DISPOSAL

.1 Comply with Section 01 74 21 - Construction/Demolition Waste Management and Disposal, and Waste Reduction Work Plan.

Part 2 Products

2.01 ACCEPTABLE MANUFACTURERS

.1 The following manufacturers of gypsum board are acceptable for the supply of gypsum board for this project:

.1 Canadian Gypsum Company (US Gypsum)

.2 CertainTeed Gypsum Canada Inc.

.3 Georgia-Pacific

2.02 GYPSUM BOARD

.1 Standard Board: To ASTM C1396/C1396M, regular and Type X, thickness indicated, 1 220 mm (4'-0") wide x maximum practical length, ends square cut, edges.

.2 Water Resistant Board: To ASTM C1396/C1396M, regular and fire-rated, thickness indicated, 1 220 mm (4'-0") wide x maximum practical length. Moisture and mould resistant.

2.03 SOUND DAMPENING GYPSUM BOARD

.1 Sound Damping Gypsum Board: ASTM C1396/C1396M, regular and Type X, 16 mm (5/8 inch) thick, 1 220 mm (4'-0") wide x maximum practical length, ends square cut, edges tapered.

.1 Acceptable Products: QuietRoc.

2.04 METAL FURRING AND SUSPENSION SYSTEMS

.1 Metal furring, runners, hangers, tie wires, inserts, anchors: to ASTM C1280, galvanized.

.2 Drywall Furring Channels: 25-gauge galvanized steel channels for screw attachment of gypsum board.

.3 Wire Hangers: Minimum 12 gauge galvanized mild steel.

2.05 ACCESSORIES

.1 Nails: To ASTM C514.

.2 Steel Drill Screws: To ASTM C1002 and ASTM C954 for attachment of gypsum board to heavier backing material. Provide corrosion resistant screw for attachment of water resistant board.

.3 Stud Adhesive: To ASTM C557.

.4 Laminating Compound: As recommended by manufacturer, asbestos free.

.5 Casing Beads, Corner Beads Fill Type: To ASTM C1047, 25 gauge commercial grade sheet steel, zinc coated, perforated flanges; one piece length per location. Plastic casing bead and corner beads not acceptable.

.6 Joint Compound and Joint Tape: To ASTM C475/C475M, asbestos free.

.7 Acoustical Sealant: To ASTM C834.

.1 Acceptable Products: Tremco Tremflex 834, Chem-Calk 600; Sheetrock Acoustical Sealant; CertainTeed QuietSeal Pro.

.8 Sound Dampening Putty:

.1 Purpose made, acoustical underlayment in 178 x 178 mm x 3.17 mm thick pads.

.2 For sound damping around outlet/switch boxes, conduit, pipes, ducts and other items penetrating sound rated or sound insulation wall and ceiling assemblies.

.3 Acceptable Products: Serious Energy QuietPutty 380.

.9 Insulating Strip: Rubberized, moisture resistant, 3 mm thick closed cell neoprene strip, 12 mm wide, with self sticking permanent adhesive on one face, lengths as required.

2.06 ACOUSTIC INSULATION

.1 Sound Attenuation Batt Insulation: To ASTM C665 Type 1, CAN/ULC-S702 Type 1, unfaced mineral fibre, thickness indicated, width to suit stud spacing.

.1 Acceptable Products: Owens Corning Sound Attenuation Fire Batts/Mineral Wool; Johns Mansville Sound-Shield; CGC Thermafiber Sound Attenuation Fire Blankets; Rockwool AFB.

Part 3 Execution

3.01 ERECTION

.1 Do application and finishing of gypsum board in accordance with ASTM C840 except where specified otherwise.

.2 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.

.3 Install gypsum board on walls vertically to avoid end-butt joints. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-rated assemblies require vertical application.

.4 Install gypsum board with face side out.

.5 Do not install damaged or damp boards.

.6 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

3.02 SUSPENDED AND FURRED CEILINGS

.1 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C840, except where indicated or specified otherwise.

.2 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.

.3 Install work level to tolerance of 1:1200

.4 Provide additional ceiling suspension hangers to support all items suspended from ceilings such as grilles, diffusers, etc. Refer to drawings and specifications and co-ordinate with other trades for specific items.

.5 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles.

.6 Install 20 mm x 64 mm furring channels parallel to, and at exact locations of steel stud partition header track.

.7 Provide casing beads around perimeter of suspended gypsum board ceilings and adjacent walls. Make joint tight fitting to wall.

.8 Furr for gypsum board faced vertical bulkheads within or at termination of ceilings.

.9 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.

3.03 WALL FURRING

.1 Install wall furring for gypsum board wall finishes in accordance with ASTM C840, except where indicated otherwise.

.2 Frame openings and around built-in equipment on four sides. Extend furring into reveals. Check clearances with equipment suppliers.

.3 Furr duct shafts, beams, columns, pipes and exposed services where indicated.

3.04 GYPSUM BOARD APPLICATION

.1 Do not apply gypsum board until bucks, anchors, blocking, sound attenuation, electrical and mechanical work are approved.

.2 Apply single layer gypsum board to furring or framing using screw fasteners. Apply double layer gypsum board to furring or framing using screw fasteners for first layer, laminating adhesive for second layer. Maximum spacing of screws 300 mm on centre.

.1 Single-Layer Application:

.1 Apply gypsum board on ceilings prior to application of walls in accordance with ASTM C840.

.2 Apply gypsum board vertically or horizontally, providing sheet lengths that will minimize end joints.

.2 Double-Layer Application:

.1 Install gypsum board for base layer and exposed gypsum board for face layer.

.2 Apply base layer to ceilings prior to base layer application on walls; apply face layers in same sequence. Offset joints between layers at least 250 mm.

.3 Apply base layers at right angles to supports unless otherwise indicated.

.4 Apply base layer on walls and face layers vertically with joints of base layer over supports and face layer joints offset at least 250 mm with base layer joints.

.3 Install gypsum board full height of stud framing where studs extend to underside of overhead structures, floors or roof decks, except where otherwise indicated.

.4 Where gypsum board is installed above finished ceilings, fit work tight to all items penetrating through gypsum board. Seal around full perimeter of items with sealant. For fire rated assemblies and smoke barriers use fire stopping in accordance with Section 07 84 00 – Fire Stopping, and acoustical sealant elsewhere.

3.05 FIRE RATED ASSEMBLIES

.1 Construct fire rated assemblies where indicated.

.2 Fire rated assemblies to be constructed in accordance with a ULC listed or cUL certified assembly, or in accordance with Appendix D of the NBC.

.3 Apply Type X (fire rated) gypsum board where indicated, to obtain fire ratings as indicated or required.

.4 For fire rated partitions and ceilings apply first and second layers with screw fasteners. No adhesives permitted. Screw spacing as follows:

.1 Ceilings: 150 mm on centre around perimeter and 300 mm on centre in field of sheet.

.2 Walls: 200 mm on centre around perimeter and 300 mm on centre in field of sheet.

.5 At door and window openings in fire rated walls and partitions install gypsum board filler full width and length of opening to cover stud header as specified in National Building Code.

.6 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.

.7 Install gypsum board on walls vertically to avoid end-butt joints. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-rated assemblies require vertical application.

.8 Install gypsum board with face side out.

.9 Do not install damaged or damp boards.

.10 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

.11 Provide perimeter relief control joints in fire rated partitions in accordance with GA - 600.

3.06 SOUND RATED/ACOUSTICALLY INSULATED PARTITIONS

.1 Install acoustic insulation in sound rated and sound insulated partitions and ceiling assemblies, of thickness indicated or required to provide sound rating indicated.

.2 Install insulation tight between studs, full height of partition.

.3 Cut and trim insulation to fit tight around protrusions, electrical boxes, and other obstructions. Leave no voids or gaps. Do not compress batts.

.4 Apply 6 mm – 9 mm round bead of acoustical sealant to seal perimeter of sound rated partitions to prevent noise transmission and to provide required sound rating

.5 Seal Sound-rated Partitions:

.1 On both sides where facings abut dissimilar materials;

.2 Around perimeter, in the angle formed by panels and abutting dissimilar materials;

.3 At intersections;

.4 At panel terminations in door and window frames; and

.5 At control joint locations before attaching the control joint to the panels.

.6 Seal full perimeter of openings for electrical boxes, ducts, conduit and other cut-outs and penetrations in partitions where perimeter sealed with acoustical sealant.

.7 Seal joints around penetrations in sound rated partitions using glass fibre insulation to fill joints completely.

.8 Apply continuous beads of acoustical sealant around all openings formed for outlets, lights, etc.

.9 Cut gypsum panels with 3 mm maximum relief at perimeter to receive sealant. Install before sealant skins.

.10 Extrude a full bead of acoustical sealant into each joint between first layer of wallboard and floor or other adjoining surface.

.11 Sound Dampening Putty:

.1 Seal around back of outlet and switch boxes with sound dampening putty.

.2 Clean surfaces of dust, dirt and other foreign matter that may inhibit adhesion.

.3 Cover back and all sides of boxes with putty and overlap and seal putty to studs or back of gypsum board.

.4 Cut putty pads to fit and seal around conduits and wiring entering box ensuring full sound seal.

.5 Pleat extra material at corners.

.6 Press putty pads firmly against substrate ensure full adhesion and coverage.

3.7 ACCESSORIES

.1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces wherever possible. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges.

.2 Secure casing beads, corner beads and trim with screws. Staples and crimping not permitted. Secure at 300 mm on centre.

.3 Install casing beads around perimeter of suspended ceilings and bulkheads, around openings and where gypsum board abuts a dissimilar material.

.4 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and elsewhere indicated.

.5 Seal joints with acoustic sealant.

.6 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.

3.8 CONTROL JOINTS

.1 Construct control joints set in gypsum board facing and supported independently on both sides of joint.

.1 For joints moving in only one plane use preformed units.

.2 For joints moving in multiple planes use back-to-back casing beads.

.2 Install continuous 6 mil polyethylene dust barrier behind and across control joints.

.3 Install control joints, plumb, straight and true with not more than 1 mm gap.

.4 Use gypsum board with tapered edges on both sides of control joint. Tape, fill and sand casing beads flush with adjacent surface.

.5 Locate control joints where indicated, and at the following locations:

.1 where partitions or furring abuts a structural element or dissimilar wall or ceiling,

.2 where a ceiling or bulkhead abuts a structural element or dissimilar wall or other vertical penetration,

.3 construction changes within plane of the partition or ceiling,

.4 partition or furring runs exceed 9 m,

.5 ceiling dimensions exceed 15 m for gypsum board in either direction,

.6 wings of "L", "U" and "T" shaped ceiling areas are joined, and

.7 expansion or control joints occur in structural elements of the building.

.6 On walls locate control joints over door and window openings wherever possible. Align control joint with corner of frames.

3.9 REMEDIAL WORK

.1 Patch and make repair existing gypsum board work where indicated and as required for alteration and renovation work of this project.

.2 Use new materials for patchwork.

.3 Do patchwork to same standards and workmanship as new construction.

.4 Patch around openings cut in existing walls for installation of new frames, access doors, equipment, piping, ductwork, conduit.

.5 Patch existing partitions where part of the partition has been demolished.

.6 Patch openings in existing partitions where existing work has been removed.

.7 For fire rated assemblies use materials and methods to maintain fire rating.

.8 Make patchwork inconspicuous in final assembly.

3.10 GYPSUM BOARD FINISHING

.1 Do taping and filling to ASTM C840, except where indicated otherwise.

.2 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.

.3 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.

.4 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after painting is completed.

.5 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

.6 Sanding not required behind solid finishes and above finished ceilings.

.7 Sand behind wall protection and lockers

.8 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for painting or other thin finish coating including fabric wall coverings.

3.11 GYPSUM BOARD FINISH LEVELS

.1 Finish gypsum board in accordance with the following finish levels for specific areas indicated.

.2 Finish levels as defined in GA-214.

.3 Where a fire resistance rating is required for the gypsum board assembly, details of construction and finishing shall be in accordance with reports of fire tests of assemblies that have met the fire-rating requirement, regardless of the finish level specified below.

.4 Level 0:

.1 Unfinished, no taping, finishing, or accessories required.

.2 Locations: Not used.

.5 Level 1:

.1 All joints and interior angles shall have tape embedded in joint compound. Tape and fastener heads need not be covered with joint compound. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable.

.2 Locations: above finished ceilings; plenum areas; concealed areas, and other areas not normally open to public view.

.6 Level 2:

.1 All joints and interior angles shall have tape embedded in joint compound and shall be immediately wiped with a joint knife or trowel, leaving a thin coating of joint compound over all joints and interior angles. Fastener heads and accessories shall be covered with a coat of joint compound. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable.

.2 Location:

.1 Not used.

.7 Level 3:

.1 All joints and interior angles shall have tape embedded in joint compound and shall be immediately wiped with a joint knife or trowel, leaving a thin coating of joint compound over all joints and interior angles. One additional coat of joint compound shall be applied over all joints and interior angles. Fastener heads and accessories shall be covered with two separate coats of joint compound. All joint compounds shall be smooth and free of tool marks and ridges.

.2 Locations:

.1 Not used.

.8 Level 4:

.1 All joints and interior angles shall have tape embedded in joint compound and shall be immediately wiped with a joint knife or trowel, leaving a thin coating of joint compound over all joints and interior angles. In addition, two separate coats of joint compound shall be applied over all flat joints and one separate coat of joint compound applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound. All joint compounds shall be smooth and free of tool marks and ridges.

.2 Locations:

.1 Where gypsum board is to be painted with flat, eggshell, or satin paint.

.9 Level 5:

.1 All joints and interior angles shall have tape embedded in joint compound and immediately wiped with a joint knife or trowel, leaving a thin coating of joint compound over all joints and interior angles. Two separate coats of joint compound shall be applied over all flat joints and one separate coat of joint compound applied over interior angles. Fastener heads and accessories shall be covered with three separate coats of joint compound. A thin skim coat of joint compound shall or a material manufactured especially for this purpose shall be applied over entire surface completely covering the paper. The surface must be smooth and free of tool marks and ridges.

.2 Locations:

.1 Not used.

3.12 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11- Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11- Cleaning.

.2 Waste Management: separate waste materials in accordance with Section 01 74 21- Construction/Demolition Waste Management

3.13 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by gypsum board assemblies installation.

END OF SECTION

Part 1 General

1.01 SUMMARY

.1 Section Includes:

.1 New non-load bearing metal steel systems as indicated.

.2 Patch and repair existing metal stud systems as required for alteration and renovation work of this project. Refer to Article “Remedial Work” in Part 3 of this Section.

1.02 RELATED REQUIREMENTS

.1 Section 06 10 00 – Rough Carpentry: For furring and blocking.

.2 Section 08 06 10 - Door and Frame Schedule: For wall mounted door hardware requiring furring or blocking.

.3 Section 08 06 71 - Door Hardware Schedule: For wall mounted door hardware requiring furring or blocking.

.4 Section 09 22 16 - Gypsum Board Assemblies.

1.03 REFERENCE STANDARDS

.1 ASTM

.1 ASTM C645-11a, Specification for Non-Load (Axial) Bearing Steel Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board.

.2 ASTM C754-11, Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.

.2 The Association of Wall and Ceiling Contractors of British Columbia (AWCC)

.1 Wall and Ceiling Specification Standards Manual.

.3 Environmental Choice Program (ECP)

.1 ECP-12, Solvent-borne Paints.

.2 ECP-07, Water-borne Surface Coatings.

.3 ECP-50, Gypsum Wallboard.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Shop Drawings: where stud heights fall outside the maximum allowable limiting heights indicated in Table 9.7/5 of the AWCC Wall and Ceiling Specification Standards Manual provide shop drawings of proposed solution to Consultant for review. Include drawing details and information on stud sizes and gauges of proposed Work.

1.05 WASTE MANAGEMENT AND DISPOSAL

.1 Comply with Section 01 74 21 - Construction/Demolition Waste Management and Disposal, and Waste Reduction Work Plan.

Part 2 Products

2.01 MATERIALS

.1 Framing Members, General: Comply with ASTM C754 for conditions indicated.

.1 Steel Sheet Components: Comply with ASTM C645 requirements for metal unless otherwise indicated.

.2 Protective Coating: Hot dipped galvanized, Z120 coating to ASTM A653.

.2 Non-Loadbearing Channel Stud Framing: ASTM C645, roll formed from hot dipped galvanized steel sheet, for screw attachment of gypsum board. Knock-out service holes at 460 mm centres.

.1 Minimum Base Steel Thickness (Gauge) as Follows:

.1 General Interior Framing: 0.46 mm (25 gauge).

.2 Jamb Studs: 0.84 mm (light duty 20 gauge).

.3 Studs Framing for partitions to U/S of deck: 1.214 mm (18 gauge).

.2 Stud Widths: As indicated on the drawings.

.3 Floor and Ceiling Tracks: ASTM C645, in widths to suit stud sizes, 32 mm flange height. Base metal thickness not less than studs being fastened to tracks.

.4 Multi-Slot Tracks: ASTM C645, in widths to suit stud sizes, 90 mm flange height, pre-punched 63.5 mm slots at 25 mm centres to accommodate stud spacing. Base metal thickness same as stud secured track, but not less than 0.84 mm (20 gauge). For expansion and deflection space at top of stud walls and partitions.

.5 Metal Channel Stiffener: 38 x 20 mm x 1.5 mm (16 gauge) base steel thickness, cold rolled steel, galvanized.

.6 Angle Clips: For attachment of channel stiffeners, roll formed steel angles, 38 x 38 mm x 0.84 mm.

.7 Acoustical Sealant: As specified in Section 09 21 16 – Gypsum Board Assemblies.

.8 Insulating/Acoustic Strip: PVC closed cell foam strip, 12 mm width, with self-sticking adhesive on one face.

.9 Ceiling Clips: Purpose made steel clips for attaching top tracks to underside of exposed T-bar suspension systems without causing damage to T-bar.

.1 Acceptable Products: Revoe Partition Ceiling Clip.

2.02 STUD LIMITING HEIGHTS

.1 Stud height limitations (stud limiting heights) in accordance with AWCC Wall and Ceiling Specification Manual, Table 9.7/5 and calculated using a lateral pressure of 240 Pa (5 psf) and deflection limit of:

.1 L/240: With gypsum board on one or both sides of partition, and wall is finished with flexible finish such as paint or wallpaper.

.2 L/360: With gypsum board on one or both sides of partition, and wall is finished with rigid material such as plaster or ceramic tile or stone.

.2 Where stud heights exceed maximum limiting heights indicated in Table 9.7/5 either decrease stud spacing or increase base steel thickness of studs to ensure stud limiting heights fall within maximum limits indicated in the Table. Do not increase stud depths without prior written approval from the Consultant.

.3 Where stud heights fall outside the maximum allowable limiting heights indicated in Table 9.7/5 notify the Consultant and await further instruction before commencing installation.

Part 3 Execution

3.01 ERECTION

.1 Install non-loadbearing interior wall framing to ASTM C754.

.2 Erect metal studding to tolerance of 1:1000.

.3 Align partition tracks at floor and ceiling and secure at maximum 600 mm on centre.

.4 Install continuous insulating strips to isolate studs from non-insulated surfaces.

.5 Place studs vertically at 400 mm on centre, except where indicated otherwise, and not more than 50 mm from abutting walls, and at each side of openings and corners.

.6 For partitions to receive cement backer board space studs at maximum 300 mm on centre. Secure studs to tracks with screw fasteners. Crimping or pop rivets not permitted.

.7 Extend studs to underside of structure, floor, except where indicated otherwise.

.8 Expansion Control:

.1 Maintain clearance under beams, structural slabs, floor and roof decks/slabs to avoid transmission of structural loads to studs.

.2 Secure studs to multi-slotted track allowing for not less than 25 mm clearance.

.9 Where partitions extend to underside of suspended acoustical tile ceiling systems secure top tracks to T-bar grid members with ceiling clips. Do not secure fasteners directly through top tracks into T-bar grid components.

.10 Coordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.

.11 Coordinate erection of studs with installation of door/window frames and special supports or anchorage for work specified in other Sections.

.12 Attach studs to bottom and ceiling track using screws.

.13 Provide two 0.84 mm (20 gauge) jamb studs at door, window and other openings. Extend jamb studs full height of partition.

.14 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs. Secure track to studs at each end, in accordance with manufacturer’s instructions. Install intermediate studs above and below openings in same manner and spacing as wall studs.

.15 Frame openings and around built-in equipment, cabinets, access panels, on four sides. Extend framing into reveals. Check clearances with equipment suppliers.

.16 Cross brace steel studs as required to provide rigid installation to manufacturer’s instructions.

.17 Install steel channel stiffeners above door/window openings, extending 800 mm (two studs) beyond both sides of opening. Attach stiffeners to each stud with bridging clips using self-tapping sheet metal screws.

3.02 FURRING AND BLOCKING

.1 Provide studs secured between studs for attachment of fixtures behind lavatory basins, toilet and bathroom accessories, and other fixtures including grab bars and towel rails, attached to steel stud partitions. Use same size stud as wall framing.

.2 Provide stud or furring channel between studs for attaching electrical and other boxes.

.3 Install stud secured between studs for attachment of wall hung cabinets attached to steel stud partitions. Use same size stud as wall framing, but not less than 90 mm size.

.4 Provide stud secured between studs for attachment of wall mounted door hardware such as wall stops and magnetic hold-opens. Use same size stud as wall framing. Refer to Section 08 06 10 - Door and Frame Schedule and Section 08 06 71 - Door Hardware Schedule for quantities and locations. Coordinate with door hardware installer for exact locations.

3.03 SOUND INSULATED/ACOUSTICALLY RATED PARTITIONS

.1 Install foam gasket acoustic tape behind top and tracks of sound insulated and acoustically rated partitions. Compress in joint between track and floor and ceiling. Apply gasket to top of track before placing in position.

.2 Install foam gasket acoustic tape behind end studs of sound rated partitions.

.3 Compress tape between in joint between track and stud and floor, wall or ceiling before placing in position.

3.04 REMEDIAL WORK

.1 Patch and repair existing steel stud framing systems as required for alteration and renovation work.

.2 Use new materials. Match components with existing adjacent work.

.3 Make patchwork inconspicuous in final assembly.

.4 Infill openings in existing stud walls and partitions where indicated.

3.05 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11- Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11- Cleaning.

.3 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21- Construction/Demolition Waste Management

3.06 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by non-structural metal framing application.

END OF SECTION

Part 1 General

1.01 RELATED REQUIREMENTS

.1 Section 09 06 00 - Room Finish Schedule

.2 Section 09 06 10 - Material Schedule

.3 Section 09 21 16 - Gypsum Board Assemblies: For backing board for ceramic tile.

.4 Section 07 92 00 - Joint Sealing: For joint sealant materials.

1.02 REFERENCE STANDARDS

.1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)

.1 ANSI A108 / A118 / A136.1: 2020, American National Specifications for the Installation of Ceramic Tile

.2 ANSI A137.1: 2017, American National Standards Specifications for Ceramic Tile

.2 ASTM

.1 ASTM C33 / C33M – 18 Standard Specification for Concrete Aggregates,

.2 ASTM C144 - 18, Standard Specification for Aggregate for Masonry Mortar

.3 ASTM C207 - 18, Standard Specification for Hydrated Lime for Masonry Purposes

.4 ASTM C627 - 18, Standard Method for Evaluating Ceramic Floor Tile Installation Systems

.5 ASTM C847 - 18, Standard Specification for Metal Lath.

.6 ASTM C979 / C979M - 16, Standard Specification for Pigments for Integrally Colored Concrete

.3 Canadian General Standards Board (CGSB)

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

.2 CGSB 71-GP-22M, Adhesive, Organic, for Installation of Ceramic Wall Tile

.3 CAN/CGSB-75.1 - M88, Tile, Ceramic

.4 Canadian Standards Association (CSA)

.1 CSA A82.30 - M1980, Interior Furring, Lathing, and Gypsum Plastering

.2 CSA A123.3 - 05 (R2015), Asphalt Saturated Organic Roofing Felt

.3 CAN/CSA-A3000 - 18, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

.5 International Concrete Repair Institute, Inc. (IRCA)

.1 IRCA Technical Guideline No.310.2R - 2013, Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair

.6 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI Source Specific Standards

.1 SCAQMD Rule 1168, Adhesives and Sealants Applications.

.7 Terrazzo Tile and Marble Association of Canada (TTMAC)

.1 Hardsurface Maintenance Guide (2017-2019)

.2 2019 – 2021 Specifications Guide 09 30 00, Tile Installation Manual

.1 Detail 301MJ - Movement Joints for Tile Installations
.2 Detail 304W - Tile Installed Over Gypsum Board - Thin Set Method

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Action Submittals:

.1 Product Data:

.1 Include manufacturer's information on:

.1 Manufacturer’s installation instructions and recommendations.
.2 Ceramic tile, marked to show each type, size, and shape required.
.3 Mortar and grout.
.4 Dry-set cement mortar and grout.
.5 Latex cement mortar and grout.

.2 Samples:

.1 Submit full size samples of each colour, texture, size and pattern of ceramic tile.

.3 Informational Submittals:

.1 Manufacturer's Instructions: Manufacturer's installation instructions.

1.04 CLOSEOUT SUBMITTALS

.1 Maintenance Data:

.1 Submit maintenance data for incorporation into Operations and Maintenance Manual in accordance with Section 01 78 00 – Closeout Submittals.
.2 Submit cleaning and maintenance recommendations for Owner’s use.
.3 Submit TTMAC Hardsurface Maintenance Guide. Provide specific warning of any maintenance practice or materials that may damage or disfigure finished work.

1.05 QUALITY ASSURANCE

.1 Installer Qualifications: Skilled mechanics trained and experienced in tile work. Installation firm registered as member in good standing with TTMAC, and a member for minimum past five years.

.2 Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from one manufacturer and each aggregate from one source or producer.

.3 Prior to start of work conduct test on tile materials to ensure that setting materials, bond coats, pigmented or sanded grouts, sealers and waxes do not permanently stain, scratch, mar or otherwise disfigure tile finishes.

.4 Allow for Consultant’s review and acceptable of test samples. If un-compatibility is evident notify respective material manufacturers for suggested remedies. Consultant shall approve any material changes.

1.06 CLOSEOUT SUBMITTALS

.1 Submit closeout submittals in accordance with Section 01 78 00 - Closeout Submittals.

.2 Maintenance Data: Submit maintenance date for tile and grout for incorporation into maintenance manual specified in Section 01 78 00 - Closeout Submittals. Include list of materials used on project by definition and manufacturer for setting materials, grouts, sealers and cleaning compounds. Provide recommended maintenance materials and procedures including stain removal. Include one copy of the latest edition of the TTMAC Hardsurface Maintenance Guide.

1.07 EXTRA MATERIALS

.1 Provide extra materials consisting of the following:

.1 Type CT-1 ceramic tile: 5% of each type and colour of tile installed on project.

.2 Provide remnants of cut tile for project for maintenance use. Store where directed.

.3 Extra materials to be same production run as installed materials. Package each type of tile separately and mark each package as to contents.

.5 Unused tiles from open cartons become the property of the Owner.

.4 Deliver maintenance materials to site and store where directed. Provide written receipt, signed by Contractor, verifying delivery.

1.08 DELIVERY, STORAGE, AND PROTECTION

.1 Section 01 61 00 - Common Product Requirements: transport, handle, store, and protect products.

.2 Deliver and store packaged materials in original containers with seals unbroken and labels intact.

.3 Store materials to prevent damage or contamination to materials by water, freezing, foreign matter, and other causes; store cementitious materials in a dry area, and raised off floor and ground surfaces.

.4 Store cementitious materials on a dry surface.

1.9 WASTE MANAGEMENT AND DISPOSAL

.1 Comply with Section 01 74 21 - Construction/Demolition Waste Management and Disposal , and Waste Reduction Work Plan.

1.10 SITE CONDITIONS

.1 Maintain air temperature and structural base temperature at ceramic tile installation area above 10°C for 48 hours before, during, and 48 hours after, installation.

.6 Do not install tiles at temperatures less than 12 degrees C or above 38 degrees C.

.7 Do not apply epoxy mortar and grouts at temperatures below 15 degrees C or above 25 degrees C.

Part 2 Products

2.01 MANUFACTURERS

.1 Source Limitations for Tile: Obtain tile from single source or producer.

.1 Obtain tile from same production run and of consistent quality in appearance and physical properties for each contiguous area.

.2 Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.

.1 Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.

2.02 DESIGN AND PERFORMANCE CRITERIA

.1 Do tile work in accordance with TTMAC Tile Installation Manual, except use more stringent requirements of manufacturer or this specification.

.2 Provide tile products manufactured and tested in accordance with ANSI A108 / A118 / A136.1 or ANSI A137.1 as appropriate for products listed in this Section.

2.03 CERAMIC TILE

.1 Ceramic Tile Type **CT-1**: Glazed ceramic tile.

.1 Face Size: 3 by 6 inches.

.2 Thickness: 3/8 inch.

.3 Face: Plain with square edges.

.4 Tile Colour, Glaze, and Pattern: Refer to Material Schedule.

.5 Grout Colour: TBD.

2.04 MORTAR AND ADHESIVE MATERIALS

.1 Cement: CAN/CSA-A3000, Type GU

.2 Sand: ASTM C144

.3 Hydrated Lime: ASTM C207

.4 Latex Additive: Formulated for use in Portland cement mortar.

.1 Acceptable Products: Flextile 43; Latacrete 4237; Mapei Kerabond/Keralastic

.8 Water: Potable and free of minerals that are detrimental to mortar and grout mixes.

2.05 GROUT

.1 Latex Cement Grout: ANSI A108 / A118 / A136.1, fast curing, high early strength, polymer-modified, stain resistant, sanded mix for floors, unsanded mix for walls and floors with polished tiles commercial tile grout. Colours selected by Consultant. Allow for up to 1 colour.

.1 Acceptable Products: Flextile Polymer Modified Grout 500/600; Custom Building Products Polyblend Grout; Laticrete 1500 Tri-Poly Fortified Grout; Mapei Ultracolor Plus FA.

2.06 MORTAR AND ADHESIVE MIXES

.1 Scratch Coat: 1 part Portland cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand, 1 part water. Adjust water volume depending on water content of sand.

.2 Slurry Bond Coat: Portland cement and latex additive to creamy paste.

.3 Mortar Bed for Walls and Ceilings: 1 part Portland cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand and 1 part water. Adjust water volume depending on water content of sand. Latex additive may be included.

.4 Bond or Setting Coat: 1 part Portland cement, 1/3-part hydrated lime, 1 part water.

.5 Dry Set Mortar: Mix to manufacturer's instructions.

.6 Measure mortar ingredients by volume

.7 Organic Adhesive: Pre-mixed.

Part 2 Execution

2.01 EXAMINATION

.1 Verify existing conditions are ready to receive work.

.2 Examine surfaces and verify that surfaces are ready to receive tile installation.

.1 Substrates are dry; clean; free from oil, waxy films, and curing compounds; and within starting flatness tolerances as specified in Section 03 30 00 [, and are ready for application of levelling materials].

.2 Grounds, anchors, recessed frames, electrical and mechanical units of Work in or behind tile have been installed.

.3 Joints and cracks in tile substrates are coordinated with tile joint locations.

.3 Verify tile subject to colour variations has been factory blended and packaged. If not factory blended, blend tiles at site before installing.

2.02 PREPARATION

.1 Protect surrounding work from damage or disfiguration.

.2 Clean existing surfaces to receive tile finish to ensure the removal of grease, oil, dust film and other contaminants. Acid-based cleaners not permitted.

.3 Prepare surfaces in accordance with manufacturer’s instructions whose setting materials or additives are being used.

.4 Scarify concrete surfaces if necessary to completely remove curing compounds or other substances that would inhibit proper bond of setting materials.

.5 Do not seal substrate unless recommended by manufacturer.

.6 Prime substrate when recommended by manufacturer.

.7 Tile Backer Board: Embed 50 mm glass fibre mesh tape in a skim coat of the tile mortar on all joints and corners.

.8 Caulk plumbing penetrations and abutments to dissimilar materials (e.g. tub deck, countertops) with flexible sealant.

.9 Seal substrate surface cracks with filler.

2.03 SURFACE FLATNESS TOLERANCES

.1 Level substrate surfaces to flatness tolerances specified.

.2 Small Format Floor Tile less than 4 by 4 inches: Floor flatness as specified in Section 03 30 00.

.3 Standard Format Floor Tile 4 by 4 inches to 16 by 16 inches: Floor flatness measured to a minimum FF35; equivalent to 1/4_inch with maximum two gaps under a 10 foot straightedge measurement.

.4 Wall Tiles: Wall levelling similar to floors tiles having similar sizes listed above.

2.04 LEVELING COATS

.1 Level substrates with latex Portland cement leveling coats to bring substrates within acceptable surface level and flatness tolerances specified.

2.05 APPLICATION

.1 Inspect materials prior to use.

.2 Tile blending:

.1 For tile exhibiting colour and shading variations within each type or series verify that tile has been blended in factory and packaged accordingly so that tile units taken from one package show the same range in colours as those take from other packages of same type and series.

.2 If tiles are not factory blended either return tiles to manufacturer for blending or blend tiles at project site before installing.

.3 Work form multiple boxes or packages at the same time to insure even colour/shading distribution.

.3 Apply tile or backing coats to clean and sound surfaces.

.4 Fit tile around corners, fitments, fixtures, drains, and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even.

.5 Maximum surface tolerance 1:800.

.6 Make joints between tile uniform, plumb, straight, true, even, and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.

.7 Lay out tiles so perimeter tiles are minimum 1/2 size.

.8 Spread setting materials using properly sized trowels matched to tile sizes and setting materials, as recommended in TTMAC Tile Installation Manual. Spread setting materials in a manner to avoid air pockets, and ensure full coverage of edges and corners.

.9 Ensure bond material coverage of at least 95% and that material is evenly disbursed over back of tile. Ensure corners and edges are fully supported by bonding material.

.10 Twist and slide tile firmly into position to ensure proper bond.

.11 Sound tiles after setting. Replace hollow-sounding units to obtain full bond.

.12 Keep 2/3 of depth of grout joints free of setting material.

.13 Allow minimum 24 h after installation of tiles, before grouting.

.14 Force grout into joints to ensure dense finish.

.15 Protect all tiles from grout staining. Test in advance and pre-seal if required. Preseal or prewax rough textured or irregular surface tile prior to grouting.

.16 Clean installed tile surfaces after installation and grout has cured. Follow manufacturer's recommendations for grout and residue removal.

.17 Apply grout sealer to grouted joints of bright glazed ceramic tile after grout is cured and dry.

.18 Protect installed areas from traffic unit setting materials have cured for periods specified in TTMAC Tile Installation Manual.

.19 Barricade grouted areas to prevent foot traffic for 24 hours after grouting.

.20 Protect wall tiles and bases from impact, vibration, heavy hammering on adjacent and opposite walls for at least 14 days after installation.

2.6 WALL TILE

.1 Install in accordance with TTMAC detail 304W.

.2 Mortar: latex-Portland cement mortar.

.3 Grout: latex-Portland cement grout.

.4 Make joints approximately 1/16 inch - 1/8 inch wide.

2.7 CLEANING AND PROTECTION

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

.1 Leave Work area clean at end of each day.

.2 Clean tile surfaces so they are free of foreign matter using manufacturer's recommended cleaning products and methods after completion of placement and grouting as follows:

.1 Remove [latex-Portland cement] [and] [epoxy] grout residue from the tile as soon as possible.

.2 Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's written instructions, but no sooner than ten days after installation; protect metal surfaces, and vitreous plumbing fixtures from effects of acid cleaning.

.3 Flush surface with clean water before and after cleaning.

.4 [Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to tile and grout manufacturer; trap and remove coating to prevent it from clogging drains.

.3 Final Cleaning: Upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

.4 Protection: Leave finished installation clean and free of cracked, chipped, broken, unbonded tiles, or other deficiencies as follows:

.1 Protect finished areas from traffic until setting materials have sufficiently cured in accordance with TTMAC requirements.

.2 Protect floor areas from traffic after grouting is completed in accordance with manufacturer's written instructions.

.3 Prevent foot and wheel traffic from floors for a minimum of [24] [72] hours after completion of tile work.

.4 Use stepping bards where access is required for light foot traffic only after [4] [24] hours after completion of grouting.

.5 [Do not immerse in water] [and] [protect from freezing] for a minimum of [7] [21] days after completion of tile work.

.6 Provide protective covering until Substantial Performance of the Work.

.7 Protect wall tiles and bases from impact, vibration, heavy hammering on adjacent and opposite walls for a minimum of [7] [14] days after installation.

.5 Waste Management: Separate waste materials for in accordance with Section 01 74 21- Construction/Demolition Waste Management and Disposal

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility. 10777

END OF SECTION

Part 1 General

1.01 SUMMARY

.1 Section Includes:

.1 Suspension systems for acoustic ceiling tile and panel ceilings.

.2 Acoustic ceiling tiles and panels.

1.02 RELATED REQUIREMENTS

.1 Section 09 06 00 – Room Finish Schedule.

.2 Mechanical Drawings: For mechanical fixtures, and trim.

.3 Electrical Drawings: For electrical fixtures and trim.

.4 Electrical Drawings: For communication fixtures and trim.

1.03 REFERENCE STANDARDS

.1 American Society of Heating, Refrigerating and Air Conditioning Engineers

.1 ASHRAE Standard 62.1-2004

.2 American Society of Heating, Refrigerating and Air Conditioning Engineers

.1 ASHRAE Standard 62.1-2004

.3 American Society for Testing and Materials (ASTM)

.1 ASTM A653/A653M - 18, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

.2 ASTM C423-17, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method

.3 ASTM C635/C635M - 17, Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings

.4 ASTM C636/C636M - 13, Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels

.5 ASTM C834-17, Standard Specification for Latex Sealants

.6 ASTM E84-18, Standard Test Method for Surface Burning Characteristics of Building Materials

.7 ASTM E1111/E1111M - 14, Standard Test Method for Measuring the Interzone Attenuation of Open Office Components

.8 ASTM E1264-14, Standard Classification for Acoustical Ceiling Products

.9 ASTM E1414/E1414M - 16, Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum

.4 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards

.1 SCAQMD Rule 1168

1.04 ADMINISTRATIVE REQUIREMENTS

.1 Coordination:

.1 Obtain samples of each type of light fixture, diffuser, speaker, and sprinkler head to be installed for preparing factory cut-outs.

.2 Coordinate suspension system with location of related components, including, but not limited to, mechanical, electrical, and communication fixtures. Centre light fixtures, diffusers, speakers, and sprinkler heads in ceiling components

1.05 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data: Manufacturers' product data for each specified acoustical tile describing physical and performance characteristics, sizes, patterns, colours.

.3 Shop Drawings:

.1 Submit reflected ceiling plans for special grid patterns as indicated.

.4 Samples:

.1 For products requiring final colour selection by Consultant submit samples of each product representing manufacturer's full colour selection range.

.2 Submit representative samples of each exposed T-bar component.

1.06 MAINTENANCE MATERIALS

.1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.

.1 Turn over open cartons of ceiling tile to owner.

.2 Provide 2% overage of gross ceiling for each pattern and type required for project, in sealed cartons.

.3 Store where directed by owner.

.3 Provide written receipt signed by Contractor, stating date and quantity delivered.

1.07 DELIVERY, STORAGE AND HANDLING

.1 Deliver acoustical panels, suspension-system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

.2 Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content

.3 Handle acoustical panels carefully to avoid chipping edges or damaging units.

1.08 WASTE MANAGEMENT AND DISPOSAL

.1 Comply with Section 01 74 21 - Construction/Demolition Waste Management and Disposal, and Waste Reduction Work Plan.

1.09 SITE CONDITIONS

.1 Do not commence installation until after building enclosed and dust generating activities completed.

.2 Permit wet work to dry before commencement of installation.

.3 Maintain uniform minimum temperature of 15°C humidity of 20 - 40% before and during installation.

.4 Allow materials to acclimatize to local ambient conditions before installation.

Part 2 Products

2.01 REGULATORY REQUIREMENTS

.1 Fire-resistance rated suspension system: certified by a Canadian Certification Organization accredited by Standards Council of Canada.

2.02 PERFORMANCE / DESIGN CRITERIA

.1 Where applicable fire resistance rated floor/ceiling and roof/ceiling assembly to be certified by a Canadian Certification Organization accredited by Standards Council of Canada.

.2 Maximum Deflection: 1/360th of span to ASTM C635 deflection test.

.3 Maximum Supporting Point Load: 38 kg to ensure tracks and hangers will break away.

.4 Complete suspension systems shall support all superimposed loads, such as lighting fixtures, diffusers grilles and speakers. Provide additional hangers as necessary. Coordinate with work of other Subcontractors.

.5 Acoustic Ceiling Panels:

.1 Noise Reduction Coefficient (NRC): ASTM C423; Classified with UL label on product carton, 0.85.

.2 Ceiling Attenuation Class (CAC): ASTM E 1414; Classified with UL label on product carton, 35.

.3 Articulation Class (AC): ASTM E1111; Classified with UL label on product carton 170.

.4 Emissions Testing: Section 01350 Protocol, 13.5 ppb of formaldehyde when used under typical conditions required by ASHRAE Standard 62.1-2004, "Ventilation for Acceptable Indoor Air Quality"

.5 Flame Spread: ASTM E 1264; Class A (UL)

.6 Light Reflectance (LR): ASTM E 1477; White Panel: Light Reflectance: 0.90.

.7 Antimicrobial Protection: Inherent - Resist growth of mold/mildew and bacterial growth.

2.03 SUSPENSION SYSTEMS

.1 Intermediate duty system to ASTM C635.

.2 Basic Materials for Suspension System: commercial quality cold rolled steel, hot dipped galvanized coating.

.3 Suspension System: Non-fire rated, made up as follows:

.1 Two directional, exposed tee bar grid.

.4 Exposed Tee Bar Grid Components:

.1 Components dye cut.

.2 Main tee with double web, rectangular bulb and rolled cap on exposed face.

.3 Exposed Face Width: Nominal 15/16 inch for use with Type 1 acoustical tiles.

.4 Cross tee with rectangular bulb, exposed face same width as main tees, web extended to form positive interlock with main tee webs, lower flange extended and offset to provide flush intersection.

.5 Finish: shop painted satin sheen white.

.5 Accessories: Splices, clips, wire ties, retainers to complement suspension system components, as recommended by system manufacturer.

.6 Hanger Wire: Galvanized soft annealed steel wire, minimum 12 gauge

.7 Hanger Inserts: Purpose made.

2.04 PERIMETER TRIM SYSTEM

.1 Fabricated of extruded aluminum, factory finished, complete with accessories and mounting hardware. Mitred corners.

.1 Trim Height: Nominal 2 inches.

.2 Colour: White.

.3 Acceptable Product: Armstrong Axiom Classic Trim.

2.05 ACOUSTICAL TILES

.1 Acoustical Ceiling Tiles – ACT-1:

.1 Mineral Fibre.

.2 Size: 24” x 48”.

.3 Edge: Square.

.4 Colour: White.

.5 Acceptable Product: Armstrong Cirrus 533.

2.06 ACCESSORIES

.1 Acoustical Sealant: Manufacturer's standard sealant complying with ASTM C 834 and effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

.1 Exposed Joints: Non-sag, paintable, non-staining latex sealant.

.2 Concealed Joints: Non-drying, non-hardening, non-skinning, non-staining, gunnable, synthetic-rubber sealant.

.3 VOC limit 100 g/L maximum to SCAQMD Rule 1168.

.2 Splices, clips, wire ties, retainers to complement suspension system components, as recommended by system manufacturer.

.3 Wall moulding: flush or reveal to suit tile edge; finish to match tee bar.

.4 Hanger wire: galvanized soft annealed steel wire, minimum 2.6 mm diameter (12 gauge).

.5 Hanger inserts: purpose made.

.6 Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, Direct Hung unless otherwise indicated.

.7 Perimeter trim.

Part 3 Execution

3.01 EXAMINATION

.1 Do not install acoustical units until work above ceilings is complete and is reviewed by Consultant.

.2 Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer's printed recommendations.

3.02 PREPARATION

.1 Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders and comply with layout shown on reflected ceiling plans.

3.03 INSTALLATION: SUSPENSION SYSTEMS

.1 Install suspension systems in accordance with ASTM C636, except where indicated otherwise.

.2 Install suspension system to manufacturer's instructions.

.3 Do not erect ceiling suspension system until work above ceilings is complete and has been reviewed by Consultant.

.4 Secure hangers to overhead structure using attachment methods acceptable to Consultant. Do not attach hangers to steel roof deck. Attach hangers to structural members.

.1 Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.

.5 Install hangers within 150 mm from ends of main tees. Wall perimeter moulding shall not be considered support for main tees and does not remove requirement for hangers placed at 150 mm from ends of main tees. Hanger spacing:

.1 Grid Type 1: maximum 1200 mm on centre.

.6 Establish ceiling elevation using laser level.

.7 Install edge mouldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.

.1 Screw attach mouldings to substrate at maximum 400 mm o.c. and maximum 75 mm from ends, leveling with ceiling suspension system to a tolerance of 3.2 mm in 3.6 m. Mitre corners accurately and connect securely.

.2 Do not use exposed fasteners, including pop rivets, on moldings and trim.

.8 Construct suspension system to support super-imposed loads, such as lighting fixtures, diffusers, grilles, and speakers. Provide additional hangers as required for loads.

.9 Interlock cross member to main runner to provide rigid assembly.

.10 Frame at openings for light fixtures, air diffusers, speakers and at changes in ceiling heights.

.11 Finished ceiling system to be square with adjoining walls and level within 3 mm in 3650 mm.

.12 Ensure straightness, tolerance, bow, camber, twist of suspension system member does not exceed values in ASTM standards.

.13 Sharp local kinks, bends, bruises, and dents: not acceptable.

.14 Level members with supporting hanger tensioned to prevent subsequent downward movement when ceiling loads imposed.

.15 Do not kink, or bend hanger wires to level system.

.16 Install cross tees at right angles to main tees, main tees be non-cumulative.

.17 Ensure no apparent angular displacement from one tee to another.

.18 Exposed surfaces of suspension system: level, flush, joints tight, straight, and true.

3.04 INSTALLATION: PERIMETER TRIM SYSTEM

.1 Install perimeter trim system in accordance with manufacturer's instructions, straight, aligned and level to tolerance of 1:1000.

.2 Layout trim system to sizes and profiles indicated. Provide tight, hairline joints.

3.05 INSTALLATION: ACOUSTICAL CEILING TILES

.1 Install acoustic units in ceiling suspension system.

.2 Do not use scratched, damaged, broken, or soiled units. Replace as required and as directed.

.3 Co-ordinate ceiling work to accommodate components of other sections, such as light fixtures, diffusers, speakers, sprinkler heads, to be built into acoustical ceiling components.

.4 Scribe acoustic units to fit suspension grid and adjacent work. Cut out neatly and tight to sprinklers heads and other fixtures within ceiling system. For tegular, reveal, or moulded edge units scribe to match factory edge and paint exposed edge to match panel face.

.5 For mylar faced tile use combination of field and border units; field units for full-size panels; and border units where panels must be cut on site.

.6 Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.

3.06 INTERFACE WITH OTHER WORK

.1 Co-ordinate ceiling work to accommodate components of other sections, such as light fixtures, diffusers, speakers, sprinkler heads, to be built into ceiling components.

3.07 CLEANING AND TOUCH UP

.1 Touch up scratches, abrasions, voids and other defects in finished surfaces to satisfaction of Consultant.

.2 Replace broken, scratched, damages, or soiled components with new materials as directed.

.3 Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage.

3.08 SCHEDULES

.1 For locations, refer to Section 09 06 10 - Room Finish Schedule.

END OF SECTION

Part 1 General

1.01 SUMMARY

.1 Section Includes:

.1 Resilient Sheet Flooring.

.2 Accessories.

1.02 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data: Manufacturers' product information on specified materials.

.3 Shop Drawings:

.1 Provide seaming diagrams with feature strips, borders, graphic inlays. Indicate locations, sizes and dimensions, colours and other details required by Consultant to clarify work.

.2 Provide large scale floor plan(s) with dimensions indicating location and orientation of graphic inlays in relation to walls, columns, or other identifiable building elements.

.4 Samples:

.1 Resilient sheet flooring: Duplicate 300 by 300 mm size samples of each type of flooring material.

.2 Submit colour samples in duplicate of each type of flooring material and accessory, representing manufacturers’ complete colour selection.

.3 After approval of Shop Drawings, submit one 610 by 610 mm sample of patient doorway threshold of all listed colours and heat welds.

1.03 CLOSEOUT SUBMITTALS

.1 Provide maintenance data for flooring materials for incorporation into Operation and Maintenance Manual specified in Section 01 78 00 - Closeout Submittals.

.2 Include maintenance procedures, recommended maintenance materials and suggested schedule for cleaning, detailed information regarding properties of stain resistance and recommended procedures for removal.

1.04 MAINTENANCE MATERIAL SUBMITTALS

.1 Submit maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 Furnish extra materials that match products installed and that are packaged with protective covering for storage.

.3 Resilient Sheet Flooring:

.1 Furnish not less than 3% of each colour used and any partial rolls left over at completion of project (no scraps) All flooring to be rolled, shrink wrapped and labelled complete with manufacturer name, model name and number, and preferred adhesive.

.4 Deliver to site and store where directed.

1.05 AMBIENT CONDITIONS

.1 Maintain air temperature and structural base temperature at installation areas between 18°-20°C for 48 hours before, during and 48 hours after installation. Avoid concentrated or irregular heating. Ensure proper ventilation.

.2 Store flooring materials on site for 72 hours before installation to attain temperature stability.

.3 Provide a high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to the outside. Do not let contaminated air recirculate through a district or whole building air distribution system. Maintain extra ventilation following building occupation until odour level from contaminated air is acceptable to the Consultant.

1.06 WASTE MANAGEMENT AND DISPOSAL

.1 Comply with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.07 EXTENDED WARRANTY

.1 Provide manufacturer's warranty for resilient flooring and accessories against defects in materials and workmanship, and that flooring materials will be free of manufacturing defects, will not wear through the colour and pattern and that seams will not split, open or separate, in accordance with General Conditions, but for five years.

Part 2 Products

2.01 RESILIENT SHEET FLOORING

.1 Resilient Sheet Flooring (RSF-1A and RSF-1B):

.1 Homogeneous sheet poly (vinyl chloride), colour and pattern dispersed uniformly throughout full thickness of product 2.0 mm thick.

.2 Acceptable Products:

.1 IQ Optima as manufactured by Johnsonite (Tarkett).

.3 Colours:

.1 Refer to Material Schedule.

.2 Rubber Base (RB):

.1 Continuous, top set, complete with pre-molded end stops and external corners, rubber, style cove, 4” high, continuous roll material.

.2 Colours: selected by Consultant allow for up to 2 colours.

.3 Acceptable material: Tarkett Traditional Vinyl Base.

2.02 ACCESSORIES

.1 Primers and Adhesives:

.1 Water-resistant, of type recommended by manufacturer for specific material on applicable substrate, above, on or below grade.

.2 Subfloor Filler and Leveler:

.1 Cementitious underlayment, trowelable, non-shrink, water-resistant, minimum compressive strength 29 MPa after 28-day cure. Premix requiring only the addition of water.

.2 Use manufacturer's recommended primers on all surfaces to receive cementitious underlayment.

.3 Gypsum based products are not acceptable for sub-floor fillers and levelers.

.4 Acceptable Products: Elsro Ardex K-55, Mapei Plani/Patch, EP Para-Patch System.

.3 Flooring Transition Strips:

.1 Refer to Material Schedule 09 06 10. Threshold THRES-1 to THRES-#.

.4 Heat Weld Threads: By same manufacturer as sheet flooring. Colours selected by the Consultant. Allow for multiple colour selection.

.5 Silicone Sealant: One component, mildew resistant silicone, as specified in Section 07 92 00 - Joint Sealing.

.6 Finish: Type recommended by resilient flooring material manufacturer for material type and location.

Part 3 Execution

3.01 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: Comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.02 SITE VERIFICATION OF CONDITIONS

.1 Ensure sub-floors are dry by using test methods recommended by flooring manufacturer.

.2 Ensure sub-floors are structurally sound, free from alkali, dust, solvents, paint, wax, oil, grease, asphalt, adhesives, sealing compounds and other extraneous foreign materials.

.3 Ensure ink from felt-tipped pens and other markers that may transmit through flooring materials have been removed or effectively sealed.

3.03 PREPARATION

.1 Repair defects in sub-floors with sub-floor filler. Remove ridges and bumps. Fill low spots, cracks, joints, holes and other defects.

.2 Apply filler, trowel and float to leave smooth, flat, hard surface free of trowel marks, bumps, voids, etc. Prohibit traffic until filler cured.

.3 Make transitions between different flooring materials smooth, level, and flush by building up subfloor with smooth gradual ramping of filler.

.4 Ensure sub-floor filler is fully bonded to substrates. Remove and replace unsound areas.

.5 Remove or treat old adhesives to prevent residual, old flooring adhesives from bleeding through to new flooring and/or interfering with the bonding of new adhesives.

.6 Prime or seal sub-floor to flooring manufacturer's printed instructions.

3.04 INSTALLATION - GENERAL

.1 Apply adhesives uniformly, using recommended trowel. Do not spread more than can be covered by flooring before initial set takes place. If adhesive over dries remove and re-coat affected areas.

.2 During and after installation roll flooring with roller to ensure full adhesion. Use roller of weight recommended by flooring manufacturer.

.3 Cut flooring neatly and tight to fixed objects.

.4 Install feature strips, borders, graphics and floor markings indicated. Fit joints tightly.

.5 Continue flooring over areas which will be under removable equipment.

.6 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.

.7 Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.

.8 Install edge protection strips at unprotected or exposed edges where flooring terminates.

.9 Flooring to run underneath millwork and lockers.

3.05 APPLICATION: RESILIENT SHEET FLOORING

.1 Apply adhesives uniformly, using recommended trowel. Do not spread more than can be covered by flooring before initial set takes place. If adhesive over dries remove and re-coat affected areas.

.2 Lay flooring with seams parallel to building lines to produce minimum number of seams.

.3 Run sheets in direction of traffic.

.4 In corridors install rolls full width across corridor, with equal borders both sides. Cross seams not permitted.

.5 Double cut sheet joints and provide straight, even joints.

.6 Heat weld joints in accordance with manufacturer’s instructions where heat weld seams are indicated.

.7 Chemically weld joints in accordance with manufacturer’s instructions where chemical weld seams are indicated.

.8 Seal around pipe upstands, cutouts, and joints which cannot be sealed with epoxy sealant compound. Make watertight.

.9 Where flooring materials are scribed to fixed objects seal joint with silicone sealant.

.10 Where room has repeating in-line circular pattern, lay sheet flooring in single direction parallel to centre axis of circles, align centre of roll with centre axis of circles. Do not allow seams to intersect a circular shape.

.11 Seal flooring around full perimeter of floor drains with two-part polyurethane adhesive. Install flooring into drain collar and install fastening clamp and strainer.

.12 Install feature strips, borders, graphics and floor markings indicated. Fit joints tightly.

.13 Continue flooring over areas which will be under removable furniture and equipment.

.14 Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.

.15 Install edge protection strips at unprotected or exposed edges where flooring terminates.

3.06 COVE BASE APPLICATION

.1 Lay out base to keep number of joints at minimum.

.2 Set base in adhesive tightly by using 3 kg hand roller, against wall and floor surfaces.

.3 Install straight and level to variation of 1:1000.

.4 Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.

.5 Cope internal corners. Use premoulded corner units for right angle external corners. Use formed straight base material for external corners of other angles.

3.07 CLEANING AND MAINTENANCE

.1 Provide initial cleaning and maintenance of resilient flooring and base installed on project.

.2 Confirm initial cleaning materials and methods with Band Council's future maintenance requirements.

.3 Clean floor, base and wall surfaces without damage. Remove excess adhesives, scuff marks or other soiled areas.

.4 Clean, seal and wax floor and base surface to flooring manufacturer's instructions.

.5 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11- Cleaning.

.1 Clean flooring surfaces to flooring manufacturer's printed instructions.

.6 Waste Management: separate waste materials accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.08 PROTECTION

.1 Prohibit traffic on floor for 48 hours after installation.

.2 Protect new floors from time of final set of adhesives until final review.

END OF SECTION

Part 1 General

1.01 SUMMARY

.1 Section Includes:

- .1 New carpet tile as indicated placed with glue down method.
- .2 Sub-floor leveler System where carpet abuts ceramic tile
- .3 Floor preparation to suit new carpet install
- .4 Install carpet before all millwork/ furniture/equipment.
- .5 Refer to Material Schedule **CPT-1.**

1.02 RELATED REQUIREMENTS

.1 Section 09 06 10 – Material Schedule. (Example: THRES-6 sub-floor level or system)

.2 Section 09 30 12 – Resilient Sheet Flooring accessories.

.3 Section 09 21 16 – Gypsum Board Assemblies.

.4 Section 09 30 13 – Ceramic Tiling.

1.03 REFERENCE STANDARDS

.1 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB-4.2, Textile Test Methods.
- .2 CGSB 4-GP-36M, Carpet Underlay, Fiber Type.
- .3 CAN/CGSB-4.129, Carpets for Commercial Use.
- .4 CGSB 20-GP-23M, Cushion, Carpet, Flexible Polymeric Material.
- .5 CAN/CGSB-25.20, Surface Sealer Floors.

.2 Underwriters' Laboratories of Canada

- .1 CAN/ULC-S102, Surface Burning Characteristics of Building Materials and Assemblies.
- .2 CAN/ULC-S102.2, Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials and Assemblies.

.3 Carpet and Rug Institute (CRI)

- .1 Contract Carpet Manual, No.001.
- .2 IAQ Carpet Testing Program.

.4 ASTM

- .1 ASTM D 1055, Specification for Flexible Cellular Materials - Latex Foam.
- .2 ASTM E 84, Test Method for Surface Burning Characteristics of Building Materials.

.5 American Association of Textile Chemists and Colorists (AATCC)

- .1 Oil Repellency: Hydrocarbon Resistance Test, AATCC 118.
- .2 Electrostatic Propensity of Carpet, AATCC 134.
- .3 Antimicrobial Activity Assessment of Carpets, AATCC 174.
- .4 Stain Resistance: Pile Floor Coverings, AATCC 175.

1.04 SUBMITTALS

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

.2 Submit certificate to demonstrate compliance with CAN/ULC S102.

.3 Submit proof that carpet has been tested and passed the Indoor Air Quality (IAQ) Carpet Testing Program requirements of the Carpet and Rug Institute.

.4 Submit report verifying that tuft bind meets requirements of CAN/CGSB-4.129 when tested to CAN/CGSB-4.2.

.5 Submit evidence of prequalification compliance.

.6 Product data: submit product data sheet for each carpet, underlay, adhesive, carpet protection and subfloor filler.

.7 Submit WHMIS MSDS - Material Safety Data Sheets acceptable to Labour Canada and Health and Welfare Canada for carpet adhesive and seam adhesive. Indicate VOC content.

.8 Coordination on site prior to installation of linear graphic carpet tile with consultant installer. Indicate locations, sizes and dimensions, colours and other details required by Consultant to clarify work.

.9 Manufacturer's Instructions: Provide to indicate special handling criteria, installation sequence and cleaning procedures.

1.05 MAINTENANCE DATA

.1 Provide maintenance data for carpet for incorporation into Operation and Maintenance Manual specified in Section 01 78 00 – Closeout Submittals.

.2 Include maintenance procedures, recommended maintenance materials and suggested schedule for cleaning. Include detailed information regarding properties of stain resistance and recommended procedures for removal.

1.06 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 – Closeout Submittals.

.2 Provide maintenance data for carpet for incorporation into maintenance manual. Include maintenance procedures, recommended maintenance materials and suggested schedule for cleaning. Include detailed information regarding properties of stain resistance and recommended procedures for removal.

1.07 MAINTENANCE MATERIALS

.1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 For maintenance use, provide extra materials as follows:

.1 CPT-1 carpet tile: 5 % of total floor area

.3 CPT-1 carpet tile: Extra materials to be of same production run and dye lot as installed materials.

.4 Wrap each package separately and protect with plastic or heavy-duty craft paper. Identify contents.

.5 Deliver to site and store where directed. Provide written receipt, signed by Contractor, verifying delivery.

.6 Turn over unused carpet tiles from open cartons to Owner.

1.08 DELIVERY, STORAGE AND HANDLING

.1 Label packaged materials. For tile products indicate nominal dimensions of tile.

.2 Packaging, labelling, packing and marking details.

.3 Store packaged materials in original containers or wrapping with manufacturer's seals and labels intact.

.4 Store carpeting and accessories in location as directed by Contractor.

.5 Prevent damage to materials during handling and storage. Keep materials under cover and free form dampness.

.6 Maintain temperature of store room at a minimum of 20°C, for at least 24 hours immediately before the installation.

1.09 SITE CONDITIONS

.1 Moisture: Ensure substrate is within moisture limits prescribed by manufacturer.

.2 Temperature: Maintain ambient temperature of not less than 70 °F from 3 days before installation to at least 3 days after completion of work.

.3 Relative humidity: Maintain relative humidity between 10 and 65% RH for 48 hours before, during and 48 hours after installation.

.4 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.

.5 Ventilation:

.1 Construction Manager will arrange for ventilation system to be operated during installation of carpet. Ventilate area of work by use of approved portable supply and exhaust fans.

.2 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities.

.3 Provide continuous ventilation during and after carpet application. Run ventilation system 24 hours per day during installation; provide continuous ventilation for 7 days after completion of carpet installation.

1.10 WARRANTY

.1 Provide manufacturers' warranties for carpeting against defects in materials and workmanship, and that carpeting will not wear, delaminate, zipper, edge ravel, stretch, wrinkle, fade or show other defects detrimental to appearance or performance, in accordance with General Conditions.

Part 2 Products

2.01 REGULATORY REQUIREMENTS

.1 Conform to applicable code for flame/smoke rating.

.2 Prequalification: compliance with Department of Consumers and Corporate Affairs regulations under "Hazardous Products Act", Part II of the Schedule, tested to CAN/ULC-S102.2 horizontal surfaces

.3 Indoor Air Quality: compliance with CRI Indoor Air Quality Program, CRI -IAQ requirements for maximum total volatile chemicals released into air. Label each carpet product with CRI -IAQ label.

.4 Provide documentation that product meets or exceeds following criteria based on an emission factor measured in mg/m ² /hr:

.1 Total Volatile Organic Compounds - 0.5.

.2 Formaldehyde - 0.05.

.3 4-phenylcyclohexene - 0.05.

.4 Styrene - 0.4.

2.02 MATERIALS

.1 Refer to Material Schedule finish code: **CPT-1**.

.2 Refer to Material Schedule finish code: **THRES-#** and as per Floor Finishes Plan.

.3 Carpet Tile adhesive:

.1 As recommended by Carpet manufacturer that complies with the following:

.2 Acrylic release type: recommended by carpet tile manufacturer, low odour, low VOC, free of volatile hydrocarbons such as toluene and mineral spirits.

.3 Low VOC content in accordance with CRI requirements:

.4 Total volatile organic compounds: 10.0mg/m ² /hr.

.5 Formaldehyde: 0.05 mg/m ² /hr.

.6 2-Ethyl-1l-Hexanol: 3.0 mg/m ² /hr.

.4 Carpet protection: non-staining heavy-duty kraft paper.

Part 3 Execution

3.01 EXAMINATION

.1 Ensure sub-floors are smooth, level (maximum variation ¼”in 10’-0”), structurally sound, free from moisture, alkali, dust, solvents, paint, wax, oil, grease, asphalt, adhesives, sealing compounds and other extraneous foreign materials and are ready to receive work.

.2 Ensure sub-floors are dry by using test methods recommended by carpet manufacturer, and exhibit negative alkalinity, carbonization or dusting.

3.02 SUB-FLOOR TREATMENT

.1 Remove dust, old adhesive, dirt, sealer and wax from existing surfaces.

.2 Seal porous and powdery surfaces with concrete floor sealer.

.3 Repair defects in sub-floors with sub-floor filler. Remove ridges and bumps. Fill low spots, cracks, joints, holes and other defects.

.4 Clean and prime sub-floor with recommended primer.

.5 Where floorings of different thicknesses abut, apply filler to build up a smooth gradual ramping to allow carpeting to meet adjacent material. All transitions between different floor finishes shall be smooth.

.6 Apply filler, trowel and float to leave smooth, flat, hard surface free of trowel marks, bumps, voids, etc. Prohibit traffic until filler cured.

.7 Ensure sub-floor filler is fully bonded to substrates. Remove and replace unsound areas.

3.03 PREPARATION

.1 Prepare floor surfaces in accordance with Contract Carpet Manual, Standard for Installation of Textile Floorcovering Materials No.001.

.2 Pre-condition carpeting following manufacturer’s printed instructions.

3.04 INSTALLATION

.1 Install carpet tile using minimum of pieces in pattern as specified in Material Schedule 09 06 10 CPT-1.

.2 Install carpet tile in accordance with manufacturers' printed instructions and in accordance with Contract Carpet Manual, Standard for Installation of Textile Floor covering Materials No.001.

.3 Install carpeting after finished work is completed.

.4 Cut carpet tile clean. Fit carpet tight to intersection without gaps. Finish installation to present smooth wearing surface free from conspicuous seams, burring and other faults.

.5 Use material from same dye lot. Ensure colour, pattern and texture match within any one visual area. Coordinate with Consultant. Maintain constant pile direction.

.6 Fit neatly around architectural, mechanical, electrical and telephone outlets, and furniture fitments, around perimeter of rooms into recesses, and around projections.

.7 Installation Method: Quarter Turn.

3.05 CARPET TILE

.1 Apply acrylic release type adhesive or with glue-free TacTiles dot installation system and install carpet tile in accordance with manufacturer's written instructions.

.2 Lay tiles with butt seams.

3.06 Protection of Finished Work

.1 Remove excess adhesive without damage from floor, base and wall surfaces.

.2 Vacuum carpets clean immediately after completion of installation. Protect traffic areas.

.3 Prohibit traffic on carpet until adhesive is cured.

.4 Install carpet protection.

END OF SECTION

Part 1 General

1.01 RELATED REQUIREMENTS

.1 Section 06 10 00 - Rough Carpentry: For wood furring and strapping.

.2 Section 09 22 16 - Non-structural Metal Framing: For stud framing and metal furring.

1.02 REFERENCE STANDARDS

.1 American Society for Testing and Materials (ASTM)

.1 ASTM C423-07, Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method

.2 Canadian Standards Association (CSA)

.1 CSA B111-1974 (R2003), Wire Nails, Spikes and Staples

.3 Underwriter Laboratories of Canada (ULC)

.1 CAN/ULC-S702-14, Standard for Mineral Fibre Thermal Insulation for Buildings

1.03 ACTION / INFORMATIONAL SUBMITTALS

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

.2 Samples: Provide 2 ½" x 4" size sample of each type acoustical unit.

.3 Product Data: Manufacturers' product data for each specified acoustical tile describing physical and performance characteristics, sizes, patterns, colours.

.4 Shop Drawings: Indicate panel layouts, location of different colours/fabrics, edge treatment, mounting details.

1.04 WASTE MANAGEMENT AND DISPOSAL

.1 Comply with Section 01 74 21 - Construction/Demolition Waste Management and Disposal][, and Waste Reduction Work Plan.

1.05 SITE CONDITIONS

.1 Commence installation after building enclosed and dust generating activities are completed.

.2 Permit wet work to dry prior to commencement of installation.

.3 Maintain uniform minimum temperature of 15°C and relative humidity of 20- 40% prior to, during and after installation.

Part 2 Products

2.01 MATERIALS

.1 Acoustic Units:

.1 Type: PET.

.2 Pattern: Flat.

.3 Flame spread rating of 0 or less.

.4 Smoke Developed Value: 35

.5 Noise reduction coefficient (NRC) designation of 0.85.

.6 Edge type square.

.7 Colour: Refer to Material Schedule.

.8 Size 1220 x 2440 x 9 mm thick.

.9 Shape flat.

.2 Adhesive: Type recommended by acoustic unit manufacturer.

.1 Adhesives: Construction Adhesive

.2 Adhesives: maximum VOC limit 50 g/L to SCAQMD Rule 1168.

Part 3 Execution

3.01 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.02 INSTALLATION

.1 Ensure substrate surface is straight to tolerance of plus or minus 3 mm over 3 000 mm.

.2 Install acoustic units to clean, dry and firm substrate using adhesive.

.3 Install acoustic units plumb and aligned. Arrange units symmetrical on each wall as indicated. Cut units to be at least 50 % of unit width].

.4 Scribe acoustic units to fit adjacent work. Butt joints tight.

.5 Arrange units as indicated on drawings.

3.03 CLEANING

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

.2 Keep acoustic installation and all components clean. Remove blemishes immediately.

3.04 PROTECTION

.1 Use cardboard to protect finished acoustical wall treatment from damage.

.2 Remove prior to substantial completion.

3.05 SCHEDULE

.1 Location: Boardroom 111 and Lunchroom / meeting Room 122.

END OF SECTION

Part 1 General

1.01 SUMMARY

.1 Section Includes:

.1 Paint all new work as indicated and as specified.

.2 Work of this section includes, but is not necessarily limited to, painting of patchwork and previously painted surfaces as required for alteration and renovation work of this project. Refer to Article "Re-Painting " in Part 3 of this Section.

.3 Refer to all drawing and coordinate with work of other trades. Claims for extras to the Contract will not be accepted due to the failure of the Contractor to become fully aware of all work that is required.

1.02 RELATED REQUIREMENTS

.1 Sections with Items Requiring Site Finishing:

.1 Section 06 20 00 – Finish Carpentry: For interior shelving.

.2 Section 08 11 14 - Hollow Metal Doors and Frames

.3 Section 09 21 16 - Gypsum Board Assembles

1.03 REFERENCES STANDARDS

.1 ASTM

.1 ASTM D4541 - 17, Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers

.2 ASTM D4752 – 10 (2015), Standard Practice for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub

.3 ASTM D7091 – 13, Standard Practice for Non-destructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals

.2 International Standards Organization (ISO)

.1 ISO12944 - 5:2007, Paints and varnishes -- Corrosion protection of steel structures by protective paint systems -- Part 5: Protective paint systems

.3 Master Painters Institute (MPI)

.1 Architectural Painting Specifications Manual (2014)

.4 Environmental Protection Agency (EPA)

.1 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings) of the Environmental Protection Agency (EPA)

.2 SW-846, Test Method for Evaluating Solid Waste, Physical/Chemical Methods

1.04 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit product data and manufacturer's installation/application instructions for each paint and coating product to be used on project.

.3 Samples:

.1 Indicate where colour availability is restricted.

.2 Submit duplicate 200 x 300 mm sample panels of each paint clear coating with specified paint or coating in colours, gloss/sheen and textures required to MPI Painting Specification Manual standards submitted on the following substrate materials:

.1 10 mm maple plywood for finishes over interior wood surfaces.

.2 13 mm gypsum board for finishes over gypsum board and other smooth surfaces.

.3 When approved, sample panels shall become acceptable standard of quality for appropriate on-site surface with one of each sample retained on-site.

1.05 CLOSEOUT SUBMITTALS

.1 Upon completion, submit records of products used. List products in relation to finish system and include the following:

.1 Product name, type and use.

.2 Manufacturer's product number.

.3 Colour numbers.

.4 MPI Environmentally Friendly classification system rating.

.5 Manufacturer's Material Safety Data Sheets (MSDS).

1.06 QUALITY ASSURANCE

.1 Contractor shall have a minimum of five years proven satisfactory experience. When requested, provide a list of last three comparable jobs including, job name and location, specifying authority, and project manager.

.2 Qualified journeymen who have a "Tradesman Qualification Certificate of Proficiency" shall be engaged in painting work. Apprentices may be employed provided they work under the direct supervision of a qualified journeyman in accordance with trade regulations.

.3 Conform to latest MPI requirements for painting work including preparation and priming.

.4 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) shall be in accordance with MPI Painting Specification Manual "Approved Product" listing and shall be from a single manufacturer for each system used.

.5 Other paint materials such as linseed oil, shellac, turpentine, etc. shall be the highest quality product of an approved manufacturer listed in MPI Painting Specification Manual and shall be compatible with other coating materials as required.

.6 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Consultant.

.7 Standard of Acceptance:

.1 Walls, doors and other vertical surfaces: no defects visible from a distance of 1 m at 90° to surface.

.2 Ceilings: No defects visible from floor at to surface when viewed using final lighting source.

.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area and shall be acceptable to Consultant.

1.07 SCHEDULING OF WORK

.1 Submit work schedule for various stages of painting to Consultant for review. Submit schedule minimum of 48 hours in advance of proposed operations.

.2 Obtain written authorization from Consultant for any changes in work schedule.

.3 Schedule painting operations to prevent disruption of occupants in and about the building.

1.08 MOCK-UP

.1 Provide mock-up in accordance with Section 01 40 00 - Quality Requirements.

.2 Refer to Section 06 40 00 for finish carpentry mock-ups.

.3 When requested by Consultant, prepare and paint designated surface, area, room or item (in each colour scheme) to requirements specified herein, with specified paint or coating showing selected colours, gloss/sheen, textures and workmanship to MPI Painting Specification Manual standards for review and approval. When approved, surface, area, room and/or items shall become acceptable standard of finish quality and workmanship for similar on-site work.

1.9 EXTRA MATERIALS

.1 Submit maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 Submit one - one litre can of each type and major colour of primer finish coating. Identify colour and paint type in relation to established colour schedule and finish system.

.3 Label each container with colour, sheen, room location, and date.

.4 Deliver to Contractor and store where directed.

1.10 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Labels shall clearly indicate:

.1 Manufacturer's name and address.

.2 Type of paint or coating.

.3 Compliance with applicable standard.

.4 Colour number in accordance with established colour schedule.

.3 Remove damaged, opened and rejected materials from site.

.4 Provide and maintain dry, temperature controlled, secure storage.

.5 Observe manufacturer's recommendations for storage and handling.

.6 Store materials and supplies away from heat generating devices.

.7 Store materials and equipment in a well ventilated area with temperature range 7°C to 30°C.

.8 Store temperature sensitive products above minimum temperature as recommended by manufacturer.

.9 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Consultant. After completion of operations, return areas to clean condition to approval of Consultant.

.10 Remove paint materials from storage only in quantities required for same day use.

.11 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.

.12 Fire Safety Requirements:

.1 Provide one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.

.2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

.3 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

1.11 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal, and Waste Reduction Work Plan.

.2 Paint, stain and wood preservative finishes and related materials (thinners, solvents, etc.) are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.

.3 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.

.4 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.

.5 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into ground the following procedures shall be strictly adhered to:

.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 an approved legal manner in accordance with hazardous waste regulations.

.5 Empty paint cans are to be dry prior to disposal or recycling (where available).

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

.7 Set aside and protect surplus and uncontaminated finish materials: Deliver to or arrange collection by employees, individuals, or organizations for verifiable re-use or re-manufacturing.

.8 Close and seal tightly partly used sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.

1.12 SITE CONDITIONS

.1 Heating, Ventilation and Lighting:

.1 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities.

.2 Perform no painting work unless adequate and continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above 10 °C for 24 hours before, during and after paint application until paint has cured sufficiently.

.3 Where required, provide continuous ventilation for seven days after completion of application of paint.

.4 Coordinate use of existing ventilation system with Owner, Contractor and Consultant and ensure its operation during and after application of paint as required.

.5 Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.

.6 Perform no painting work unless a minimum lighting level of 323 Lux is provided on surfaces to be painted.

.2 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Unless specifically pre-approved by the Consultant and the applied product manufacturer, perform no painting work when:

.1 Ambient air and substrate temperatures are below 10°C.

.2 Substrate temperature is over 32°C unless paint is specifically formulated for application at high temperatures.

.3 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's prescribed limits.

.4 The relative humidity is above 85% or when the dew point is less than 3°C variance between the air/surface temperature.

.5 Rain or snow is forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.

.2 Perform no painting work when the maximum moisture content of the substrate exceeds:

.1 15% for wood.

.2 12% for plaster and gypsum board.

.3 Conduct moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple "cover patch test".

.4 Test concrete, masonry and plaster surfaces for alkalinity as required.

.3 Surface and Environmental Conditions:

.1 Apply paint finish only in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.

.2 Apply paint only to adequately prepared surfaces and to surfaces within moisture limits noted herein.

.3 Apply paint only when previous coat of paint is dry or adequately cured.

.4 Additional Interior Application Requirements:

.1 Apply paint finishes only when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.

.2 Apply paint in occupied facilities in accordance with approved schedule. Schedule operations to approval of Consultant and Owner such that painted surfaces will have dried and cured sufficiently before occupants are affected.

.5 Additional Exterior Application Requirements:

.1 Apply paint finishes only when conditions forecast for entire period of application fall within manufacturer's recommendations.

.2 Do not apply paint when:

.1 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's limits.

.2 Surface to be painted is wet, damp or frosted.

.3 Schedule painting operations such that surfaces exposed to direct, intense sunlight are scheduled for completion during early morning.

Part 2 Products

2.01 MATERIALS

.1 Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.

.2 Paint materials for paint systems shall be products of a single manufacturer.

.3 Only qualified products with E2 "Environmentally Friendly" rating are acceptable for use on this project.

.4 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids, shall:

.1 be water clean-up,

.2 be non-flammable,

.3 be manufactured without compounds which contribute to ozone depletion in the upper atmosphere,

.4 be manufactured without compounds which contribute to smog in the lower atmosphere,

.5 do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments,

.5 Water-borne surface coatings must be manufactured and transported in a manner that steps of process, including disposal of waste products arising therefrom, will meet requirements of applicable governmental acts, by-laws and regulations including, for facilities located in Canada, Fisheries Act and Canadian Environmental Protection Act (CEPA).

.6 Water-borne surface coatings must not be formulated or manufactured with aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavelant chromium or their compounds.

.7 Water-borne surface coatings and recycled water-borne surface coatings must have a flash point of 61°C or greater.

.8 Both water-borne surface coatings and recycled water-borne surface coatings must be made by a process that does not release:

.1 Matter in undiluted production plant effluent generating a 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.

.2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.

.9 Water-borne paints and stains, recycled water-borne surface coatings and water borne varnishes must meet a minimum "Environmentally Friendly" E2 rating.

.10 Recycled water-borne surface coatings must contain 50% post-consumer material by volume.

.11 Recycled water-borne surface coatings must not contain:

.1 Lead in excess of 600.0 ppm weight/weight total solids.

.2 Mercury in excess of 50.0 ppm weight/weight total product.

.3 Cadmium in excess of 1.0 ppm weight/weight total product.

.4 Hexavelant chromium in excess of 3.0 ppm weight/weight total product.

.5 Organochlorines or polychlorinated biphenyls (PCBS) in excess of 1.0 ppm weight/weight total product.

.12 The following must be performed on each batch of consolidated post-consumer material before surface coating is reformulated and canned. These tests must be performed at a laboratory or facility that has been accredited by the Standards Council of Canada.

.1 Lead, cadmium and chromium are to be determined using ICP-AES (Inductively Coupled Plasma - Atomic Emission Spectroscopy) technique no. 6010 as defined in EPA SW-846.

.2 Mercury is to be determined by Cold Vapour Atomic Absorption Spectroscopy using Technique no. 7471 as defined in EPA SW-846.

.3 Organochlorines and PCBs are to be determined by Gas Chromatography using Technique no. 8081 as defined in EPA SW-846.

2.02 ENVIRONMENTAL PERFORMANCE REQUIREMENTS

.1 Provide paint products meeting MPI "Environmentally Friendly", E1 ratings based on VOC (EPA Method 24) content levels.

.2 Where indoor air quality (odour) is a problem, use only MPI listed materials having a minimum E1 rating.

2.03 COLOURS

.1 Consultant will select colours and determine total number of colours to be used on project and their locations. Refer to Material Schedule.

.2 Selection of colours may be from several different manufacturers. Match colour samples exactly regardless of manufacturer.

.3 Allow for 25% of all painted surfaces to be deep to medium tone colours.

.4 Second coat in a three-coat system to be tinted slightly lighter colour than topcoat to show visible difference between coats.

2.04 MIXING AND TINTING

.1 Perform colour tinting operations prior to delivery of paint to site. On-site tinting of painting materials is allowed only with Consultant's written permission.

.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 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.

.5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.05 GLOSS/SHEEN RATINGS

.1 Paint gloss is defined as sheen rating of applied paint.

.2 Gloss levels in accordance with MPI Architectural Painting Specifications Manual, defined as follows:

Gloss Level	Description	Gloss @ 60º	Sheen @ 85º
G1	traditional matte finish - flat	Max. 5 units	Max. 10 units
G2	high hide sheet flat - 'velvet-like'	Max.10 units	10 - 35 units
G3	traditional 'eggshell-like'	10 - 25 units	10 - 35 units
G4	'satin-like'	20 - 35 units	Min. 35 units
G5	traditional semi-gloss	35 - 70 units	
G6	traditional gloss	70 - 85 units	
G7	high gloss	< 85 units	

.3 Gloss level ratings of interior painted surfaces as follows, except where specified otherwise:

Interior Surfaces	Gloss
Gypsum board - walls - generally	G4
Gypsum board - ceilings - generally	G1
Gypsum board - walls - utility spaces	G5
Gypsum board - ceilings - utility spaces	G5
Masonry/concrete - walls - generally	G4
Steel doors and frames	G5
Millwork - clear finish	Flat

2.06 INTERIOR PAINTING SYSTEMS

.1 Paint interior surfaces in accordance with the following MPI Painting Specification Manual requirements.

.2 All paint systems specified herein are premium grade unless otherwise indicated.

.3 Galvanized Metal: doors, frames, railings, misc. steel, pipes, overhead decking, ducts, etc.

.1 INT 5.3M - High Performance Architectural Latex.

.4 Dressed Lumber: Including doors, door and window frames, casings, mouldings, etc.

.1 INT 6.3E Polyurethane Varnish (over stain), to match Consultant’s sample.

.5 Gypsum Board: Gypsum wallboard, drywall, "sheet rock type material", etc., and textured finishes

.1 INT 9.2B – High performance architectural latex finish.

Part 3 Execution

3.01 GENERAL

.1 Perform preparation and operations for painting in accordance with MPI Painting Specifications Manual requirements, except where indicated otherwise.

.2 Apply paint materials in accordance with paint manufacturers’ written application instructions.

.3 Paint all new work, except prefinished items or where indicated otherwise.

3.02 EXISTING CONDITIONS

.1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Consultant damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.

.2 Conduct moisture testing of surfaces to be painted using a properly calibrated electronic moisture meter, except test concrete floors for moisture using a simple "cover patch test" and report findings to Consultant.

.3 Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

3.03 PROTECTION

.1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore such surfaces as directed by Consultant.

.2 Protect items that are permanently attached such as Fire Labels on doors and frames.

.3 Protect factory finished products and equipment.

.4 Protect, building occupants and general public in and about the building.

.5 Remove electrical cover plates, light fixtures, surface hardware on doors, signs and signage, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking any painting operations. Store items and re-installed after painting is completed.

.6 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.

.7 As painting operations progress, place "WET PAINT" signs in occupied areas to approval of Consultant.

3.04 CLEANING AND PREPARATION

.1 Clean and prepare surfaces in accordance with MPI Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:

.1 Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.

.2 Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.

.3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.

.4 Allow surfaces to drain completely and allow to dry thoroughly.

.5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.

.6 Use trigger operated spray nozzles for water hoses.

.7 Many water-based paints cannot be removed with water once dried. However, minimize the use of kerosene or any such organic solvents to clean up water-based paints.

.2 New exposed and unexposed wood surfaces to receive shop applied primer before installation. Use same primers as specified for exposed surfaces and as follows:

.1 Apply solvent based sealer to MPI #36 over knots, pitch, sap and resinous areas.

.2 Apply wood filler to nail holes and cracks.

.3 Tint filler to match stains for stained woodwork.

.3 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove visible defects.

.4 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes, blowing with clean dry compressed air, or vacuum cleaning.

.5 Touch up of shop primers with primer as specified in applicable section. Major touch-up including cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas, shall be by supplier of fabricated material.

.6 Do not apply paint until prepared surfaces have been reviewed by Consultant.

3.05 APPLICATION

.1 Apply paint by air sprayer. Conform to manufacturer's application instructions unless specified otherwise.

.2 Spray Application:

.1 Provide and maintain equipment that is suitable for intended purpose, capable of properly atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.

.2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.

.3 Apply paint in a uniform layer, with overlapping at edges of spray pattern.

.4 Brush out immediately all runs and sags.

.5 Use brushes to work paint into cracks, crevices and places which are not adequately painted by spray.

.3 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access and only when specifically authorized by Consultant.

.4 Apply coats of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

.5 Painting coats specified are intended to cover surface completely. If necessary apply additional coats until satisfactory coverage is obtained. Provide additional coats at not additional cost to Contract.

.6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.7 Sand and dust between coats to remove visible defects.

.8 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.

.9 Finish inside of cupboards and cabinets as specified for outside surfaces.

.10 Finish closets and alcoves as specified for adjoining rooms.

.11 Doors and frames:

.1 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

.2 Finish exposed edges of laminated plastic covered wood doors. Apply wood stain and clear sealer as specified for stained wood surfaces.

.3 Finish surfaces of doors and frames that will be concealed behind protective plates and coverings, door frame guards. Use same finish formula specified for visible portion of door.

.4 For exterior doors and frames indicated for painting/staining, use exterior quality paint/stain on both interior and exterior sides of door and frame.

.5 For doors and frames to receive epoxy coatings, finish both sides of doors and frames with same finish formula.

.12 Paint wall and ceiling surfaces inside of lighting valences, including surfaces behind louvered panels and diffusers, with primer and two coats flat white paint.

.13 Finish wall surfaces that will be concealed behind wall hung fixtures and equipment such as cabinets and visual display boards. Use same finish formula specified for visible portion of wall.

.14 Paint/stain wood trim and mouldings on walls and ceilings, as well as on cabinets, countertops, visual display boards, wood mirror frames and other items as designated, if such wood trim and mouldings are unfinished.

.15 Do not paint door and miscellaneous hardware, unless indicated otherwise.

.16 Do not paint nameplates, signage, fire labels, or other markers or signs indicated to remain.

.17 Do not paint copper, bronze, chromium plate, nickel, stainless steel, aluminum, lead and other bright metals, unless specified otherwise.

.18 Clean shop applied paint surfaces that become marked. Touch up with primer and paint as required.

3.06 RE-PAINTING

.1 Cleaning and preparation of surfaces:

.1 Clean and prepare previously finished surfaces in accordance with MPI Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:

.2 Remove any loose or flaked paint or paper.

.3 Remove dirt, dust, grease, oil and other deleterious substances.

.4 Dull glossy areas with sand paper.

.5 Sand to remove rough edges and leave feather smooth.

.6 Fill minor cracks and holes with patching compound. Sand smooth and wipe clean.

.7 Spot prime patched areas with finishing coat.

.2 Paint existing walls, ceilings, doors and frames, and other previously painted surfaces where indicated.

.3 Paint patchwork on previously painted surfaces indicated. Match existing paint finish as closely as possible, except where indicated otherwise.

.4 Painting of patchwork shall include for painting of existing surfaces up to nearest change in direction or surface interruption (e.g. door jamb, corner, bulkhead). Make neat termination and feather out to make patchwork inconspicuous.

.5 Wherever repainting of existing partitions or walls is indicated, paint both sides of all doors and frames, and other items requiring painting, which occur within the wall.

.6 Paint both sides of new partitions and walls, regardless of whether both sides are indicated in the Room Finish Schedule.

.7 Paint both sides of new doors and frames, windows or other items that require painting, which are installed in existing walls. Paint adjacent patchwork.

.8 Repaint or refinish interior surfaces of exterior window frames if adjacent walls are being painted or repainted.

3.07 RESTORATION

.1 Clean and re-install all hardware items removed before undertaken painting operations.

.2 Remove protective coverings and warning signs as soon as practical after operations cease.

.3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.

.4 Protect freshly completed surfaces from paint droppings and dust. Avoid scuffing newly applied paint.

.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition.

END OF SECTION

General

1.01 RELATED REQUIREMENTS

.1 Section 09 21 23 - Gypsum Board Assemblies: Wall assemblies, metal furring and blocking.

1.02 REFERENCES

.1 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S102, Surface Burning Characteristics of Building Materials and Assemblies.

.2 American Society for Testing and Materials (ASTM)

.1 ASTM E 84, Standard Test Method for Surface Burning Characteristics of Building Materials

1.03 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section [01 33 00 - Submittal Procedures].

.2 Product Data: Submit manufacturer’s technical data and brochures for wall and door protection.

.1 Shop Drawings:

.1 Indicate manufacturer, materials, thicknesses, sizes and dimensions, accessories, installation details.

.2 Include schedule of locations indicating different materials, colours and textures.

.3 Samples: Provide samples of vinyl/acrylic material representing manufacturer's full colour and texture selection range.

.4 Manufacturer's Instructions: Provide to indicate special handling criteria, installation sequence, cleaning procedures and installation materials and methods.

1.04 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Maintenance data: provide cleaning and maintenance data for incorporation into Maintenance Manual. Include information regarding properties of stain resistance, recommended maintenance procedures, and procedures for removal of stains, scuff marks, ink or other damage or markings.

1.05 QUALITY ASSURANCE

.1 Qualifications: Wall protection shall be installed by the manufacturer's qualified and approved applicators. Upon request, provide proof of qualifications to Consultant.

1.06 SITE CONDITIONS

.1 Do not commence installation until after building enclosed and dust generating activities completed. Permit wet work to dry before commencement of installation.

.2 Do not commence installation until a uniform minimum temperature of 20°C and relative humidity of 20 - 40% can be consistently maintained 72 h before and 48 h after installation.

.3 Allow materials to acclimatize to local ambient conditions before installation.

1.07 WASTE MANAGEMENT AND DISPOSAL

.1 Comply with Section 01 74 21 - Construction/Demolition Waste Management and Disposal , and Waste Reduction Work Plan.

Part 2 Products

2.01 CORNER GUARDS

.1 Vinyl/Acrylic Corner Guards:

.2 Stainless Steel Corner Guards:

.1 Stainless steel, Type 304, ANSI No. 4 satin finish, 3 1/2 x 3 1/2 inch x 18 gauge, 90° corner with 1/8 inch radius edge.

.2 Lengths: 8'-0".

2.02 ACCESSORIES

.1 Fasteners, screws, anchors and mounting hardware: type recommended by manufacturer, suitable for substrate.

.2 Adhesive: water resistant type recommended by manufacturer for substrate.

Part 3 Execution

3.01 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.02 EXAMINATION

.1 Examine site conditions to ensure surfaces are ready to receive wall and door protection, are clean, firm, smooth and dry, free from loose material or other irregularities which would prevent good adhesive grip or smooth application of materials.

.2 Ensure joints and screw holes in gypsum board are taped and sanded smooth, and jointing compounds are fully cured and dry.

.3 Ensure new surfaces have been primed or painted.

.4 Ensure pipes, conduit and other work penetrating surfaces has been completed before installation of wall covering.

.5 Report improper conditions to Consultant and await remedial measures.

3.03 PREPARATION

.1 Prepare surfaces in accordance with manufacturer's instructions.

.2 Where adhesive is applied over painted surfaces, sand lightly, wipe clean all dust to provide improved adhesive grip.

3.04 INSTALLATION

.1 Install materials and components in accordance with manufacturer's instructions and reviewed shop drawings.

.2 Install components straight, plumb and level to tolerance of 1:1000. Align top edges with adjacent work.

.3 Use continuous full length pieces wherever possible to reduce number of joints. Where joints are required provide tight, butt joints to manufacturer's specifications. Offset joints between retainers and covers.

.4 Adhesive Application:

.1 Bond materials to substrates with manufacturer's recommended adhesives. Ensure full coverage of adhesive to corners and edges.

.2 Roll material with hand roller to ensure positive bond.

.3 Completed work shall be fully bonded to substrates, smooth and even, without gaps, overlaps, bubbles or air pockets.

.5 Fastener Application:

.1 Install components requiring fasteners using recommended fasteners suitable for substrates. Use expansion anchors for solid backing; screws for metal and wood backing.

.2 Ensure firm anchorage.

.6 Corner Guards

.1 Stainless steel corner guards: install stainless steel corner guards with adhesive on both legs.

.2 Set bottom edge of guards on top of wall base.

3.05 REMEDIAL WORK

.1 Remove carefully to prevent damage. Store materials on site until required for reinstallation.

3.06 ADJUSTING AND CLEANING

.1 After completion inspect work for defects in materials or workmanship. Ensure all brackets and retainers are securely fastened. Ensure covers and closure pieces are secured in place.

.2 Clean surfaces of excess adhesive, scuff marks, dirt, dust or other marks with recommended cleaners

.3 Replace or repair soiled, damaged or improperly installed materials to Consultant’s satisfaction.

END OF SECTION