Durham District School Board

ARCHITECTURAL SPECIFICATIONS
Pine Ridge S.S.
Changeroom Renovation

2155 Liverpool Road
Pickering, Ontario L1X 1V4

Project Number: 25-101B
Issued for Tender: July 15, 2025

GOW HASTINGS
ARCHITECTS

DDSB
Ignite Learning

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Summary of Work

Part 1 General

1.1 WORK COVERED BY CONTRACT DOCUMENTS

1. Work of this Contract comprises renovation of Pine Ridge SS, located at 2155 Liverpool Rd Pickering, ON ; and further identified as Change Room Alterations.

1.2 CONTRACT METHOD

1. Construct Work under stipulated price contract.

1.3 WORK BY OTHERS

1. Co-operate with other Contractors in carrying out their respective works and carry out instructions from Consultant.
2. Co-ordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to Consultant, in writing, any defects which may interfere with proper execution of Work.

1.4 WORK SEQUENCE

1. Construct Work in stages to accommodate Owner's continued use of premises during construction.
2. Co-ordinate Progress Schedule and co-ordinate with Owner Occupancy during construction.
3. Maintain fire access/control.

1.5 CONTRACTOR USE OF PREMISES

1. Limit use of premises for access, to allow:
   1.1. Owner occupancy.
   1.2. Work by other contractors.
   1.3. Public usage.
2. Co-ordinate use of premises under direction of Consultant.
3. Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
4. Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
5. Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Consultant.
6. At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.6 OWNER OCCUPANCY

1. Owner will occupy premises during entire construction period for execution of normal operations.
2. Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

1.7 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

1. Execute work with least possible interference or disturbance to occupants, public and normal use of premises. Arrange with Consultant to facilitate execution of work.

1.8 EXISTING SERVICES

1. Notify, Consultant and utility companies of intended interruption of services and obtain required permission.
2. Where Work involves breaking into or connecting to existing services, give 72 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to tenant operations.
3. Provide alternative routes for pedestrian and vehicular traffic.
4. Establish location and extent of service lines in area of work before starting Work. Notify Consultant of findings.
5. Submit schedule to and obtain approval from Consultant for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
6. Provide temporary services when directed by Consultant to maintain critical building and tenant systems.
7. Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
8. Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.
9. Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
10. Record locations of maintained, re-routed and abandoned service lines.
11. Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.9 DOCUMENTS REQUIRED

1. Maintain at job site, one copy each document as follows:
    1.1. Contract Drawings.
    1.2. Specifications.
    1.3. Addenda.
    1.4. Reviewed Shop Drawings.
    1.5. List of Outstanding Shop Drawings.
    1.6. Change Orders.
    1.7. Other Modifications to Contract.
    1.8. Field Test Reports.
    1.9. Copy of Approved Work Schedule.
    1.10. Health and Safety Plan and Other Safety Related Documents.
    1.11. Other documents as specified.

Part 2 Products

2.1 NOT USED

1. Not used.

Part 3 Execution

3.1 NOT USED

1. Not used.

END OF SECTION

SECTION 01 14 00
Work Restrictions

Part 1 General

1.1 ACCESS AND EGRESS

1. Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.
2. Contractor to coordinate with College facilities to maintain access to grounds and equipment located adjacent to construction entrance.

1.2 USE OF SITE AND FACILITIES

1. Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Consultant to facilitate work as stated.
2. Maintain existing services to building and provide for personnel and vehicle access.
3. Where security is reduced by work provide temporary means to maintain security.
4. Use of College washroom facilities is note permitted. Contractor to provide temporary washroom facilities
5. Use only elevators, existing in building for moving workers and material.
   5.1. Use of elevators must be coordinated with and receive owner's approval.
   5.2. Protect walls of passenger elevators, to approval of Owner prior to use.
   5.3. Accept liability for damage, safety of equipment and overloading of existing equipment.
6. Closures: protect work temporarily until permanent enclosures are completed.

1.3 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

1. Execute work with least possible interference or disturbance to building operations and normal use of premises. Arrange with Consultant to facilitate execution of work.

1.4 EXISTING SERVICES

1. Notify, Consultant and utility companies of intended interruption of services and obtain required permission.
2. Where Work involves breaking into or connecting to existing services, give 72 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.
3. Provide for pedestrian and vehicular traffic.
4. Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.5 SPECIAL REQUIREMENTS

1. Carry out noise generating Work that disrupts the Owner's day-to-day function on Monday to Friday from 23:00 to 07:00 hours, weekends and on statutory holidays at cost to contractor

2. Submit schedule in accordance with Section 01 32 16.19 - Construction Progress Schedule - Bar (GANTT) Chart complete with critical path milestones.
3. Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
4. Keep within limits of work and avenues of ingress and egress.
5. Deliver materials outside of peak traffic hours 17:00 to 07:00 and 13:00 to 15:00 unless otherwise approved by Owner.

1.6 SECURITY

1. Where security has been reduced by Work of Contract, provide temporary means to maintain security.

1.7 BUILDING SMOKING ENVIRONMENT

1. Comply with smoking restrictions. Smoking is not permitted.

Part 2 Products

2.1 NOT USED

1. Not Used.

Part 3 Execution

3.1 NOT USED

1. Not Used.

END OF SECTION

SECTION 01 19 00
Specifications and Documents

Part 1 General

1.1 SECTION INCLUDES

1. Words and terms.
2. Complementary documents.
3. Precedence of Documents.
4. Specification grammar.

1.2 RELATED DOCUMENTS

1. Document 00 52 10 - Agreement and Definitions: Precedence of documents.
2. Document 00 72 13 - General Conditions - Stipulated Price.
3. This section describes requirements applicable to all sections within Divisions 02 to 49.

1.3 WORDS AND TERMS

1. Conform to definitions and their defined meanings in the Agreement and Definitions portion of …… for supplementary words and terms.
2. The following words and terms are applicable to the Contract Documents for this project:
3. Addendum: A document that amends the Bid Documents during the Bidding Period and becomes part of the Contract Documents when a Contract is executed. (Plural: Addenda).
4. Agreement: The signed and sealed legal instrument binding parties in a Contract, describing in strict terms their mutual arrangement, roles and responsibilities, commencement, and completion responsibilities.
5. Alternative Price: The amount stipulated by a Bidder for an Alternative and stated as an addition, a deduction, or no change to the Bid Price.
6. Bid: To offer as a Bid stating for what price a Contractor will assume a Contract.
7. Bid Documents: A set of documents consisting of the Instructions to Bidders, Bid Form, Contract Documents, and other information issued for the benefit of Bidders to prepare and submit a Bid.
8. Bid Form: The specific and detailed form used to collect information about a Bid.
9. Bidding: The process of preparing and submitting a Bid.
10. Construction Documents: The Drawings and Project Manual. When combined with a Contract and Contract conditions, these documents form the Contract Documents.
11. Contingency Allowance: An additional monetary amount added to a Project cost estimate and designated to cover unpredictable or unforeseen items of Work. The amount is usually based on some percentage of the estimated cost and expended and adjusted by Change Order. It is not intended to cover additions to the scope of Work.
12. Cost Plus Contract: A Contract under which a Contractor is reimbursed for the direct and indirect costs for the performance of a Contract and, in addition, is paid a Fee for services. The Fee is usually stated as a stipulated price or as a percentage of cost.
13. General Conditions: That part of the Contract Documents that sets forth many of the rights, responsibilities and relationships of the parties involved in a Contract.

14. Instructions To Bidders: Instructions contained in the Bid Documents to convey an Owner's expectations and criteria associated with submitting a Bid.
15. Section: A portion of a Project Specification covering one or more segments of the total Work or requirements. Sections are included in a Project manual as required to meet Project requirements.
16. Standard: A document describing a grade or a level of quality, which has been established by a recognized agency or organization, utilizing an internal voting process.
17. Separate Price: A separate price for work to be added to the base price if selected by the Owner. This price type is not a part of the base bid price.
18. Stipulated Price: An amount set forth in a Stipulated Price Contract as the total payment for the performance of the Work. Sometimes referred to as a stipulated sum or a lump sum stipulated price.
19. Tender: A term that was formally abandoned by CCDC and the Canadian Construction industry in the early 1980's in favour of the preferred term Bid.
20. Unit Price: The amount payable for a single unit of Work as stated in a Schedule of Prices.
21. Install: To remove from site storage, move or transport to intended location, install in position, connect to utilities, repair site caused damage, and make ready for use.
22. Supply: To acquire or purchase, ship or transport to the site, unload, remove packaging to permit inspection for damage, re-package, replace damaged items, and safely store on-site.

1.4 COMPLEMENTARY DOCUMENTS

1. Generally, drawings indicate graphically, the dimensions and location of components and equipment. Specifications indicate specific components, assemblies, and identify quality.
2. Drawings, specifications, diagrams and schedules are complementary, each to the other, and what is required by one, to be binding as if required by all.
3. Should any conflict or discrepancy appear between documents, which leaves doubt as to the intent or meaning, apply the Precedence of Documents article below or obtain guidance or direction from Consultant.
4. Examine all discipline drawings, specifications, schedules, diagrams and related Work to ensure that Work can be satisfactorily executed.
5. All specification sections of the Project Manual and Drawings are affected by requirements of Division 01 sections.

1.5 PRECEDENCE OF DOCUMENTS

1. In the event of conflict within and between the Contract Documents, the order of priority within specifications and drawings for this project are - from highest to lowest:
    1.1. the Agreement and Definitions between the Owner and the Contractor;
    1.2. the Definitions;
    1.3. Supplementary Conditions;
    1.4. the General Conditions;
    1.5. Sections of Division 01 of the specifications;
    1.6. Sections of Divisions 02 through 49 of the specifications.
    1.7. Schedules and Keynotes:
        1.7.1. Material and finishing schedules within the specifications, then;
        1.7.2. Material and finishing schedules on drawings, then;
        1.7.3. Keynotes and definitions thereto, then;

1.8. Diagrams.

1.9. Drawings:

1.9.1. Drawings of larger scale shall govern over those of smaller scale of the same date, then;

1.9.2. Dimensions shown on drawings shall govern over dimensions scaled from drawings, then;

1.9.3. Location of utility outlets indicated on architectural detail drawings takes precedence over positions or mounting heights located on mechanical or electrical Drawings.

1.10. Later dated documents shall govern over earlier documents of the same type.

2. In the event of conflict between documents, the decision of the Consultant shall be final.

1.6 SPECIFICATION GRAMMAR

1. Specifications are written in the imperative (command) mode, in an abbreviated form.
2. Imperative language of the technical sections is always directed to the Contractor identified as a primary constructor, as sole executor of the Contract, unless specifically noted otherwise.
   2.1. This form of imperative (command) mode statement requires the primary constructor to perform such action or Work.
   2.2. Perform all requirements of the Contract Documents whether stated imperatively or otherwise.
3. Division of the Work among subcontractors, suppliers, or others is solely the prime constructor's responsibility. The Consultant(s) and specification authors assume no responsibility to function or act as an arbiter to establish subcontract scope or limits between sections or divisions of Work.

END OF SECTION

SECTION 01 21 00
Allowances

Part 1 General

1.1 REFERENCE STANDARDS

1. Canadian Construction Documents Committee (CCDC)
   1.1. CCDC 2-2008, Stipulated Price Contract.
2. Project Supplementary Conditions

1.2 CASH ALLOWANCES

1. Refer to CCDC 2, GC 4.1.
2. Include in Contract Price specified cash allowances.
3. Cash allowances, unless otherwise specified, cover net cost to Contractor & Subcontractor of services, products, construction machinery and equipment, freight, handling, unloading, storage installation and other authorized expenses incurred in performing Work.
4. Contract Price, and not cash allowance, includes Contractor's overhead and profit in connection with such cash allowance.
5. Contract Price will be adjusted by written order to provide for excess or deficit to each cash allowance.
6. Where costs under a cash allowance exceed amount of allowance, Contractor will be compensated for excess incurred and substantiated plus allowance for overhead and profit as set out in Contract Documents.
7. Include progress payments on accounts of work authorized under cash allowances in Consultant's monthly certificate for payment.
8. Prepare schedule jointly with Consultant and Contractor to show when items called for under cash allowances must be authorized by Consultant for ordering purposes so that progress of Work will not be delayed.
9. Amount of each allowance, for Work specified in respective specification Sections is as follows:
   9.1. Cash Allowance CA1: Inspection and Testing
   9.2. Cash Allowance CA2: PA and Security
   9.3. Cash Allowance CA3: Additional Cutting and Patching
   9.4. Cash Allowance CA4: BAS Controls

Part 2 Products

2.1 NOT USED

1. Not Used.

Part 3 Execution

3.1 NOT USED

1. Not Used.

END OF SECTION

SECTION 01 31 00
Project Management and Coordination

Part 1 General

1.1 SECTION INCLUDES

1. Coordination Work with other contractors and work by Owner under administration of Consultant.
2. Scheduled progress meetings.

1.2 COORDINATION

1. Perform coordination of progress schedules, submittals, use of site, temporary utilities, construction facilities and construction Work, with progress of Work of others and Work by Owner, under instructions of Consultant.

1.3 CONSTRUCTION ORGANIZATION AND START-UP

1. Within fifteen (15) days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
2. Consultant, Owner, Contractor, major Subcontractors, field inspectors and supervisors are to be in attendance.
3. Establish time and location of meeting and notify parties concerned minimum five (5) days before meeting.
4. Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
5. Agenda to include following:
    5.1. Appointment of official representative of participants in Work.
    5.2. Schedule of Work, progress scheduling as specified in Section 01 32 16.19.
    5.3. Schedule of submission of shop drawings, samples, colour chips as specified in Section 01 33 00.
    5.4. Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences as specified in Section 01 51 00.
    5.5. Delivery schedule of specified equipment as specified in Section 01 32 00.
    5.6. Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.
    5.7. Owner-furnished Products.
    5.8. Record drawings as specified in Section 01 78 00, 01 79 00 and consultant specifications.
    5.9. Maintenance material and data as specified in Section 01 78 00, 01 79 00 and consultant specifications.
    5.10. Take-over procedures, acceptance, and warranties as specified Section 01 78 00, 01 79 00 and consultant specifications.
    5.11. Monthly progress claims, administrative procedures, photographs, and holdbacks.
    5.12. Appointment of inspection and testing agencies or firms as specified in Section 01 45 00.
    5.13. Insurances and transcript of policies.

6. Comply with Consultant's allocation of mobilization areas of site; for field offices and sheds, for staging, access, traffic, and parking facilities.
7. During construction, coordinate use of site and facilities through Consultant's procedures for intra-project communications: Submittals, reports and records, schedules, coordination of drawings, recommendations, and resolution of ambiguities and conflicts.
8. Comply with instructions of Consultant for use of temporary utilities and construction facilities.
9. Coordinate field engineering and layout work with Consultant.

1.4 CONTRACT ADMINISTRATION - WEB-BASED PROJECT SOFTWARE

1. The Contract Administration process shall be hosted through rform; which is an online construction contract administration software platform, administered by Gow Hastings Architects. This software is to be used ot host and manage project documentation until final completion. All of the below project documents are to be issued via rform (www.rform.ca):
   - 1.1. Project Forms:
     - 1.1.1. Proposed Change Order (PCO)
     - 1.1.2. Change Order (CO)
     - 1.1.3. Change Directive (CD)
     - 1.1.4. Supplemental Instruction (SI)
     - 1.1.5. Request for Information
     - 1.1.6. Schedule of Values
     - 1.1.7. Certificates of Payment
   - 1.2. Project Files
   - 1.3. Submittals
2. The project will be setup on rform by Gow Hastings Architects and the contractor will be invited to collaborate online.

1.5 ON-SITE DOCUMENTS

1. Maintain at job site, one copy each of the following:
   - 1.1. Contract drawings.
   - 1.2. Specifications.
   - 1.3. Addenda.
   - 1.4. Reviewed shop drawings.
   - 1.5. Change orders.
   - 1.6. Other modifications to Contract.
   - 1.7. Online access to rform as referenced in section 1.4 above.
   - 1.8. Field test reports.
   - 1.9. Copy of approved Work schedule.
   - 1.10. Manufacturers' installation and application instructions.
   - 1.11. Labour conditions and wage schedules.
   - 1.12. Applicable current editions of municipal regulations and by-laws. Current building codes, complete with addenda bulletins applicable to the Place of the Work.

1.6 SCHEDULES

1. Submit preliminary construction progress schedule as specified in Section 01 32 16.19 to Consultant coordinated with Consultant's project schedule.
2. After review, revise and resubmit schedule to comply with revised project schedule.
3. During progress of Work revise and resubmit as directed by Consultant.

1.7 CONSTRUCTION PROGRESS MEETINGS

1. During course of Work schedule progress meetings biweekly unless otherwise requested by the Consultant or Owner.
2. Contractor, major subcontractors involved in Work , Consultant and Owner are to be in attendance.
3. Notify parties minimum of five days prior to meetings.
4. Record minutes of meetings, and circulate to attending parties and affected parties not in attendance within two days after meeting.
5. Agenda to include following:
   - 5.1. Review, approval of minutes of previous meeting.
   - 5.2. Review of Work progress since previous meeting.
   - 5.3. Field observations, problems, conflicts.
   - 5.4. Problems that impede construction schedule.
   - 5.5. Review of off-site fabrication delivery schedules.
   - 5.6. Corrective measures and procedures to regain projected schedule.
   - 5.7. Revision to construction schedule.
   - 5.8. Progress schedule, during succeeding work period.
   - 5.9. Review submittal schedules: expedite as required.
   - 5.10. Maintenance of quality standards.
   - 5.11. Review proposed changes for effect on construction schedule and on completion date.
   - 5.12. Review site safety and security issues.
   - 5.13. Other business.

1.8 SUBMITTALS

1. Prepare and issue submittals to Consultant for review.
2. Submit preliminary Shop Drawings, product data and samples as specified in Section 01 33 00 for review for compliance with Contract Documents; for field dimensions and clearances, for relation to available space, and for relation to Work of other contracts. After review, revise and resubmit for transmittal to Consultant.
3. Submit requests for payment for review, and for transmittal to Consultant.
4. Submit requests for interpretation of Contract Documents, and obtain instructions through Consultant.
5. Process substitutions through Consultant.
6. Process change orders through Consultant.
7. Deliver closeout submittals for review and preliminary inspections, for transmittal to Consultant.

1.9 COORDINATION DRAWINGS

1. Provide information required by Consultant for preparation of coordination Drawings.

2. Review and approve revised Drawings for submittal to Consultant.

1.10 CLOSEOUT PROCEDURES

1. Notify Consultant when Work is considered ready for Substantial Performance, Permit Reivew and Ready-For-Takeover.
2. Accompany Consultant on preliminary inspection to determine items listed for completion or correction.
3. Comply with Consultant's instructions for correction of items of Work identified as deficient, incomplete or missing.
4. Notify Consultant of instructions for completion of items of Work determined in Consultant's final inspection.

END OF SECTION

SECTION 01 31 19
Project Meetings

Part 1 General

1.1 ADMINISTRATIVE

1. Schedule and administer biweekly project meetings throughout the progress of the work.
2. Prepare agenda for meetings.
3. Distribute written notice of each meeting five days in advance of meeting date to Consultant.
4. Provide physical space and make arrangements for meetings.
5. Preside at meetings.
6. Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
7. Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants , affected parties not in attendance and Consultant.
8. Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.2 PRECONSTRUCTION MEETING

1. Within 15 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
2. Consultant, Owner representative, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.
3. Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.
4. Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
5. Agenda to include:
   - 5.1. Appointment of official representative of participants in the Work.
   - 5.2. Schedule of Work: in accordance with Section 01 32 16.19 - Construction Progress Schedules - Bar (GANTT) Chart complete with Critical Path Milestones.
   - 5.3. Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
   - 5.4. Requirements for site access, laydown area, temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
   - 5.5. Delivery schedule of specified equipment in accordance with Section 01 14 00 - Work Restrictions.
   - 5.6. Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
   - 5.7. Proposed changes, change orders and site instructions procedures including approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
   - 5.8. RFI and submittal procedures.
   - 5.9. Health and safety policies.
   - 5.10. Owner provided products.

5.11. Record drawings in accordance with Section 01 33 00 - Submittal Procedures.

5.12. Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.

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

5.14. Monthly progress claims, administrative procedures, photographs, hold backs.

5.15. Appointment of inspection and testing agencies or firms.

5.16. Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

1. During course of Work and two weeks prior to project completion, schedule progress meetings biweekly or weekly as required to maintain communication between the stakeholders.
2. Contractor, major Subcontractors involved in Work ,Owner and Consultant are to be in attendance.
3. Set next meeting date at the end of each meeting and notify all stakeholders of changes in date/time min. 3 days in advance
4. Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 3 days after meeting.
5. Agenda to include the following:
   5.1. Review, approval of minutes of previous meeting.
   5.2. Review of Work progress since previous meeting.
   5.3. Field observations, problems, conflicts.
   5.4. Problems which impede construction schedule.
   5.5. Review of off-site fabrication delivery schedules.
   5.6. Corrective measures and procedures to regain projected schedule.
   5.7. Revision to construction schedule.
   5.8. Progress schedule, during succeeding work period.
   5.9. Review submittal schedules: expedite as required.
   5.10. Maintenance of quality standards.
   5.11. Review proposed changes for affect on construction schedule and on completion date.
   5.12. Other business.

Part 2 Products

2.1 NOT USED

1. Not Used.

Part 3 Execution

3.1 NOT USED

1. Not Used.

END OF SECTION

SECTION 01 32 16.19
Construction Progress Schedule - Bar (GANTT) Chart

Part 1 General

1.1 DEFINITIONS

1. Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
2. Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
3. Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
4. Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
5. Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
6. Master Plan: summary-level schedule that identifies major activities and key milestones.
7. Milestone: significant event in project, usually completion of major deliverable.
8. Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

1.2 REQUIREMENTS

1. Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
2. Plan to complete Work in accordance with owner provided milestones and time frame.
3. Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.
4. Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.
5. Activities impacting programs must be scheduled after regular hours or during weekends. This work must be coordinated in advance with the Owner.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

1. Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
2. Submit to Consultant within 10 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.

1.4 MASTER PLAN

1. Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
2. Schedule to be submitted to Consultant for review and comment.

3. Revise impractical schedule and resubmit within 5 working days.
4. Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.5 PROJECT SCHEDULE

1. Develop detailed Project Schedule derived from Master Plan.
2. Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
   - 2.1. Award.
   - 2.2. Shop Drawings, Samples.
   - 2.3. Permits.
   - 2.4. Mobilization.
   - 2.5. Interior Architecture (Walls, Floors and Ceiling).
   - 2.6. Plumbing.
   - 2.7. Lighting.
   - 2.8. Electrical.
   - 2.9. Piping.
   - 2.10. Controls.
   - 2.11. Heating, Ventilating, and Air Conditioning.
   - 2.12. Millwork.
   - 2.13. Testing and Commissioning.
   - 2.14. Supplied equipment long delivery items.
   - 2.15. Engineer supplied equipment required dates.
   - 2.16. Any tasks that will disrupt traffic i.e. RTU installation

1.6 PROJECT SCHEDULE REPORTING

1. Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.
2. Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.
3. Provide a schedule variance and a schedule performance index calculation at each progress meeting after the project is reaching 20% completion and discuss milestones on the critical path.

1.7 PROJECT MEETINGS

1. Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
2. Weather related delays with their remedial measures will be discussed and negotiated.

Part 2 Products

2.1 NOT USED

1. Not used.

Part 3 Execution

3.1 NOT USED

1. Not used.

END OF SECTION

SECTION 01 33 00
Submittal Procedures

Part 1 General

1.1 REFERENCE STANDARDS

1. CCDC 2-2020, Stipulated Price Contract.

1.2 ADMINISTRATIVE

1. Submit to Consultant 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. Provide Owner with copies of shop drawing that are requested for prior verification.
3. Do not proceed with Work affected by submittal until review is complete.
4. Present shop drawings, product data, samples and mock-ups in SI Metric units.
5. Where items or information is not produced in SI Metric units converted values are acceptable.
6. Review submittals prior to submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated 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.
7. Notify Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
8. Verify field measurements and affected adjacent Work are co-ordinated.
9. Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.
10. Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant review.
11. Keep one reviewed copy of each submission on site.

1.3 SHOP DRAWINGS AND PRODUCT DATA

1. Refer to CCDC 2 GC 3.11.
2. 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.
3. Where requested in drawings and/or specifications, submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
4. Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, 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 co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
5. Allow 10 days for Consultant's review of each submission.

6. Adjustments made on shop drawings by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.
7. Make changes in shop drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify Consultant in writing of revisions other than those requested.
8. Accompany submissions with electronic and/or hard copy transmittal letter containing:
   - 8.1. Date.
   - 8.2. Project title and number.
   - 8.3. Contractor's name and address.
   - 8.4. Identification and quantity of each shop drawing, product data and sample.
   - 8.5. Other pertinent data.
9. Submissions include:
   - 9.1. Date and revision dates.
   - 9.2. Project title and number.
   - 9.3. Name and address of:
     - 9.3.1. Subcontractor.
     - 9.3.2. Supplier.
     - 9.3.3. Manufacturer.
   - 9.4. Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
   - 9.5. Details of appropriate portions of Work as applicable:
     - 9.5.1. Fabrication.
     - 9.5.2. Layout, showing dimensions, including identified field dimensions, and clearances.
     - 9.5.3. Setting or erection details.
     - 9.5.4. Capacities.
     - 9.5.5. Performance characteristics.
     - 9.5.6. Standards.
     - 9.5.7. Operating weight.
     - 9.5.8. Wiring diagrams.
     - 9.5.9. Single line and schematic diagrams.
     - 9.5.10. Relationship to adjacent work.
10. After Consultant's review, distribute copies.
11. Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Consultant may reasonably request.
12. Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Consultant where shop drawings will not be prepared due to standardized manufacture of product.
13. Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Consultant.
    - 13.1. Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.

13.2. Testing must have been within 3 years of date of contract award for project.

14. Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Consultant.

    14.1. 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.

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

15. Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Consultant.

    15.1. Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

16. Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Consultant.

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

18. Submit 2 hard copies and 1 electronic copy of Operations and Maintenance data for requirements requested in specification Sections and as requested by Consultant.

    18.1. Refer to section 01 78 00 Closeout submittals.

19. Delete information not applicable to project.

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

21. If upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, the submittal will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

1.4 SAMPLES

1. Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.
2. Deliver samples prepaid to Consultant's business address.
3. Notify Consultant in writing, at time of submission of deviations in samples from requirements of Contract Documents.
4. Where colour, pattern or texture is criterion, submit full range of samples.
5. Adjustments made on samples by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.
6. Make changes in samples which Consultant may require, consistent with Contract Documents.
7. Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.5 MOCK-UPS

1. Erect mock-ups in accordance with 01 45 00 - Quality Control.

1.6 PHOTOGRAPHIC DOCUMENTATION

1. Submit electronic of colour digital photography in jpg format, standard resolution of all phases of construction compiled on a USB memory stick.
2. Project identification: name and number of project and date of exposure indicated.
3. Number of viewpoints: 2 locations.
   3.1. Viewpoints and their location as determined by Consultant.
4. Frequency of photographic documentation: as directed by Consultant.
   4.1. Upon completion of: as directed by Consultant.

1.7 CERTIFICATES AND TRANSCRIPTS

1. Immediately after award of Contract, submit Workers' Compensation Board status.
2. Submit transcription of insurance immediately after award of Contract.

Part 2 Products

2.1 NOT USED

1. Not Used.

Part 3 Execution

3.1 NOT USED

1. Not Used.

END OF SECTION

SECTION 01 41 00
Regulatory Requirements

Part 1 General

1.1 SUMMARY

1. This Section references to laws, by laws, ordinances, rules, regulations, codes, orders of Authority Having Jurisdiction, and other legally enforceable requirements applicable to Work and that are; or become, in force during performance of Work.

1.2 REFERENCES TO REGULATORY REQUIREMENTS

1. Department of Justice Canada (Jus)
   1.1. SOR/2018-196 Prohibition of Asbestos and Products Containing Asbestos Regulations.
2. Perform Work in accordance with the current Ontario Building Code including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
3. Specific design and performance requirements listed in specifications or indicated on Drawings may exceed minimum requirements established by referenced Building Code; these requirements will govern over the minimum requirements listed in Building Code
   3.1. Meet or exceed requirements of:
      3.1.1. Contract documents.
      3.1.2. Specified standards, codes and referenced documents.

1.3 HAZARDOUS MATERIAL DISCOVERY

1. Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify Consultant.
2. PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Consultant.
3. Mould: stop work immediately when material resembling mould is encountered during demolition work. Notify Consultant.

1.4 BUILDING SMOKING ENVIRONMENT

1. Comply with smoking restrictions and municipal by-laws.

1.5 QUALITY ASSURANCE

1. Regulatory Requirements: Except as otherwise specified, Constructor shall apply for, obtain, and pay fees associated with, permits, licenses, certificates, and approvals required by regulatory requirements and Contract Documents, based on General Conditions of Contract and the following:
   1.1. Regulatory requirements and fees in force on date of Bid submission, and
   1.2. A change in regulatory requirements or fees scheduled to become effective after date of tender submission and of which public notice has been given before date of tender submission

Part 2 Products

2.1 NOT USED

1. Not Used.

2.2 PERMITS

1. Building Permit:
   1.1. Owner has applied for and will be paying for building permit. Constructor is responsible for obtaining or coordinating other permits required for Work and its various parts.
   1.2. Constructor will require that specific Subcontractor ’s obtain and pay for permits required by authorities having jurisdiction, where their Work is affected by Work requiring permits.
   1.3. Constructor shall display building permit and other permits in a conspicuous location at Place of Work.
2. Occupancy Permits:
   2.1. Constructor shall apply for, obtain, and pay for occupancy permits, including partial occupancy permits where required by authority having jurisdiction.
   2.2. Consultant will issue appropriate instructions to Constructor for correction to Work where Contract Document deficiencies are required to be corrected in order to obtain occupancy permits, including partial occupancy permits.
   2.3. Constructor shall correct deficiencies in accordance with Consultant ’s instructions. Where deficiency is not corrected, Owner reserves the right to make correction and charge Constructor for costs incurred.
   2.4. Constructor shall turn occupancy permits over to Owner upon receipt from the Building Department verbal and /or in writing.

Part 3 Execution

3.1 NOT USED

1. Not Used.

END OF SECTION

SECTION 01 45 00
Quality Control

Part 1 General

1.1 REFERENCE STANDARDS

1. Canadian Construction Documents Committee (CCDC)
   1.1. CCDC 2-2020, Stipulated Price Contract.

1.2 INSPECTION

1. Refer to CCDC 2, GC 2.3.
2. Allow Consultant 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 Consultant instructions, or law of Place of Work.
4. If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
5. Consultant 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.

1.3 INDEPENDENT INSPECTION AGENCIES

1. Independent Inspection/Testing Agencies will be engaged by the Contractor for purpose of inspecting and/or testing portions of Work. Cost of such services will be covered by the testing and inspections cash allowance. Refer to section 01 21 00 Allowances .
2. Contractor to tender this scope of work to 3 recognized inspection/ testing agencies and present recommendations to Consultant and Owner prior to contract award.
3. Provide equipment required for executing inspection and testing by appointed agencies.
4. Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
5. If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Consultant at no cost to the Owner. Pay costs for retesting and reinspection.

1.4 ACCESS TO WORK

1. Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
2. Co-operate to provide reasonable facilities for such access.

1.5 PROCEDURES

1. Notify appropriate agency and Consultant in advance of requirement for tests, in order that attendance arrangements can be made.
2. Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.

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

1.6 REJECTED WORK

1. Refer to CCDC, GC 2.4.
2. Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Consultant as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
3. Make good other Contractor's work damaged by such removals or replacements promptly.
4. If in opinion of Consultant it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Consultant.

1.7 REPORTS

1. Submit electronic copies of inspection and test reports to Consultant.
2. Provide copies to manufacturer or fabricator of material being inspected or tested.
3. A copy of all test reports is to be included in the final O&M manuals

1.8 TESTS AND MIX DESIGNS

1. Furnish test results and mix designs as requested.
2. Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Consultant and may be authorized as recoverable.

1.9 MOCK-UPS

1. Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
2. Construct in locations acceptable to Consultant and Owner.
3. Prepare mock-ups for Consultant's review with reasonable promptness and in orderly sequence, to not cause delays in Work.
4. Failure to prepare mock-ups 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.
5. If requested, Consultant will assist in preparing schedule fixing dates for preparation.
6. Remove mock-up at conclusion of Work or when acceptable to Consultant.
7. Mock-ups may remain as part of Work pending approval by Consultant.

1.10 MILL TESTS

1. Submit mill test certificates as required of specification Sections.
2. Include in Operations and Maintenance Manuals Submittals

1.11 EQUIPMENT AND SYSTEMS

1. Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.
2. Include in Operations and Maintenance Manuals Submittals

Part 2 Products

2.1 NOT USED

1. Not Used.

Part 3 Execution

3.1 NOT USED

1. Not Used.

END OF SECTION

SECTION 01 51 00
Temporary Utilities

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

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

1.2 INSTALLATION AND REMOVAL

1. Provide temporary utilities controls in order to execute work expeditiously.
2. Remove from site all such work after use.

1.3 WATER SUPPLY

1. The Owner will provide access to a hose bib located in the proximity of the construction area for water supply. GC will be responsible for all connections, maintenance and removal.

1.4 TEMPORARY HEATING AND VENTILATION

1. Provide temporary heating required during construction period, including attendance, maintenance and fuel.
2. Construction heaters used inside building must be vented to outside or be flameless (vent free) type. Solid fuel salamanders are not permitted.
3. Provide temporary heat and ventilation in enclosed areas as required to:
   - 3.1. Facilitate progress of Work.
   - 3.2. Protect Work and products against dampness and cold.
   - 3.3. Prevent moisture condensation on surfaces.
   - 3.4. Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
   - 3.5. Provide adequate ventilation to meet health regulations for safe working environment.
4. Maintain temperatures of minimum 10 degrees Celsius in areas where construction is in progress.
5. Ventilating:
   - 5.1. Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
   - 5.2. Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
   - 5.3. Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
   - 5.4. Ventilate storage spaces containing hazardous or volatile materials.
   - 5.5. Ventilate temporary sanitary facilities.
   - 5.6. Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
6. Permanent heating system of building will not be permitted for use during construction. All air return ducts exposed to the construction area to be sealed to prevent dust infiltration. Be responsible for damage and cleaning of heating system used in error or without written permission.

7. New RTU and heating system usage will not be permitted during construction. Final commissioning of RTU to be scheduled when all interior finishes generating dust, i.e. drywall sanding, etc. are complete.
8. On completion of Work for which existing heating system is used, clean units and replace filters.
9. Ensure Date of Substantial Performance and Warranties for heating system do not start until entire system is in as near original condition as possible and is certified by Consultant.
10. Pay costs for maintaining temporary heat, when using permanent heating system.
11. Maintain strict supervision of operation of temporary heating and ventilating equipment to:
    - 11.1. Conform with applicable codes and standards.
    - 11.2. Enforce safe practices.
    - 11.3. Prevent abuse of services.
    - 11.4. Prevent damage to finishes.
    - 11.5. Vent direct-fired combustion units to outside.
12. Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.5 TEMPORARY POWER AND LIGHT

1. Owner will provide access to an existing electrical panel for temporary electrical panel connection during construction temporary lighting and operating of power tools, to a maximum supply of 230 volts 30 amps.
2. Temporary power for electric cranes, welding machines and other equipment requiring in excess of above is responsibility of Contractor based on General Conditions of Contract.
3. Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162 lx.
4. Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of Owner and Consultant provided that guarantees are not affected.
    - 4.1. Repair damage to electrical system caused by use under this Contract.
    - 4.2. Replace lamps which have been used for more than 3 months.

1.6 TEMPORARY COMMUNICATION FACILITIES

1. Provide and pay for temporary telephone, fax and data hook up, lines and equipment necessary for own use and use of Consultant.

1.7 FIRE PROTECTION

1. Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction governing codes, regulations and bylaws.
2. Burning rubbish and construction waste materials is not permitted on Site.

Part 2 Products

2.1 NOT USED

1. Not Used.

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

1. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
2. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
3. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

END OF SECTION

SECTION 01 52 00
Construction Facilities

Part 1 General

1.1 REFERENCE STANDARDS

1. Canadian Construction Documents Committee (CCDC)
   1.1. CCDC 2-2008, Stipulated Price Contract.
2. Canadian General Standards Board (CGSB)
   2.1. CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.
   2.2. CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
3. CSA Group (CSA)
   3.1. CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
   3.2. CSA-0121-M1978 (R2003), Douglas Fir Plywood.
   3.3. CAN/CSA-S269.2-M1987 (R2003), Access Scaffolding for Construction Purposes.
   3.4. CAN/CSA-Z321-96 (R2001), Signs and Symbols for the Occupational Environment.
4. Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as of: May 14, 2004.
5. Ontario Environmental Protection Act

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

1.3 INSTALLATION AND REMOVAL

1. Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
2. Identify areas which have to be gravelled to prevent tracking of mud.
3. Indicate use of supplemental or other staging area.
4. Provide construction facilities in order to execute work expeditiously.
5. Remove from site all such work after use.

1.4 SCAFFOLDING

1. Scaffolding in accordance with CAN/CSA-S269.2.
2. Provide and maintain all required equipment.

1.5 HOISTING

1. Provide, operate and maintain hoists cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
2. Hoists cranes to be operated by qualified operator.

1.6 SITE STORAGE/LOADING

1. Refer to CCDC 2, GC 3.12.
2. Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
3. Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.7 CONSTRUCTION PARKING

1. Parking will be permitted on site only in designated areas and pre-approved by the Owner, at no additional charge.
2. Provide and maintain adequate access to project site.

1.8 SECURITY

1. Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays as necessary and as requested by Owner.

1.9 OFFICES

1. Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.
2. Provide marked and fully stocked first-aid case in a readily available location.
3. Maintain office in clean condition.

1.10 EQUIPMENT, TOOL AND MATERIALS STORAGE

1. Provide and maintain, in 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 manner to cause least interference with work activities.

1.11 SANITARY FACILITIES

1. Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
2. Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.
3. College washroom facilities cannot be used by contractors during construction.

1.12 CONSTRUCTION SIGNAGE

1. Provide proposed project sign and location for Owner’s approval. Erect project sign within three weeks of signing Contract in the approved location.
2. Construction sign up to 4m x 2 m, of wood frame and plywood construction painted with exhibit lettering produced by a professional sign painter.
3. Indicate on sign, name of Owner, Consultant Contractor and Subcontractor, of design style established by Owner.
4. No other signs or advertisements, other than warning signs, are permitted on site.
5. Direct requests for approval to erect Consultant/Contractor signboard to Consultant. For consideration general appearance of Consultant/Contractor signboard must conform to project identification site sign. Wording in both official languages.

6. Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.
7. Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Consultant.

1.13 PROTECTION AND MAINTENANCE OF TRAFFIC

1. Follow Owner designated access routes to Construction area and provide temporary relocated roads as / if necessary to maintain traffic with Owner's prior written permission
2. Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Consultant.
3. 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
4. Protect travelling public from damage to person and property.
5. Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
6. Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
7. Construct access and haul roads necessary.
8. Haul roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided.
9. Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
10. Dust control: adequate to ensure safe operation at all times.
11. Location, grade, width, and alignment of construction and hauling roads: subject to approval by Consultant.
12. Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.
13. Provide snow removal during period of Work.
14. Remove, upon completion of work, haul roads designated by Consultant.

1.14 CLEAN-UP

1. Remove construction debris, waste materials, packaging material from work site daily.
2. Clean dirt or mud tracked onto paved or surfaced roadways.
3. Store materials resulting from demolition activities that are salvageable.
4. Stack stored new or salvaged material not in construction facilities.

Part 2 Products

2.1 NOT USED

1. Not Used.

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

1. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
2. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
3. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

END OF SECTION

SECTION 01 56 00
Temporary Barriers and Enclosures

Part 1 General

1.1 REFERENCE STANDARDS

1. Canadian General Standards Board (CGSB)
   1.1. CGSB 1.59-97, Alkyd Exterior Gloss Enamel.
   1.2. CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.
2. CSA Group (CSA)
   2.1. CSA-O121-M1978 (R2003), Douglas Fir Plywood.
3. Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as Of: May 14, 2004.

1.2 INSTALLATION AND REMOVAL

1. Provide temporary controls in order to execute Work expeditiously.
2. Remove from site all such work after use.

1.3 HOARDING

1. Erect temporary exterior site enclosures using painted metal fence panels with height of 1.8m by Modu-Loc or alternate.
2. Erect temporary interior site enclosures using steel stud framing complete with taped and painted GWB finish. Hoarding wall to contain lockable pedestrian door access.
3. Refer to drawings for suggestion hoarding layout. All hoarding locations are to be reviewed and approved by the Owner on site prior to erection.
4. Provide one lockable truck entrance gate and at least one pedestrian door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys.
5. Erect and maintain pedestrian walkways including roof and side covers, complete with signs and electrical lighting as required by law.
6. Paint public side of site enclosure in selected colours with one coat primer to CAN/CGSB 1.189 and one coat exterior paint to CGSB 1.59. Maintain public side of enclosure in clean condition.
7. Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

1.4 GUARD RAILS AND BARRICADES

1. Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs, and any other unsafe opening.
2. Provide as required by governing authorities.

1.5 WEATHER ENCLOSURES

1. Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.

2. Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.
3. Design enclosures to withstand wind pressure and snow loading.

1.6 DUST TIGHT SCREENS

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

1.7 ACCESS TO SITE

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

1.8 PUBLIC TRAFFIC FLOW

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

1.9 FIRE ROUTES

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

1.10 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

1. Protect surrounding private and public property from damage during performance of Work.
2. Be responsible for damage incurred.

1.11 PROTECTION OF BUILDING FINISHES

1. Provide protection for finished and partially finished building finishes and equipment during performance of Work.
2. Provide necessary screens, covers, and hoardings.
3. Confirm with Consultant and Owner locations and installation schedule 3 days prior to installation.
4. Be responsible for damage incurred due to lack of or improper protection.

Part 2 Products

2.1 NOT USED

1. Not Used.

Part 3 Execution

3.1 NOT USED

1. Not Used.

END OF SECTION

SECTION 01 61 00
Common Product Requirements

Part 1 General

1.1 REFERENCE STANDARDS

1. Canadian Construction Documents Committee (CCDC)
   1.1. CCDC 2-2020, Stipulated Price Contract.
2. Within text of each specifications section, reference may be made to reference standards.
3. Conform to these reference standards, in whole or in part as specifically requested in specifications.
4. If there is question as to whether products or systems are in conformance with applicable standards, Consultant reserves right to have such products or systems tested to prove or disprove conformance.
5. Cost for such testing will be born by Owner in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.2 QUALITY

1. Refer to CCDC 2.
2. Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
3. Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
4. 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.
5. Should disputes arise as to quality or fitness of products, decision rests strictly with Consultant based upon requirements of Contract Documents.
6. Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
7. Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 AVAILABILITY

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

1.4 STORAGE, HANDLING AND PROTECTION

1. Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
2. Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
3. Store products subject to damage from weather in weatherproof enclosures.
4. Store cementitious products clear of earth or concrete floors, and away from walls.
5. Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
6. Store sheet materials, lumber and any other construction material safely on flat, solid supports and keep clear of ground. Slope to shed moisture.
7. Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
8. Remove and replace damaged products at own expense and to satisfaction of Consultant.
9. Touch-up damaged factory finished surfaces to Consultant's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.5 TRANSPORTATION

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

1.6 MANUFACTURER'S INSTRUCTIONS

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

1.7 QUALITY OF WORK

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

1.8 CO-ORDINATION

1. Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
2. Be responsible for coordination and placement of openings, sleeves and accessories.

1.9 CONCEALMENT

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

1.10 REMEDIAL WORK

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

1.11 LOCATION OF FIXTURES

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

1.12 FASTENINGS

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

1.13 FASTENINGS - EQUIPMENT

1. Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
2. Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
3. Bolts may not project more than one diameter beyond nuts.
4. Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.14 PROTECTION OF WORK IN PROGRESS

1. Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Consultant.

1.15 EXISTING UTILITIES

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

Part 2 Products

2.1 NOT USED

1. Not Used.

Part 3 Execution

3.1 NOT USED

1. Not Used.

END OF SECTION

SECTION 01 71 00
Examination and Preparation

Part 1 General

1.1 REFERENCE STANDARDS

1. Canadian Construction Documents Committee (CCDC)
   1.1. CCDC 2-2020, Stipulated Price Contract.
2. Owner's identification of existing survey control points and property limits.

1.2 EXISTING SERVICES

1. Before commencing work, establish location and extent of service lines in area of Work and notify Consultant of findings.
2. Remove abandoned service lines within 2 m of structures. Cap or otherwise seal lines at cut-off points as directed by Consultant.

1.3 LOCATION OF EQUIPMENT AND FIXTURES

1. Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
2. Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
3. Inform Consultant of impending installation and obtain approval for actual location.
4. Submit field drawings to indicate relative position of various services and equipment when required by Consultant.

1.4 RECORDS

1. Maintain a complete, accurate log of control and survey work as it progresses.
2. Record locations of maintained, re-routed and abandoned service lines.

1.5 SUBSURFACE CONDITIONS

1. Promptly notify Consultant in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.
2. After prompt investigation, should Consultant determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes and Change Orders.

Part 2 Products

2.1 NOT USED

1. Not Used.

Part 3 Execution

3.1 NOT USED

1. Not Used.

END OF SECTION

SECTION 01 73 00
Execution

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

1. Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
2. Submit written request in advance of cutting or alteration which affects:
   2.1. Structural integrity of elements of project.
   2.2. Integrity of weather-exposed or moisture-resistant elements.
   2.3. Efficiency, maintenance, or safety of operational elements.
   2.4. Visual qualities of sight-exposed elements.
   2.5. Work of Owner or separate contractor.
3. Include in request:
   3.1. Identification of project.
   3.2. Location and description of affected Work.
   3.3. Statement on necessity for cutting or alteration.
   3.4. Description of proposed Work, and products to be used.
   3.5. Alternatives to cutting and patching.
   3.6. Effect on Work of Owner or separate contractor.
   3.7. Written permission of affected separate contractor.
   3.8. Date and time work will be executed.

1.2 MATERIALS

1. Required for original installation.
2. Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

1.3 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; maintain excavations free of water.

1.4 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. Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
7. Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
8. Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
9. Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
10. Restore work with new products in accordance with requirements of Contract Documents.
11. Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
12. Provide firestopping in accordance with Section 07 84 00 - Firestopping to maintain the integrity of fire separations, including:
    12.1. Protecting penetrations at fire-resistance rated wall, ceiling or floor construction.
    12.2. Using construction joint fire stops and building perimeter fire stops to protect gaps at fire separations and between fire separations and other construction assemblies.
13. Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.
14. Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

Part 2 Products

2.1 NOT USED

1. Not Used.

Part 3 Execution

3.1 NOT USED

1. Not Used.

END OF SECTION

SECTION 01 74 00
Cleaning

Part 1 General

1.1 REFERENCE STANDARDS

1. Canadian Construction Documents Committee (CCDC)
   1.1. CCDC 2-2020, Stipulated Price Contract.

1.2 PROJECT CLEANLINESS

1. Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.
2. Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site, unless approved by Consultant.
3. Clear snow and ice from access to building, and bank/pile snow in designated areas only.
4. Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
5. Provide on-site bins/ containers for collection of waste materials and debris.
6. Provide and use marked separate bins for recycling. Refer to Section 01 74 19 - Waste Management and Disposal.
7. Dispose of waste materials and debris off site.
8. Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
9. Store volatile waste in covered metal containers, and remove from premises at end of each working day.
10. Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
11. Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
12. Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.3 FINAL CLEANING

1. Refer to CCDC 2, GC 3.14.
2. When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
3. Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
4. Prior to final review remove surplus products, tools, construction machinery and equipment.
5. Remove waste products and debris including that caused by Owner or other Contractors.
6. Remove waste materials from site at regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site, unless approved by Consultant.

7. Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
8. Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
9. Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, glazing, door/frames, ceilings, floors and equipment.
10. Clean lighting reflectors, lenses, and other lighting surfaces.
11. Vacuum clean and dust building interiors, behind grilles, louvres and screens.
12. Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.
13. Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
14. Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
15. Remove dirt and other disfiguration from exterior surfaces.
16. Clean and sweep roofs, gutters, areaways, and sunken wells.
17. Sweep and wash clean paved areas.
18. Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
19. Clean roofs, downspouts, and drainage systems.
20. Remove debris and surplus materials from crawl areas and other accessible concealed spaces.
21. Remove snow and ice from access to building.

1.4 WASTE MANAGEMENT AND DISPOSAL

1. Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 NOT USED

1. Not Used.

Part 3 Execution

3.1 NOT USED

1. Not Used.

END OF SECTION

SECTION 01 74 19
Waste Management and Disposal

Part 1 General

1.1 SUMMARY

1. This Section includes requirements for management of construction waste and disposal, which forms the Contractor ’s commitment to reduce and divert waste materials from landfill and includes the following:
   1.1. Preparation of a Draft Construction Waste Management Plan that will be used to track the success of the Construction Waste Management Plan against actual waste diversion from landfill.
   1.2. Preparation of a Construction Waste Management Plan that provides guidance on a logical progression of tasks and procedures to be followed in a pollution prevention program to reduce or eliminate the generation of waste, the loss of natural resources, and process emissions through source reduction, reuse, recycling, and reclamation.
   1.3. Preparation of monthly progress reports indicating cumulative totals representing progress towards achieving diversion and reduction goals of waste materials away from landfill and identifying any special programs, landfill options or alternatives to landfill used during construction.
   1.4. Preparation of a Construction Waste Management Report containing detailed information indicating total waste produced by the project, types of waste material and quantity of each material, and total waste diverted and diversion rates indicated as a percentage of the total waste produced.
2. Owner has established that this project shall generate the least amount of waste possible and that processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors be employed by the Contractor.

1.2 REFERENCE STANDARDS

1. American Society for Testing and Materials (ASTM):
   1.1. ASTM E1609 01, Standard Guide for Development and Implementation of a Pollution Prevention Program
2. Recycling Certification Institute (RCI):
   2.1. RCI Certification Construction and Demolition Materials Recycling

1.3 DEFINITIONS

1. Clean Waste: Untreated and unpainted; not contaminated with oils, solvents, sealants or similar materials.
2. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, re modeling operations.repair and demolition
3. Hazardous: Exhibiting the characteristics of hazardous substances including properties such as ignitability, corrosiveness, toxicity or reactivity.
4. Non hazardous: Exhibiting none of the characteristics of hazardous substances, including properties such as ignitability, corrosiveness, toxicity, or reactivity.
5. Non toxic: Not poisonous to humans either immediately or after a long period of exposure.

6. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
7. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
8. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form; recycling does not include burning, incinerating, or thermally destroying waste.
9. Return: To give back reusable items or unused products to vendors for credit.
10. Reuse: To reuse a construction waste material in some manner on the project site.
11. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
12. Sediment: Soil and other debris that has been eroded and transported by storm or well production run off water.
13. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
14. Toxic: Poisonous to humans either immediately or after a long period of exposure.
15. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
16. Volatile Organic Compounds (VOC's): Chemical compounds common in and emitted by many building products over time through outgassing:
    16.1. Solvents in paints and other coatings;
    16.2. Wood preservatives; strippers and household cleaners;
    16.3. Adhesives in particleboard, fiberboard, and some plywood; and foam insulation.
    16.4. When released, VOC's can contribute to the formation of smog and can cause respiratory tract problems, headaches, eye irritations, nausea, damage to the liver, kidneys, and central nervous system, and possibly cancer.
17. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.
18. Construction Waste Management Plan: A project related plan for the collection, transportation, and disposal of the waste generated at the construction site; the purpose of the plan is to ultimately reduce the amount of material being landfilled.

1.4 ADMINISTRATIVE REQUIREMENTS

1. Coordination: Coordinate waste management requirements with all Divisions of the Work for the project, and ensure that requirements of the Construction Waste Management Plan are followed.
2. Preconstruction Meeting: Arrange a pre-construction meeting in accordance with Section 01 31 19 – Project Meetings before starting any Work of the Contract attended by the Owner, Contractor, affected Subcontractor 's and Consultant to discuss the Contractor 's Construction Waste Management Plan and to develop mutual understanding of the requirements for a consistent policy towards waste reduction and recycling.

1.5 SUBMITTALS

1. Provide required information in accordance with Section 01 33 00 – Submittal Procedures.
2. Action Submittals: Provide the following submittals before starting any work of this Section:
    2.1. Draft Construction Waste Management Plan (Draft CWM Plan): Submit to Consultant a preliminary analysis of anticipated site generated waste by listing a minimum of five (5)

construction or demolition waste streams that have potential to generate the most volume of material indicating methods that will be used to divert construction waste from landfill and source reduction strategies; Consultant will provide commentary before development of Contractor ’s Construction Waste Management Plan.

2.2. Construction Waste Management Plan (CWM Plan): Submit a CWM Plan for this project prior to any waste removal from site and that includes the following information:

2.2.1. Material Streams: Analysis of the proposed jobsite waste being generated, including material types and quantities forming a part of identified material streams in the Draft CWM Plan ; materials removed from site destined for alternative daily cover at landfill sites and land clearing debris cannot be considered as contributing to waste diversion and will be included as a component of the total waste generated for the site.

2.2.2. Recycling Haulers and Markets: Investigate local haulers and markets for recyclable materials, and incorporate into CWM Plan.

2.2.3. Alternative Waste Disposal: Prepare a listing of each material proposed to be salvaged, reused, recycled or composted during the course of the project, and the proposed local market for each material.

2.2.4. Landfill Materials: Identify materials that cannot be recycled, reused or composted and provide explanation or justification.

2.2.5. Landfill Options: The name of the landfill where trash will be disposed of; landfill materials will form a part of the total waste generated by the project.

2.2.6. Materials Handling Procedures: A description of the means by which any recycled waste materials will be protected from contamination, and a description of the means to be employed in recycling the above materials consistent with requirements for acceptance by designated facilities.

2.2.7. Transportation: A description of the means of transportation of the recyclable materials, whether materials will be site separated and self hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site, and destination of materials.

1.6 PROJECT CLOSEOUT SUBMISSIONS

1. Record Documentation: Submit as constructed information in accordance with Section 01 78 00– Closeout Submittals as follows:

1.1. Construction Waste Management Report (CWM Report): Submit a CWM Report for this project in a format that includes the following information:

1.1.1. Accounting: Submit information indicating total waste produced by the project.

1.1.2. Composition: Submit information indicating types of waste material and quantity of each material.

1.1.3. Diversion Rate: Submit information indicating total waste diverted from landfill as a percentage of the total waste produced by the project.

1.1.4. Diversion Documentation: Submit copies of transportation documents or shipping manifests indicating weights of materials, and other evidence of disposal indicating final location of waste diverted from landfill and waste sent to landfill.

1.1.5. Alternative Daily Cover (ADC): Submit quantities of material that were used as ADC at landfill sites, and that form a part of the total waste generated by the project.

1.1.6. Multiple Waste Hauling: Compile all information into a single CWM Report where multiple waste hauling and diversion strategies were used for the project.

1.1.7. Photographs: Submit photographs of waste diversion facilities documenting location and signage describing usage of waste separation containers.

1.7 QUALITY ASSURANCE

1. Resources for Development of Construction Waste Management Report (CWM Report): The following sources may be useful in developing the Draft Construction Waste Management Plan:
   1.1. Recycling Haulers and Markets: Investigate local haulers and markets for recyclable materials, and incorporate into CWM Plan.
   1.2. Waste-to-Energy Systems: Investigate local waste-to-energy incentives where systems for diverting materials from landfill for reuse or recycling are not available.
2. Certifications: Provide proof of the following during the course of the Work :
   2.1. Compliance Certification: Provide proof that recycling center is third party verified and is listed as a Certified Facility through the registration and certification requirements of the Recycling Certification Institute.

1.8 DELIVERY, STORAGE AND HANDLING

1. Storage Requirements: Implement a recycling/reuse program that includes separate collection of waste materials as appropriate to the project waste and the available recycling and reuse programs in the project area.
2. Handling Requirements: Clean materials that are contaminated before placing in collection containers and ensure that waste destined for landfill does not get mixed in with recycled materials:
   2.1. Deliver materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process.
   2.2. Arrange for collection by or delivery to the appropriate recycling or reuse facility.
3. Hazardous Waste and Hazardous Materials: Handle in accordance with applicable regulations.

Part 2 Products

2.1 NOT USED

1. Not Used.

Part 3 Execution

3.1 (CWM PLAN) IMPLEMENTATION

1. Manager: Contractor is responsible for designating an on site party or parties responsible for instructing workers and overseeing and documenting results of the CWM Plan for the project.
2. Distribution: Distribute copies of the CWM Plan to the job site foreman, each Subcontractor, the Owner, the Consultant and other site personnel as required to maintain CWM Plan.
3. Instruction: Provide on site instruction of appropriate separation, handling, and recycling, salvage, reuse, composting and return methods being used for the project to Subcontractor ’s at appropriate stages of the project.
4. Separation Facilities: Lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, composting and return:
   4.1. Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.

4.2. Hazardous wastes shall be separated, stored, and disposed of in accordance with local regulations.

5. Progressive Documentation: Submit a monthly summary of waste generated by the project to ensure that waste diversion goals are on track with project requirements:

5.1. Submission of waste summary can coincide with application for progress payment, or similar milestone event as agreed upon between the Owner, Contractor and Consultant.

5.2. Monthly waste summary shall contain the following information:

5.2.1. The amount in tonnes or m^3 and location of material landfilled,

5.2.2. The amount in tonnes or m^3 and location of materials diverted from landfill, and

5.2.3. Indication of progress based on total waste generated by the project with materials diverted from landfill as a percentage.

3.2 SUBCONTRACTOR'S RESPONSIBILITY

1. Subcontractor 's shall cooperate fully with the Contractor to implement the CWM Plan.
2. Failure to cooperate may result in the Owner not achieving their environmental goals, and may result in penalties being assessed by the Contractor to the responsible Subcontractor 's.

END OF SECTION

SECTION 01 77 00
Closeout Procedures

Part 1 General

1.1 REFERENCE STANDARDS

1. Canadian Construction Documents Committee (CCDC)
   1.1. CCDC 2-2020, Stipulated Price Contract.
2. Canadian Environmental Protection Act (CEPA)
   2.1. SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

1.2 ADMINISTRATIVE REQUIREMENTS

1. Acceptance of Work Procedures:
   1.1. Contractor's Inspection: Contractor and all Subcontractors shall: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
      1.1.1. Notify Consultant in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
      1.1.2. Request Consultant's inspection.
   1.2. Consultant's Inspection:
      1.2.1. Consultant and Contractor to inspect Work and identify defects and deficiencies.
      1.2.2. Contractor to correct Work as directed.
   1.3. Completion Tasks: submit written certificates in English that tasks have been performed as follows:
      1.3.1. Work: completed and inspected for compliance with Contract Documents.
      1.3.2. Defects: corrected and deficiencies completed.
      1.3.3. Equipment and systems: tested, balanced, adjusted and fully operational.
      1.3.4. Certificates required by Fire Commissioner, Utility companies and Boiler Inspection Branch: submitted.
      1.3.5. Operation of systems: demonstrated to Owner's personnel.
      1.3.6. Work: complete and ready for final inspection.
   1.4. Final Inspection:
      1.4.1. When completion tasks are done, request final inspection of Work by Consultant, Owner, and Contractor.
      1.4.2. When Work incomplete according to Consultant and/or Owner, complete outstanding items and request re-inspection.
   1.5. Declaration of Substantial Performance: when Consultant considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
   1.6. Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.

1.7. Final Payment:

1.7.1. When Consultant considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

1.7.2. Refer to CCDC 2: when Work deemed incomplete by Consultant, complete outstanding items and request re-inspection.

1.8. Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.3 FINAL CLEANING

1. Clean in accordance with Section 01 74 00 - Cleaning.
   1.1. Remove surplus materials, excess materials, rubbish, tools and equipment.

Part 2 Products

2.1 NOT USED

1. Not Used.

Part 3 Execution

3.1 NOT USED

1. Not Used.

END OF SECTION

SECTION 01 78 00
Closeout Submittals

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

1. Pre-warranty Meeting:
   1.1. Convene meeting two week prior to contract completion with Consultant and Owner, in accordance with Section 01 31 19 - Project Meetings to:
      1.1.1. Verify Project requirements.
      1.1.2. Review warranty requirements.
   1.2. Consultant to establish communication procedures for:
      1.2.1. Notifying construction warranty defects.
      1.2.2. Determine priorities for type of defects.
      1.2.3. Determine reasonable response time.
   1.3. Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
   1.4. Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

1. Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
2. Two weeks prior to Substantial Performance of the Work, submit to the Consultant, three final copies of operating and maintenance manuals in English.
3. Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
4. Provide evidence, if requested, for type, source and quality of products supplied.

1.3 FORMAT

1. Organize data as instructional manual submitted in electronic USB key format (1 copy) and printed format (2 copies).
2. Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
3. When multiple binders are used correlate data into related consistent groupings.
   3.1. 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 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.

8.1. Bind in with text; fold larger drawings to size of text pages.

9. Provide 1:1 scaled CAD files in DWG and PDF format on USB Key.

1.4 CONTENTS - PROJECT RECORD DOCUMENTS

1. Table of Contents for Each Volume: provide title of project;
   1.1. Date of submission; names.
   1.2. Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.
   1.3. Schedule of products and systems, indexed to content of volume.
2. For each product or system:
   2.1. List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
3. Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
4. Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
5. Typewritten Text: as required to supplement product data.
   5.1. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.
6. Training: refer to Section 01 79 00 - Demonstration and Training.

1.5 AS -BUILT DOCUMENTS AND SAMPLES

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

1.6 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

1. Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Consultant.
2. Use felt tip marking pens, maintaining separate colours for each major system, for recording information.
3. Record information concurrently with construction progress.
   3.1. Do not conceal Work until required information is recorded.
4. Contract Drawings and shop drawings: mark each item to record actual construction, including:
   4.1. Measured depths of elements of foundation in relation to finish first floor datum.
   4.2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
   4.3. Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
   4.4. Field changes of dimension and detail.
   4.5. Changes made by change orders.
   4.6. Details not on original Contract Drawings.
   4.7. Referenced Standards to related shop drawings and modifications.
5. Specifications: mark each item to record actual construction, including:
   5.1. Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
   5.2. Changes made by Addenda and change orders.
6. Other Documents: maintain manufacturer's certifications, field test records, inspection certifications, required by individual specifications sections.
7. Provide digital photos, if requested, for site records.

1.7 EQUIPMENT AND SYSTEMS

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

8. Include sequence of operation by controls manufacturer.
9. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
10. Provide installed control diagrams by controls manufacturer.
11. Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.
12. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
13. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
14. Include test and balancing reports as specified in Section 01 45 00 - Quality Control and other Consultant's Specifications.
15. Additional requirements: as specified in individual specification sections.

1.8 MATERIALS AND FINISHES

1. Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
    1.1. Provide information for re-ordering custom manufactured products.
2. Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
3. Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
4. Additional requirements: as specified in individual specifications sections.

1.9 MAINTENANCE MATERIALS

1. Spare Parts:
    1.1. Provide spare parts, in quantities specified in individual specification sections.
    1.2. Provide items of same manufacture and quality as items in Work.
    1.3. Deliver to location as directed ; place and store.
    1.4. Receive and catalogue items.
        1.4.1. Submit inventory listing to Consultant.
        1.4.2. Include approved listings in Maintenance Manual.
    1.5. Obtain receipt for delivered products and submit prior to final payment.
2. Extra Stock Materials:
    2.1. Provide maintenance and extra materials, in quantities specified in individual specification sections.
    2.2. Provide items of same manufacture and quality as items in Work.
    2.3. Deliver to location as directed ; place and store.
    2.4. Receive and catalogue items.
        2.4.1. Submit inventory listing to Consultant.
        2.4.2. Include approved listings in Maintenance Manual.
    2.5. Obtain receipt for delivered products and submit prior to final payment.

3. Special Tools:
   3.1. Provide special tools, in quantities specified in individual specification section.
   3.2. Provide items with tags identifying their associated function and equipment.
   3.3. Deliver to location as directed ; place and store.
   3.4. Receive and catalogue items.
      3.4.1. Submit inventory listing to Consultant.
      3.4.2. Include approved listings in Maintenance Manual.

1.10 DELIVERY, STORAGE AND HANDLING

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

1.11 WARRANTIES AND BONDS

1. Develop warranty management plan to contain information relevant to Warranties.
2. Submit warranty management plan, 10 days before planned pre-warranty conference, to Consultant approval.
3. Warranty management plan to include required actions and documents to assure that Consultant 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 Consultant for approval prior to each monthly pay estimate.
6. Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
   6.1. Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
   6.2. List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
   6.3. Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
   6.4. Verify that documents are in proper form, contain full information, and are notarized.
   6.5. Co-execute submittals when required.
   6.6. Retain warranties and bonds until time specified for submittal.
7. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
8. Conduct joint 4 month and 9 month warranty inspection, measured from time of acceptance, by Consultant.
9. Include information contained in warranty management plan as follows:

9.1. Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.

9.2. Listing and status of delivery of Certificates of Warranty for extended warranty items.

9.3. Provide list for each warranted equipment, item, feature of construction or system indicating:

9.3.1. Name of item.

9.3.2. Model and serial numbers.

9.3.3. Location where installed.

9.3.4. Name and phone numbers of manufacturers or suppliers.

9.3.5. Names, addresses and telephone numbers of sources of spare parts.

9.3.6. Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.

9.3.7. Cross-reference to warranty certificates as applicable.

9.3.8. Starting point and duration of warranty period.

9.3.9. Summary of maintenance procedures required to continue warranty in force.

9.3.10. Cross-Reference to specific pertinent Operation and Maintenance manuals.

9.3.11. Organization, names and phone numbers of persons to call for warranty service.

9.3.12. Typical response time and repair time expected for various warranted equipment.

9.4. Contractor's plans for attendance at 4 and 9 month post-construction warranty inspections.

9.5. Procedure and status of tagging of equipment covered by extended warranties.

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

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

11. Written verification to follow oral instructions.

11.1. Failure to respond will be cause for the Consultant to proceed with action against Contractor.

1.12 WARRANTY TAGS

1. Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Consultant.
2. Attach tags with copper wire and spray with waterproof silicone coating.
3. Leave date of acceptance until project is accepted for occupancy.
4. Indicate following information on tag:

4.1. Type of product/material.

4.2. Model number.

4.3. Serial number.

4.4. Contract number.

4.5. Warranty period.

4.6. Inspector's signature.

4.7. Construction Contractor.

Part 2 Products

2.1 NOT USED

1. Not Used.

Part 3 Execution

3.1 NOT USED

1. Not Used.

END OF SECTION

SECTION 01 79 00
Demonstration and Training

Part 1 General

1.1 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:
   - 3.1. Verify conditions for demonstration and instructions comply with requirements.
   - 3.2. Verify designated personnel are present.
   - 3.3. Ensure equipment has been inspected and put into operation in accordance with specifications.
   - 3.4. Ensure testing, adjusting, and balancing has been performed in accordance with specifications and equipment and systems are fully operational.
4. Demonstration and Instructions:
   - 4.1. Demonstrate start-up, operation, control, adjustment, trouble-shooting, warranty, servicing, and maintenance of each item of equipment at agreed upon times, at the equipment location.
   - 4.2. Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.
   - 4.3. Review contents of manual in detail to explain aspects of operation and maintenance.
   - 4.4. Prepare and insert additional data in operations and maintenance manuals when needed during instructions.

1.2 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.

1.3 QUALITY ASSURANCE

1. When specified in individual Sections requiring manufacturer to provide authorized representative to demonstrate operation of equipment and systems:
   - 1.1. Instruct Owner's personnel.
   - 1.2. Provide written report that demonstration and instructions have been completed.

Part 2 Products

2.1 NOT USED

1. Not Used.

Part 3 Execution

3.1 NOT USED

1. Not Used.

END OF SECTION

SECTION 02 41 19.16
Selective Interior Demolition

Part 1 General

1.1 SUMMARY

1. This Section includes the following:
   1.1. Demolition and removal of selected portions of interior building components and finishes.
   1.2. Repair procedures for selective demolition operations.
2. This section does not include the following:
   2.1. Removal of hazardous materials or asbestos abatement.
   2.2. Demolition of exterior building components or structural elements.
   2.3. Mechanical or electrical equipment, except as required to make minor modifications to allow the work to be completed.
3. Drawings contain details that suggest directions for solving some of the major demolition and removal requirements for this project; Contractor is required to develop these details further by submitting a demolition plan prepared by a professional engineer employed by the Contractor.

1.2 REFERENCE STANDARDS

1. American National Standards Institute (ANSI)
   1.1. ANSI A10.8 2011, Safety Requirements for Scaffolding
2. American Society for Testing and Materials (ASTM):
   2.1. ASTM C475/C475M-15, Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board
3. CSA Group (CSA)
   3.1. CSA S350 M1980 (R2003), Code of Practice for Safety in Demolition of Structures
4. Department of Justice Canada (Jus)
   4.1. Canadian Environmental Assessment Act (CEAA), 2012
   4.2. Canadian Environmental Protection Act (CEPA), 2012
      4.2.1. SOR/2003-2, On-Road Vehicle and Engine Emission Regulations
      4.2.2. SOR/2006-268, Regulations Amending the On-Road Vehicle and Engine Emission Regulations
      4.2.3. Transportation of Dangerous Goods Act (TDGA), 1992, c. 34
      4.2.4. Motor Vehicle Safety Act (MVSA), 1995
      4.2.5. Hazardous Materials Information Review Act, 1985
5. National Fire Protection Association (NFPA)
   5.1. NFPA 241 13, Standard for Safeguarding Construction, Alteration, and Demolition Operations

1.3 DEFINITIONS

1. Demolish: Detach items from existing construction and legally dispose of them off site, unless indicated to be removed and salvaged or removed and reinstalled.

2. Remove and Salvage: Detach items from existing construction and deliver them to Owner.
3. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
4. Existing to Remain: Existing items of construction that are not removed and that are not otherwise indicated as being removed, removed and salvaged, or removed and reinstalled.
5. Waste Management Coordinator (WMC): Contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.
6. Draft Construction Waste Management Plan (Draft CWM Plan): Detailed inventory of materials in building indicating estimated quantities of reuse, recycling and landfill, prepared in accordance with Section 01 74 19 - Waste Management and Disposal and as follows:
   6.1. Involves quantifying by volume/weight amounts of materials and wastes generated during construction, demolition, deconstruction, or renovation project.
7. Construction Waste Management Plan (CWM Plan): Written plan addressing opportunities for reduction, reuse, or recycling of materials prepared in accordance with Section 01 74 19- Waste Management and Disposal.
8. Construction Waste Management Report (CWM Report): Written report identifying actual materials that formed CWM Plan for reduction, reuse, or recycling of materials prepared in accordance with Section 01 74 19- Waste Management and Disposal.
9. Hazardous Substances: Dangerous substances, dangerous goods, hazardous commodities and hazardous products may include asbestos, mercury and lead, PCB's, poisons, corrosive agents, flammable substances, radioactive substances, or other material that can endanger human health or wellbeing or environment if handled improperly as defined by the Federal Hazardous Products Act (RSC 1985) including latest amendments.

1.4 ADMINISTRATIVE REQUIREMENTS

1. Coordination: Coordinate with Owner for the material ownership as follows:
   1.1. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner 's property, demolished materials shall become Contractor ’s property and shall be removed from Project site.
   1.2. Coordinate selective demolition work so that work of this Section adheres to aesthetic criteria established by the Drawings and specified dimensions with all elements in planes as drawn, maintaining their relationships with all other building elements.
2. Pre Demolition Meeting: Convene pre-installation meeting 1 week prior to beginning work of this Section, with Contractor in accordance with Section 01 31 19 - Project Meetings to:
   2.1. Confirm extent of salvaged and demolished materials
   2.2. Review Contractor ’s demolition plan
      2.2.1. Verify existing site conditions adjacent to demolition work
      2.2.2. Coordination with other construction sub trades
3. WMC must provide written report on status of waste diversion activity at each meeting.

1.5 ACTION AND INFORMATION SUBMITTALS

1. Action Submittals: Provide the following submittals before starting any work of this Section:
   1.1. Schedule of Selective Demolition Activities: Coordinate with Section 01 32 16.16– Construction Progress Schedule - Critical Path Method (CPM), and indicate the following:

1.1.1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.

1.1.2. Coordinate with Owner 's user group ongoing site operations, and limit the number of interruptions during regular business hours.

1.1.3. Interruption of utility services.

1.1.4. Coordination for shutoff, capping, and continuation of utility services.

1.1.5. Use of elevator and stairs.

1.1.6. Locations of temporary partitions and means of egress, including for others affected by selective demolition operations.

1.1.7. Coordination with Owner 's continuing occupancy of portions of existing building and of Owner 's partial occupancy of completed Work

1.2. Demolition Plan: Submit a plan of demolition area indicating extent of temporary facilities and supports, methods of removal and demolition prepared by a professional engineer in accordance with requirements of Authority Having Jurisdiction, and as follows:

1.2.1. Proposed Noise Control & Dust Control Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. Consultant reserves the right to make modifications where proposed methods interfere with the Owner ’s ongoing operation

1.2.2. Inventory: Submit a list of items that have been removed and salvaged after selective demolition is complete.

1.2.3. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.2.4. Pre demolition Photographs: Submit photographs indicating existing conditions of adjoining construction and site improvements prior to starting Work. Include finish surfaces that may be misconstrued as damage caused by selective demolition operations.

2. Informational Submittals: Provide the following submittals when requested by the Consultant :

2.1. Qualification Data: Submit information for companies and personnel indicating their capabilities and experience to perform work of this Section including; but not limited to, lists of completed projects with project names and addresses, names and addresses of architects and owners, for work of similar complexity and extent.

1.6 QUALITY ASSURANCE

1. Regulatory Requirements: Perform work as follows; use most restrictive requirements where differences occur between the municipal, provincial and federal jurisdictions:

1.1. Provincial and Federal Requirements: Perform work in accordance with governing environmental notification requirements and regulations of the Authority Having Jurisdiction.

1.2. Municipal Requirements: Perform hauling and disposal operations in accordance with regulations of Authority Having Jurisdiction.

2. Qualifications: Provide proof of qualifications when requested by Consultant :

2.1. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project:

2.1.1. Conform to the provincial Occupational Health and Safety Act and Regulation.

2.1.2. Conform to Workers' Compensation Board Regulations.

2.1.3. Conform to City of local municipal bylaws and regulations governing this type of work.

1.7 SITE CONDITIONS

1. Owner will occupy portions of building immediately adjacent to selective demolition area:
   1.1. Conduct selective demolition so that Owner 's operations will not be disrupted.
   1.2. Provide not less than 72 hours notice to Owner of activities that will affect Owner 's operations.
2. Maintain access to existing means of egress, walkways, corridors, exits, and other adjacent occupied or used facilities in accordance with Section 01 35 16:
   2.1. Do not close or obstruct means of egress, walkways, corridors, exits, or other occupied or used facilities without written acceptance from authorities having jurisdiction.
3. Owner assumes no responsibility for condition of areas to be selectively demolished:
   3.1. Conditions existing at time of Pre Bid Site Review will be maintained by Owner as far as practical.
4. Discovery of Hazardous Substances: It is not expected that Hazardous Substances will be encountered in the Work; immediately notify Consultant if materials suspected of containing hazardous substances are encountered and perform the following activities:
   4.1. Refer to Section 01 41 00– Regulatory Requirements for directives associated with specific material types.
   4.2. Hazardous materials will be as defined in the Hazardous Materials Act.
   4.3. Hazardous materials will be removed by Owner before start of the Work.
   4.4. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Owner. Hazardous materials will be removed by Owner under a separate contract or as a change to the Work.

Part 2 Products

2.1 TEMPORARY SUPPORT STRUCTURES

1. Design temporary support structures required for demolition work and underpinning and other foundation supports necessary for the project using a qualified professional engineer registered or licensed in province of the Work.

2.2 DESCRIPTION

1. This section of the Work includes, but is not necessarily limited to, the following:
   1.1. Demolition, removal completely from site, and disposal of all identified components, materials, equipment and debris
   1.2. Selective demolition to allow new walls, bulkheads, ceilings and other materials to meet existing construction as indicated
   1.3. All material from demolition shall be removed from site immediately with no salvage, selling, sorting or burning permitted on site
   1.4. Retain items indicated on drawings for re use in new construction

2.3 DEBRIS

1. Make all arrangements for transport and disposal of all demolished materials from the site.

2.4 EQUIPMENT

1. Provide all equipment required for safe and proper demolition of the building interiors indicated.

2.5 REPAIR MATERIALS

1. Use repair materials identical to existing materials:
   1.1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
   1.2. Use a material whose installed performance equals or surpasses that of existing material.
   1.3. Comply with material and installation requirements specified in individual Specification Sections.
2. Floor Patching and Levelling Compounds: Cement based, trowelable, self levelling compounds compatible with specified floor finishes; gypsum based products are not acceptable for work of this Section.
3. Concrete Unit Masonry: Lightweight concrete masonry units, and mortar, cut and trimmed to fit existing opening to be filled. Provide standard hollow core units, square end units and bond beam units as indicated on drawings.
4. Prefinished Sheet Steel: Prefinished sheet steel, colour to match existing radiation cabinets, bent and profiled to match existing radiation cabinets.
5. Gypsum Board Patching Compounds: Joint compound to ASTM C475/C475M, bedding and finishing types thinned to provide skim coat consistency to patch and prepare existing gypsum board walls ready for new finishes in accordance with Section 09 21 16 – Gypsum Board Systems.
6. Hoarding and Dust Screens: Refer to Section 01 50 00 for stud framing and gypsum board sheathing materials.

2.6 EXISTING MATERIALS

1. Items to be retained for re use in new construction include, but are not limited to the following:
   1.1. Ceiling components
   1.2. Miscellaneous items identified on drawings
   1.3. Confirm with Owner's Representative any materials that appear to be in re usable condition prior to disposal.
   1.4. Confirm with Owner's Representative any materials scheduled for re use that are not in re usable condition prior to installation.

Part 3 Execution

3.1 EXAMINATION

1. Verify that utilities have been disconnected and capped.
2. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
3. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
4. Notify the Representative Consultant where existing mechanical, electrical, or structural elements conflict with intended function or design:
   4.1. Investigate and measure the nature and extent of conflict and submit a written report to Representative Consultant.
   4.2. Representative Consultant will issue additional instructions or revise drawings as required to correct conflict.
5. Perform surveys as the work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES

1. Coordinate existing services indicated to remain and protect them against damage during selective demolition operations in accordance with Section 01 35 16.
2. Provide Owner with min. 72 hrs advance notice prior to a contemplated utility service shut off or temporary disconnection and obtain written approval prior to the scheduled demolition work.
3. Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
   3.1. Arrange to shut off affected utilities with utility companies.
   3.2. If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.
   3.3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
   3.4. Cut off pipe or conduit to a minimum of 25 mm below slab, and remove concrete mound. Patch concrete using cementitious grout.
4. Coordinate with Mechanical and Electrical Divisions for shutting off, disconnecting, removing, and sealing or capping utilities.
5. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 PREPARATION

1. Identify and mark all equipment and materials identified to be retained by Owner or to be re used in subsequent construction. Separate and store items to be retained in an area away from area of demolition and protect from accidental disposal.
2. Post warning signs on electrical lines and equipment that must remain energized to serve other areas during period of demolition.
3. Confirm that all electrical and telephone service lines entering buildings are not disconnected.
4. Do not disrupt active or energized utilities crossing the demolition site.
5. Provide and maintain barricades, warning signs, protection for workmen and the public during the full extent of the Work. Read drawings carefully to ascertain extent of protection required.
6. Mark all materials required to be re used, store in a safe place until ready for re installation.
7. Adjust all junction boxes, receptacles and switch boxes flush with new wall construction where additional layers to existing construction are indicated.
8. Remove permanent marker lines used or found on exposed surfaces and at surfaces indicated for subsequent finish materials. Mechanically remove permanent marker lines and associated substrates where permanent marker lines occur and patch surface. Sealing or priming over permanent marker lines is not acceptable.

3.4 CONCRETE SLAB REINFORCING

1. Locate location of reinforcing steel in concrete slabs prior to cutting or coring using non destructive, non ionizing radio frequency locators.
2. Core concrete slabs to avoid reinforcing steel, electrical conduit or water pipes; adjust core location and coordinate with Engineer where slab features interfere with core drilling.
3. Notify the Engineer immediately for further instructions where coring or cutting will damage existing slab features.

3.5 SELECTIVE DEMOLITION

1. Demolish and dismantle work in a neat and orderly manner and in strict accordance with all regulations.
2. At end of each day's work, leave Work in safe condition so that no part is in danger of toppling or falling.
3. Demolish in a manner to minimize dusting and to prevent migration of dust.
4. Selling or burning of materials on the site is not permitted.
5. Remove concrete bases by cutting and chipping, take precautions against slab cracking and degradation. Grind edges smooth, fill and make level with self levelling grout.
6. Fill all openings in concrete block walls with concrete masonry units, coursing to match existing, prepare ready to receive new finishes to match existing.
   6.1. Provide bond beams in new openings cut into existing concrete masonry unit walls.
   6.2. Provide finished end masonry units to patch and repair for new jamb sections in existing concrete masonry unit walls.
7. Fill all openings in gypsum board walls with gypsum board and steel framing to match existing, skim coat to make wall smooth and even.
8. Demolish existing carpet, resilient flooring and adhesive remnants as follows:
   8.1. Vacuum existing carpet thoroughly, prior to removal, using vacuum equipped with power head/sweeper.
   8.2. Apply fine mist water spray to carpet as required to minimize dust generation during removal. Avoid spraying near electrical outlets.
   8.3. Demolish existing carpet and resilient floor finishes, remove and dispose of off site.
   8.4. Remove adhesive to the greatest extent possible using scrapping tools and as follows:
      8.4.1. Do not use solvent based cleaners to remove adhesive remnants.
      8.4.2. Lightly shot blast or grind floor using machine designed for purpose to remove adhesive remnants.
      8.4.3. Vacuum floor ready for application of skim coating.
      8.4.4. Repair all slab depressions and damage with cementitious patching compound.
      8.4.5. Skim coat floor with minimum 1 mm thick cementitious floor underlayment compatible with new flooring materials.
   8.5. Floor substrate shall be smooth, free from ridges and depressions, and adhesive remnants that could telegraph through resilient flooring materials and carpets.
   8.6. Recycle materials in accordance with Section 01 74 19 – Waste Management and Disposal.
9. Demolish existing ceramic tile finishes. Remove setting bed or adhesive to the greatest extent possible using mechanical scrapping tools and as follows:
   9.1. Saw cut edge of tile for clean and even transition joint between existing tile to remain and new flooring materials
   9.2. Lightly shot blast or grind floor to remove remnants of setting materials
   9.3. Vacuum floor ready for application of skim coating
   9.4. Repair all slab depressions and damage with cementitious patching compound. Skim coat floor with minimum 1 mm thick cementitious floor underlayment compatible with new flooring materials
10. Demolish completely all ceiling panels and grid as indicated.

11. Remove all wall coverings scheduled for demolition. Patch and repair wall surfaces with skim coat of gypsum board joint compound leaving wall surfaces smooth and even ready for new wall finishes.
12. Patch and repair all walls, floor and ceilings damaged during demolition with material matching adjacent walls, prepare ready for new finishes.
13. Patch and repair all radiation cabinets, mechanical equipment and electrical fixtures damaged or exposed during demolition to match adjacent finished surfaces.

3.6 PATCHING AND REPAIRING

1. Floors and Walls:
   1.1. Where walls or partitions that are demolished extend from one finished area into another, patch and repair floor and wall surfaces in the new space.
   1.2. Provide a level and smooth surface having uniform finish colour, texture, and appearance.
   1.3. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform colour and appearance.
   1.4. Patch with durable seams that are as invisible as possible.
   1.5. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
   1.6. Where patching occurs in a painted surface, apply primer and intermediate paint coats over patch and apply final paint coat over entire unbroken surface containing patch. Provide additional coats until patch blends with adjacent surfaces.
   1.7. Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
2. Ceilings: patch, repair, or re hang existing ceilings as necessary to provide an even plane surface of uniform appearance.

3.7 PROTECTION

1. Prevent debris from blocking drainage inlets and systems and ground draining, and protect material and electrical systems and services that must remain in operation.
2. Arrange demolition and shoring work so that interference with the use of adjoining areas by the Owner and end users is minimized.
3. Maintain safe access to and egress from occupied areas adjoining.
4. Provide and maintain fire prevention equipment and alarms accessible during demolition.

3.8 CLEANING

1. Promptly as the Work progresses, and on completion, clean up and remove from the site all rubbish and surplus material. Remove rubbish resulting from demolition work daily.
2. Maintain access to exits clean and free of obstruction during removal of debris.
3. Keep surrounding and adjoining roads, lanes, sidewalks, municipal rights of way clean and free of dirt, soil or debris that may be a hazard to vehicles or persons.

END OF SECTION

SECTION 03 35 00
Concrete Finishing

Part 1 General

1.1 SECTION INCLUDES

1. Surface preparation.
2. Application of clear, colourless, liquid concrete hardener and densifier.
3. Application of water-based concrete enhancer.

1.2 RELATED REQUIREMENTS

1. Section 07 92 00 - Joint Sealants.
2. Section 07 95 13 - Expansion Joint Assemblies.

1.3 REFERENCE STANDARDS

1. ASTM C779 - Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.
2. ASTM F609 - Standard Test Method for Using a Horizontal Pull Slip Meter (HPS).

1.4 ADMINISTRATIVE REQUIREMENTS

1. Section 01 31 00: Project management and coordination procedures.

1.5 ACTION SUBMITTALS

1. Section 01 33 00: Submission procedures.
2. Submit manufacturer's product data and application instructions.

1.6 CLOSEOUT SUBMITTALS

1. Section 01 78 00: Submission procedures.
2. Maintenance Data: Provide data on maintenance renewal of applied coatings.
3. Sustainable Design Closeout Documentation: …….

1.7 QUALITY ASSURANCE

1. Products of This Section: Manufactured to ISO 9000 certification requirements.
2. Perform Work in accordance with CSA-A23.1/A23.2.
3. Maintain one (1) copy of document on site.
4. Installer Qualifications: Company specializing in performing the work of this section with minimum three (3) years documented experience and approved by the manufacturer.
5. Floor Finishers:

1.8 DELIVERY, STORAGE, AND HANDLING

1. Section 01 61 00: Transport, handle, store, and protect products.
2. Deliver materials in manufacturer's packaging including application instructions.

3. Avoid direct contact with this product, as it may cause mild-to-moderate irritation of the eyes and/or skin.
4. Protect materials during handling and application to prevent damage or contamination.

1.9 SITE CONDITIONS

1. Do not apply concrete densifier and chemical hardener when concrete temperature is below 4º C (40º F) or above 57º C (135º F).
2. Do not apply to frozen concrete.
3. Do not use on highly dense or non-porous surfaces.
4. Ventilation: Sufficient to prevent injurious gases from temporary heat or other sources affecting concrete.

Part 2 Products

2.1 MANUFACTURER

1. W. R. MEADOWS® of CANADA, 70 Hannant Court, Milton, Ontario, Canada L9T 5C1. (800) 563-3618. Fax (905) 878-4125. Web Site www.wrmeadows.com.

2.2 MATERIALS

1. Concrete densifier and chemical hardener compound:LIQUI-HARD ULTRA manufactured by W. R. MEADOWS.
2. Concrete enhancer: BELLATRIX® manufactured by W. R. MEADOWS.

2.3 RELARED MATERIALS

1. Water: Potable water

Part 3 Execution

3.1 EXAMINATION

1. Section 01 71 00: Verify existing conditions before starting work.
2. Examine surfaces to receive concrete densifier and chemical hardener. Notify architect if surfaces are not acceptable. Do not begin application until unacceptable conditions have been corrected.
3. Ensure material can penetrate the concrete surface.

3.2 SURFACE PREPARATION

1. Protect adjacent surfaces not designated to receive treatment.
2. Clean and prepare surfaces to receive treatment in accordance with manufacturer's instructions, ensuring that all stains, oil, grease, form release agents, curing compounds, dust, and dirt removed prior to application.
3. Fill and repair all holes, cracks, and deteriorated areas that have been removed to sound concrete.

3.3 APPLICATION

1. Apply concrete densifier and chemical hardener in accordance with manufacturer's instructions.
2. Ensure application equipment is clean and free of previously used materials.
3. Do not dilute concrete densifier and chemical hardener.
4. Fresh Concrete

4.1. Apply undiluted concrete densifier and chemical hardener as soon as concrete is firm enough to work on after final troweling.

4.2. Apply undiluted concrete densifier and chemical hardener at approximately 650 - 800 $ft.^2$/gal. (15.95 – 19.63 m^2/L) using a low-pressure sprayer.

4.3. Do not allow material to puddle on the surface.

5. Existing Concrete

5.1. Saturate the surface with undiluted concrete densifier and chemical hardener by sprayer, squeegee, or broom.

5.2. Keep the surface wet with concrete densifier and chemical hardener for 20 minutes.

5.3. Do not allow material to puddle on the surface.

5.4. Let the surface dry for 2-4 hours.

5.5. Restrict foot traffic for at least 4 hours. Twelve hours is preferable.

3.4 CONCRETE ENHANCER

1. Allow 24 hours before proceeding with concrete enhancer application.
2. Spray concrete enhancer full strength from container using an industrial sprayer delivering $1/10^{th}$ of a gallon per minute.
3. Pre-wet micro-fiber applicator with concrete enhancer prior to use
4. Uniformly spread concrete enhancer with a micro-fiber applicator, ensuring that the product is not allowed to dry before spreading is complete. Special caution should be taken to not over apply. A monolithic, thin, even film is desired.
5. For optimum performance, apply a second coat at a 90° (right) angle to the first coat, after the first coat is thoroughly dry.
6. Allow 24 hours for concrete enhancer to dry.

3.5 PROTECTION

1. Keep surface dry for a minimum of 48 hours after application (preferably 72 hours).

END OF SECTION

SECTION 04 20 00
Unit Masonry

Part 1 General

1.1 REFERENCE STANDARDS

1. ASTM International
   1.1. ASTM A1064/A1064M- 17 Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
   1.2. ASTM C73-14 Standard Specification for Calcium Silicate Face Brick (Sand-Lime Brick).
2. CSA Group (CSA)
   2.1. CAN/CSA-A82-14, Fired Masonry Brick Made From Clay or Shale.
   2.2. CAN/CSA-A165 SERIES-04 (R2014), CSA Standards on Concrete Masonry Units (Consists of A165.1-04 Concrete Block Masonry Units, A165.2 Concrete Brick Masonry Units, A165.3 Prefaced Concrete Masonry Units).
   2.3. CAN/CSA-A179-04 (R2014), Mortar and Grout for Unit Masonry.
   2.4. CAN/CSA-A370-14, Connectors for Masonry.
   2.5. CAN/CSA A371-04 (R2014), Masonry Construction for Buildings.
   2.6. CSA G30.18-09 (R2014), Carbon Steel Bars for Concrete Reinforcement.
   2.7. CSA S304-14 - Design of masonry structures.
3. Health Canada/Workplace Hazardous Materials Information System (WHMIS)
   3.1. Material Safety Data Sheets (SDS).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
   2.1. Submit manufacturer's instructions, printed product literature and data sheets for unit masonry products, mortar and grout, connectors, anchorage and reinforcing, and accessories. Include product characteristics, performance criteria, physical size, finish and limitations.
3. Samples:
   3.1. Submit duplicate samples of each unit exposed in final construction for review and acceptance.
   3.2. Samples will be returned for inclusion into work.

1.3 DELIVERY, STORAGE AND HANDLING

1. Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
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:
   3.1. Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

3.2. Store and protect masonry products from nicks, scratches, and blemishes.

3.3. Replace defective or damaged materials with new.

4. Packaging Waste Management: As specified in Construction Waste Management Plan in accordance with Section 01 74 19 - Waste Management and Disposal.

1.4 COLD WEATHER REQUIREMENTS

1. Supplement requirements of CAN3-A371 as follows:

1.1. Maintain temperature of mortar between -5C and 50C until used.

1.5 HOT WEATHER REQUIREMENTS

1. Supplement requirements of CAN3-A371 as follows:

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

Part 2 Products

2.1 MASONRY UNITS

1. Standard concrete block units: to CAN/CSA-A165.1.

1.1. Normal Weight Classification:

1.1.1. Hollow units: H/15/A/O, H/20/A/O and H/25/A/O

1.1.2. Semi-solid units: SS/15/A/O, SS/20/A/O and SS/25/A/O

1.1.3. Full solid units: SF/15/A/O, SF/20/A/O and SF/25/A/O

1.2. Light Weight Classification:

1.2.1. Hollow units: H/15/C/O

1.2.2. Semi-solid units: SS/15/C/O

1.2.3. Full solid units: SF/15/C/O

1.3. Colour: Grey

1.4. Size: Metric

1.5. Special shapes: provide square units for exposed corners. Provide purpose-made shapes for lintels and bond beams. Provide additional special shapes as indicated.

2.2 REINFORCEMENT AND CONNECTORS

1. Bar reinforcement: to CAN/CSA-A371, Grade 400.
2. Wire reinforcement: wire to ASTM A 1064/A 1064M, truss type.
3. Connectors: to CAN/CSA-A370.

3.1. Corrosion resistance: to CAN/CSA-A370

2.3 MORTAR AND GROUT

1. Mortar: to CAN/CSA-A179.

1.1. Use aggregate passing 1.18 mm sieve where 6 mm thick joints are indicated.

1.2. Colour: ground coloured natural aggregates or metallic oxide pigments, .

2. Mortar Type:

2.1. Exterior non-loadbearing walls and parapet walls: N based on proportion specifications.

2.2. Interior non-loadbearing walls: Type N based on proportion specifications.

3. Mortar for foundation walls, manholes, sewers, pavements, walks, patios and other exterior masonry at or below grade: type M based on proportion specifications.
4. Following applies regardless of mortar types and uses specified above:
   4.1. Mortar for stonework: type N based on proportion specifications.
   4.2. Mortar for grouted reinforced masonry: type S based on proportion specifications.
5. Grout: to CAN/CSA-A179, Table 3.
6. Parging mortar: to CAN/CSA-A179.

Part 3 Execution

3.1 EXAMINATION

1. Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's written instructions.
   1.1. Visually inspect substrate in presence of Consultant.
   1.2. Inform Consultant of unacceptable conditions immediately upon discovery.
   1.3. Proceed with installation only after unacceptable conditions have been remedied .

3.2 INSTALLATION

1. Do masonry work in accordance with CAN/CSA-A371 except where specified otherwise.
   1.1. Bond: running stretcher bond with vertical joints in perpendicular alignment and centred on adjacent stretchers above and below.
   1.2. Ensure coursing matches existing
   1.3. Jointing: tool where exposed or where paint or other finish coating is specified to provide smooth compressed surface.
2. Build masonry plumb, level, and true to line, with vertical joints in alignment.
3. Layout coursing and bond to achieve correct coursing heights, and continuity of bond above and below openings, with minimum of cutting.

3.3 CONSTRUCTION

1. Exposed masonry:
   1.1. Remove chipped, cracked, and otherwise damaged units, in exposed masonry and replace with undamaged units.
   1.2. Cut out for electrical switches, outlet boxes, and other recessed or built-in objects. Make cuts straight, clean, and free from uneven edges.
2. Building-in:
   2.1. Install masonry connectors and reinforcement where indicated on drawings.
   2.2. Build in items required to be built into masonry.
   2.3. Prevent displacement of built-in items during construction. Check plumb, location and alignment frequently, as work progresses.
   2.4. Brace door jambs to maintain plumb. Fill spaces between jambs and masonry with mortar.

2.5. Install loose steel lintels centered over openings where indicated, with minimum 200 end bearing.

3. Concrete block lintels:
   3.1. Install reinforced concrete block lintels over openings in masonry where steel or reinforced concrete lintels are not indicated.
   3.2. End bearing: not less than 200 mm as indicated on drawings.
4. Provision for movement:
   4.1. Leave 6 mm space below shelf angles.
   4.2. Leave 6 mm space between top of non-load bearing walls and partitions and structural elements. Do not use wedges.
   4.3. Built masonry to tie in with stabilizers, with provision for vertical movement.
   4.4. Build expansion and control joints where and as indicated.
5. Interface with other work:
   5.1. Cut openings in existing work as indicated.
   5.2. Openings in walls: approved by Consultant.
   5.3. Make good existing work. Use materials to match existing.
6. Build in flashings in masonry in accordance with CAN/CSA-A371.
   6.1. Install flashings under exterior masonry bearing on foundation walls, slabs, shelf angles, and steel angles over openings. Install flashings under weep hole courses and as indicated. Seal laps, penetrations and terminations to resist water penetration.
   6.2. In cavity walls and veneered walls, carry flashings from front edge of masonry, under outer wythe, then up backing not less than 150 mm, and as follows:
      6.2.1. For self-adhesive flashing, apply primer and firmly press sheet against backing. Lap under air-barrier membrane. Seal penetrations with recommended sealant or mastic. Installation shall be free of wrinkles, fish-mouths and punctures.
      6.2.2. Provided turned up end dams minimum 50 mm high at ends of all flashings.
      6.2.3. For masonry backing embed flashing 25 mm in joint.
      6.2.4. For concrete backing, insert flashing into reglets.
      6.2.5. For wood frame backing, staple flashing to walls behind sheathing paper.
      6.2.6. For gypsum board backing, bond to wall using manufacturer's recommended adhesive.
   6.3. Lap joints 150 mm and seal with adhesive or mastic.
7. Install weep hole vents in vertical joints immediately over flashings, in exterior wythes of cavity wall and masonry veneer wall construction, at maximum horizontal spacing of 600 mm on center.
8. Place drainage mesh in cavity as indicated as construction progresses.

3.4 REINFORCING AND CONNECTING

1. Install masonry connectors and reinforcement in accordance with CAN/CSA-A370, CAN/CSA-A371 and CSA S304.1 unless indicated otherwise.
2. Prior to placing concrete, obtain Consultant's approval of placement of reinforcement and connectors.

3.5 BONDING AND TYING

1. Bond walls of two or more wythes using metal connectors in accordance with CAN/CSA-A371, and as indicated.

2. Tie masonry veneer to backing in accordance with National Building Code of Canada (NBC) 2015, CAN/CSA-A371, CSA S304.1 and as indicated.

3.6 MODIFICATIONS TO EXISTING MASONRY

1. Match existing bond and coursing height of adjacent masonry to remain.
2. Tooth new masonry into existing masonry in run of wall and at intersections with existing partitions.
3. At new openings in masonry walls, remove units, clean and re-install rotated to conceal cut and expose finish surface.
4. Clean bond areas of adjacent masonry to remain, remove loose material and prepare masonry to receive new masonry toothed in.
5. Install reinforcement as necessary to provide continuity of reinforcing and stability between existing and new masonry work.
6. Provide repair anchors as necessary to stabilize existing masonry adjacent to and affected by the Work.

3.7 REINFORCED LINTELS AND BOND BEAMS

1. Reinforce masonry lintels and bond beams as indicated.
2. Place and grout reinforcement in accordance with CAN/CSA-A179, CAN/CSA-A371.

3.8 GROUTING

1. Grout masonry in accordance with CAN/CSA-A179, CAN/CSA-A371 and as indicated.

3.9 ANCHORS

1. Supply and install metal anchors as indicated.

3.10 LATERAL SUPPORT AND ANCHORAGE

1. Supply and install lateral support and anchorage in accordance with CSA S304.1 and as indicated.

3.11 SITE TOLERANCES

1. Tolerances of CAN/CSA-A371 apply.

3.12 FIELD QUALITY CONTROL

1. Inspection and testing will be carried out by Testing Laboratory designated by …….

3.13 CLEANING

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
   1.1. 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 00 - Cleaning.
3. Waste Management:
   3.1. separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
   3.2. Return pallets to masonry manufacturer for re-use.
   3.3. Return surplus masonry materials to manufacturer for recycling and/or re-use.

3.14 PROTECTION

1. Keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect from wind-driven rain until masonry work is completed and protected by flashings or other permanent construction.
2. Protect masonry and other work from marking and other damage. Protect completed work from mortar droppings. Use non-staining coverings.
3. Repair damage to adjacent materials caused by masonry products installation.

END OF SECTION

SECTION 05 50 00
Metal Fabrications

Part 1 General

1.1 REFERENCE STANDARDS

1. ASTM International (ASTM)
   1.1. ASTM A 53/A 53M-12, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
   1.2. ASTM A269M-15a, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
   1.3. ASTM A307-14, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
2. CSA Group (CSA)
   2.1. CSA G40.20-13 /G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
   2.2. CAN/CSA G164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
   2.3. CSA S16-14, Design of Steel Structures.
   2.4. CSA W48-14, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
   2.5. CSA W59-13, Welded Steel Construction (Metal Arc Welding) Metric.
3. Green Seal Environmental Standards (GS)
   3.1. GS-11-2011, Paints and Coatings.
4. The Master Painters Institute (MPI)
   4.1. Architectural Painting Specification Manual - current edition.
5. ULC Standards (ULC)
   5.1. UL 2768-2011, Architectural Surface Coatings.
   5.2. UL 2760-2011, Surface Coatings - Recycled Water-borne.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
   2.1. Submit manufacturer's instructions, printed product literature and data sheets for all materials and include product characteristics, performance criteria, physical size, finish and limitations.
3. Shop Drawings:
   3.1. Submit drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada.
   3.2. Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.
   3.3. Provide physical samples of all components in their specified finish for review by consultants as part of the shop review process.

1.3 QUALITY ASSURANCE

1. Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.
2. Certifications: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.4 DELIVERY, STORAGE AND HANDLING

1. Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
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:
   3.1. Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
   3.2. Replace defective or damaged materials with new.
4. Packaging Waste Management: remove for reuse and return of packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 MATERIALS

1. Steel sections (included but not limited to, HSS, angles, channels) and plates: to CSA G40.20/G40.21, Grade 300W.
   1.1. Refer to all drawings to capture all required metal work.
2. Bolts and anchor bolts: to ASTM A307.
3. Stainless steel tubing: to ASTM A269, Type 302.
4. Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

2.2 FABRICATION

1. Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
2. Use self-tapping shake-proof flat headed screws on items requiring assembly by screws or as indicated.
3. Where possible, fit and shop assemble work, ready for erection.
4. Exposed welds continuous for length of each joint. File or grind exposed welds smooth and flush.

2.3 FINISHES

1. Refer to drawings and paragraph 2.1 Materials for any custom finishes.
2. Galvanizing: hot dipped galvanizing with zinc coating 600 g/m^{2}to CAN/CSA-G164.
3. Chromium plating: chrome on steel with plating sequence of 0.009 mm thickness of copper 0.010 mm thickness of nickel and 0.0025 mm thickness of chromium.
4. Shop coat primer: MPI- 5.1B.

5. Zinc primer: zinc rich, ready mix to MPI-INT 5.2C in accordance with chemical component limits and restrictions requirements and VOC limits .

2.4 ISOLATION COATING

1. Isolate aluminum from following components, by means of bituminous paint:
   1.1. Dissimilar metals except stainless steel, zinc, or white bronze of small area.
   1.2. Concrete, mortar and masonry.
   1.3. Wood.

2.5 SHOP PAINTING

1. Primer: VOC limit 250 g/L maximum to UL 2768.
2. Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.
3. Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Paint when temperature minimum 7 degrees C.
4. Clean surfaces to be field welded; do not paint.

2.6 ANGLE LINTELS

1. Steel angles: prime painted, sizes indicated for openings. Provide 150 mm minimum bearing at ends.
2. ALL EXTERIOR steel to be galvanized.
3. Weld or bolt back-to-back angles to profiles as indicated.
4. Finish: shop painted.
   4.1. Primer: VOC limit 250 g/L maximum to GS-11 when applied onsite.

2.7 CHANNEL FRAMES

1. Fabricate frames from steel and sized to suit drawings.
2. Weld channels together to form continuous frame for jambs, head of openings and stairs & landings to suit drawings.
3. Finish: galvanized for exterior use and prime coat painted for interior use.

Part 3 Execution

3.1 EXAMINATION

1. Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts acceptable for metal fabrications installation in accordance with manufacturer's written instructions.
   1.1. Visually inspect substrate in presence of Consultant.
   1.2. Inform Consultant of unacceptable conditions immediately upon discovery.
   1.3. Proceed with installation only after unacceptable conditions remedied and after receipt of written approval to proceed from Consultant.

3.2 ERECTION - GENERAL

1. Do welding work in accordance with CSA W59 unless specified otherwise.
2. Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

3. Provide suitable means of anchorage acceptable to Consultant such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
4. Exposed fastening devices to match finish and be compatible with material through which they pass.
5. Supply components for work by other trades in accordance with shop drawings and schedule.
6. Weld field connection and Make field connections with bolts to CSA S16 as per indicated.
7. Deliver items over for casting into concrete and building into masonry together with setting templates to appropriate location and construction personnel.
8. Touch-up rivets, field welds, bolts and burnt or scratched surfaces with primer after completion of:
   8.1. Primer: maximum VOC limit 250 g/L to GS-11.
9. Touch-up galvanized surfaces with zinc rich primer where burned by field welding.
   9.1. Primer: maximum VOC limit 250 g/L to GS-11.

3.3 CLEANING

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
   1.1. 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 00 - Cleaning.

3.4 PROTECTION

1. Protect installed products and components from damage during construction.
2. Repair damage to adjacent materials caused by metal fabrications installation.

END OF SECTION

SECTION 06 10 53
Miscellaneous Rough Carpentry

Part 1 General

1.1 REFERENCE STANDARDS

1. American National Standards Institute/National Particleboard Association (ANSI/NPA)
   1.1. ANSI/NPA A208.1-2009 Particleboard.
2. ASTM International
   2.1. ASTM A123/A123M-15, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   2.2. ASTM A153/A153M-09 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   2.3. ASTM A307-14 Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60000 PSI Tensile Strength.
   2.4. ASTM A653/A653M-15, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   2.5. ASTM D 5055-13e1, Standard Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists.
   2.6. ASTM D 5456-14b, Standard Specification for Evaluation of Structural Composite Lumber Products.
   2.7. ASTM F1667-13 Standard Specification for Driven Fasteners: Nails, Spikes and Staples.
3. Canadian General Standards Board (CGSB)
   3.1. CAN/CGSB-11.3-M87, Hardboard.
   3.2. CAN/CGSB-71.26-M88, Adhesive for Field-Gluing Plywood to Lumber Framing for Floor Systems.
4. Canadian Wood Council
   4.1. Wood Design Manual 2010 (R2014) Edition
   4.2. Engineering Guide for Wood Frame Construction 2014
5. CSA Group (CSA)
   5.1. CAN/CSA-A123.2-03 (R2013), Asphalt Coated Roofing Sheets.
   5.2. CSA B111-1974 (R2003), Wire Nails, Spikes and Staples.
   5.3. CSA O86-14 Engineered Design in Wood
   5.4. CSA O112.9-10, Evaluation of Adhesives for Structural Wood Products (Exterior Exposure).
   5.5. CSA O121-08 (R2013), Douglas Fir Plywood.
   5.6. CSA O141-05 (R2014), Softwood Lumber.
   5.7. CSA O151-09 (R2014), Canadian Softwood Plywood.
   5.8. CSA O153-13, Poplar Plywood.
   5.9. CSA O325-07 (R2012), Construction Sheathing.
   5.10. CAN/CSA-S406-92 (R2008), Construction of Preserved Wood Foundations.

5.11. CAN/CSA-Z809-08, Sustainable Forest Management.

6. Forest Stewardship Council (FSC)
   6.1. FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.
7. National Lumber Grades Authority (NLGA)
   7.1. Standard Grading Rules for Canadian Lumber 2010.
8. National Research Council Canada (NRC)
   8.1. National Building Code of Canada 2015 (NBC).
9. South Coast Air Quality Management District (SCAQMD), California State (SCAQMD)
   9.1. SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
10. Sustainable Forestry Initiative (SFI)
    10.1. SFI-2015-2019 Standard.
11. Underwriters' Laboratories of Canada (ULC)
    11.1. CAN/ULC-S706-09, Standard for Wood Fibre Insulating Boards for Buildings.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
   2.1. Submit manufacturer's instructions, printed product literature and data sheets for wood products and accessories and include product characteristics, performance criteria, physical size, finish and limitations.
   2.2. Submit manufacturer’s installation instructions.
3. Shop Drawings:
   3.1. For structural applications or conditions beyond the scope of the manufacturer’s pre-engineered design information, submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
   3.2. Include on drawings:
      3.2.1. Design data in accordance with CAN/CSA-O86 and CWC Engineering Guide for Wood Frame Construction.
      3.2.2. Indicate configuration and spacing of joists, hanger and connector types, fasteners, locations and design values; bearing details.
      3.2.3. Submit stress diagrams or print out of computer design indicating design loads for members. Indicate allowable load and stress increase.
      3.2.4. Indicate arrangement of webs or other members to accommodate ducts and other specialties.

1.3 DELIVERY, STORAGE, AND HANDLING

1. Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
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:
   3.1. Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

3.2. Store materials off ground with moisture barrier at both ground level and as a cover forming a well-ventilated enclosure, with drainage to prevent standing water.

3.3. Replace defective or damaged materials with new.

Part 2 Products

2.1 FURRING AND BLOCKING

1. Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers:
   1.1. Board sizes: "Standard" or better grade.
   1.2. Dimension sizes: "Standard" light framing or better grade.
   1.3. Post and timbers sizes: "Standard" or better grade.
2. Where indicated, provide pressure treated materials for furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers

2.2 PANEL MATERIALS AND APPLICATION

1. Electrical equipment mounting boards:
   1.1. Plywood, DFP, CSP or PP, square edge 19mm thick.
   1.2. Fire retardant treated.
2. Plywood blocking
   2.1. Where indicated on drawings
   2.2. Plywood, DFP, CSP or PP square edge 19mm thick.
   2.3. Fire retardant treated

2.3 ACCESSORIES

1. General purpose adhesive: to CSA O112.9.
2. Nails, spikes and staples: to ASTM F1667.
3. Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.
4. Fastener Finishes:
   4.1. Galvanizing: to ASTM A653, use galvanized fasteners for exterior work.
   4.2. Plated finish: use cadmium plated fasteners for interior work.

Part 3 Execution

3.1 FURRING AND BLOCKING

1. Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding electrical equipment mounting boards, and other work as required.
2. Install furring to support siding applied vertically where there is no blocking and where sheathing is not suitable for direct nailing.
   2.1. Align and plumb faces of furring and blocking to tolerance of 1:600.
3. Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
4. Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure using galvanized fasteners.

3.2 CLEANING

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
   1.1. 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 00 - Cleaning.

3.3 WASTE MANAGEMENT

1. Separate waste materials for reuse or recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
2. Re-use scrap lumber to the greatest extent possible. Separate scrap lumber for use on site as accessory components, including: shims, bracing, and blocking.
3. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill. Prevent saw dust and wood shavings from entering the storm drainage system.
4. Do not burn scrap lumber that has been pressure treated.
5. Do not send lumber treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

3.4 PROTECTION

1. Protect installed products and components from damage during construction.
2. Repair damage to adjacent materials caused by rough carpentry installation.

END OF SECTION

SECTION 06 40 00
Architectural Woodwork

Part 1 General

1.1 REFERENCE STANDARDS

1. Architectural Woodwork Manufacturers Association of Canada (AWMAC)
   1.1. Architectural Woodwork Standards (AWMAC AWS), Latest edition.
2. Canadian General Standards Board (CGSB)
   2.1. CAN/CGSB-11.3-M87, Hardboard.
   2.2. CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.
   2.3. CAN/CGSB-71.19-M88, Adhesive, Contact, Sprayable.
3. Health Canada/Workplace Hazardous Materials Information System (WHMIS)
   3.1. Material Safety Data Sheets (SDS).
4. Sustainable Forestry Initiative (SFI)
   4.1. SFI-2015-2019 Standard and Rules.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
   2.1. Prepare and submit material list in accordance with AWMAC AWS, cross-referenced to specifications.
   2.2. Include manufacturer's instructions, printed product literature, data sheets and catalogue pages for all materials and products to be incorporated into architectural wood casework and include product characteristics, performance criteria, dimensions and profiles, finish and limitations on use.
3. Hardware List:
   3.1. Include heavy duty "T" bracket " HD front mount bench bracket" from Iron Supports.com refer to drawings.
   3.2. Include all hardware required to complete this work and as indicated in the drawings.
   3.3. Include manufacturer’s specification sheets indicating name, model, material, function, finish, BHMA designations and other pertinent information.
4. Shop Drawings:
   4.1. Prepare and submit shop drawings in accordance with AWMAC AWS and as follows.
   4.2. Indicate details of construction, profiles, jointing, fastening and other related details.
5. Samples:
   5.1. Apply sample finishes to specified substrate or core material minimum 300 x 300 mm to match. For veneers with transparent finish submit three samples to illustrate range and colour of grain expected.
   5.2. Shop applied coatings:

5.2.1. For transparent finish, submit duplicate samples of each species and cut of wood to be used, finished as specified.

5.2.2. For opaque finish, submit duplicate samples for each colour selection, finished as specified.

5.3. Submit duplicate samples of laminated plastic for each specified colour selection.

5.4. Certifications: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

1.3 QUALITY ASSURANCE

1. Perform Work of this Section by single architectural wood casework fabricator with minimum 5 years of current architectural casework production experience and having completed minimum one project in the past 5 years with value within 20% of the cost of the work of this Section.
2. Mock-ups:
   2.1. Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
   2.2. Construct mock-up of Bench **M1**
   Mock up to be reviewed by Consultant and Owner for approval before proceeding with remainder of work.
   2.3. When accepted, mock-up will demonstrate minimum standard for Work.
   2.4. Do not proceed with work prior to receipt of written acceptance of mock-up by Consultant.

1.4 DELIVERY, STORAGE AND HANDLING

1. Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
2. Deliver wood casework only when area of work is enclosed, plaster and concrete work is dry, and area is broom clean and site environmental conditions are acceptable for installation.
3. Protect millwork against dampness and damage during and after delivery.
4. Store millwork in ventilated areas, protected from extreme changes of temperature and humidity, and within range recommended by AWMAC AWS for location of project.
5. Store materials indoors in clean, dry, well-ventilated area.
6. Protect architectural woodwork and hardware from nicks, scratches, and blemishes.
7. Replace defective or damaged materials with new.

Part 2 Products

2.1 QUALITY GRADE

1. Provide all materials and perform all fabrication in accordance with AWMAC AWS Premium Grade

2.2 FINISHES

1. Benches - solid hardwood
   1.1. Wood Type: Maple
   Finish: As per Architect direction
2. Shelve Finish - Solid Polymer Fabrications (**SO**)
   2.1. Manufacturer: Corian
   Supplier: Willis 1 888 944 5547
   Colours:

SO: Antarctica or equivalent Wilsonart, Formica or HI-MACS
Thickness: min 13mm for shelf

2.2. All solid polymer panel joints are to be welded to be seamless and finished smooth to be invisible.

2.3. Adhesives as recommended by manufacturer

3. Metal (MTL) and Stainless steel (SS)
   3.1. Refer to 05 50 00 Metal Fabrications

2.3 LUMBER

1. Softwood and Hardwood Lumber: Sound lumber to specified AWMAC AWS quality grade requirements, kiln-dried to moisture content recommended by AWMAC AWS for location of the Work.
2. Machine stress-rated lumber is acceptable for all purposes.

2.4 FASTENERS AND ADHESIVES

1. Nails and staples: to CSA B111.
2. Screws: stainless steel, type and size to suit application.
3. Splines: metal.
4. Sealant: in accordance with Section 07 92 00 - Joint Sealants, type one part silicone: CAN /CGSB-19.22-M89.
   4.1. Sealants: VOC limit 250 g/L maximum to SCAQMD Rule 1168.
5. Laminated plastic adhesive:
   5.1. Adhesives: VOC limit 30 g/L maximum to GS-36.
   5.2. Use least toxic sealants, adhesives, sealers, and finishes necessary to comply with requirements of this section.
   5.3. Clear Wood Finishes: VOC limit 350 g/L maximum to GS-11
   5.4. Paints: VOC limit 50 g/L maximum to SCAQMD Rule 1113.

Part 3 Execution

3.1 EXAMINATION

1. Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for architectural woodwork installation in accordance with manufacturer's instructions.
   1.1. Inform Consultant of unacceptable conditions immediately upon discovery.
   1.2. Proceed with installation only after unacceptable conditions have been remedied ..

3.2 INSTALLATION

1. Install prefinished millwork at locations shown on drawings.
   1.1. Position accurately, level, plumb straight.
2. Fasten and anchor millwork securely.
   2.1. Supply and install heavy duty hardware for the benches.
3. 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.

4. Apply moisture barrier between wood framing members and masonry or cementitious construction.
5. Fit hardware accurately and securely in accordance with manufacturer's written instructions.
6. Make cutouts for inset equipment and fixtures using templates provided.

3.3 CLEANING

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
   1.1. 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 00 - Cleaning.
   2.1. Clean millwork.
   2.2. Remove excess glue, pencil and ink marks from surfaces.

3.4 PROTECTION

1. Protect millwork from damage until final inspection.
2. Protect installed products and components from damage during construction.
3. Repair damage to adjacent materials caused by architectural woodwork installation.

END OF SECTION

SECTION 07 84 00
Fire stopping

Part 1 General

1.1 REFERENCE STANDARDS

1. Health Canada/Workplace Hazardous Materials Information System (WHMIS)
   1.1. Material Safety Data Sheets (SDS).
2. National Research Council Canada (NRC)
   2.1. National Building Code of Canada 2015 (NBC).
3. Underwriter's Laboratories of Canada (ULC)
   3.1. ULC-S115-1995, Fire Tests of Fire stop Systems.

1.2 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 noncombustible construction or have "0" annular space in buildings of combustible construction.
   4.1. 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.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

1. Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
   2.1. Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
   2.2. Submit two copies of WHMIS SDS - Material Safety Data Sheets in accordance with Section 02 81 01 - Hazardous Materials.
3. Shop Drawings:
   3.1. Submit shop drawings to show location, proposed material, reinforcement, anchorage, fastenings and method of installation.
   3.2. Construction details should accurately reflect actual job conditions.
4. Samples:
   4.1. Submit duplicate 300 x 300 mm samples showing actual fire stop material proposed for project.
5. Quality assurance submittals: submit following in accordance with Section 01 45 00 - Quality Control.

5.1. Test reports: in accordance with CAN-ULC-S101 for fire endurance and CAN-ULC-S102 for surface burning characteristics.

5.1.1. Submit certified test reports from approved independent testing laboratories, indicating compliance of applied fire stopping with specifications for specified performance characteristics and physical properties.

5.2. Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

5.3. Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures and maintenance guide.

5.4. Manufacturer's Field Reports: submit to manufacturer's written reports within 3 days of review, verifying compliance of Work, as described in PART 3 - FIELD QUALITY CONTROL.

1.4 QUALITY ASSURANCE

1. Qualifications:

1.1. Installer Qualifications: Perform Work of this Section by a company that has a minimum of five years proven experience in the installation of firestopping and smoke seal Work of a similar size and nature and that is approved by manufacturer. Submit to Consultant, applicator's current certificate of approval by the material manufacturer as proof of compliance.

1.2. Manufacturer's direct representative and/or fire protection specialist shall be on-site during initial installation of firestop systems to train appropriate contractor personnel in proper selection and installation procedures conforming to manufacturer's written recommendations published in their literature and drawing details.

2. Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning work of this Section, with contractor's representative in accordance with Section 01 31 19 - Project Meetings to:

2.1. Verify project requirements.

2.2. Review installation and substrate conditions.

2.3. Co-ordination with other building subtrades.

2.4. Review manufacturer's installation instructions and warranty requirements.

3. Site Meetings: as part of Manufacturer's Services described in PART 3 - FIELD QUALITY CONTROL, schedule site visits, to review Work, at stages listed.

3.1. After delivery and storage of products, and when preparatory Work is complete, but before installation begins.

3.2. Twice during progress of Work at 25% and 60% complete.

3.3. Upon completion of Work, after cleaning is carried out.

1.5 DELIVERY, STORAGE AND HANDLING

1. Packing, shipping, handling and unloading:

1.1. Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

1.2. Deliver, store and handle materials in accordance with manufacturer's written instructions.

1.3. 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:

2.1. Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

2.2. Replace defective or damaged materials with new.

3. Waste Management and Disposal:

3.1. Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 MATERIALS

1. Fire stopping and smoke seal systems: in accordance with CAN-ULC-S115.

1.1. Asbestos-free materials and systems capable of maintaining effective barrier against flame, smoke and gases in compliance with requirements of CAN-ULC-S115 and not to exceed opening sizes for which they are intended and conforming to specified special requirements described in PART 3.

1.2. Fire stop system rating: 1 Hr or as indicated on drawings.

2. Service penetration assemblies: systems tested to CAN-ULC-S115.
3. Service penetration fire stop components: certified by test laboratory to CAN-ULC-S115.
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.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

1. Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 PREPARATION

1. Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials.

1.1. 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 without interruption to vapour barrier.

4. Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

3.3 INSTALLATION

1. Install fire stopping and smoke seal material and components in accordance with manufacturer's certified tested system listing.
2. Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.
3. Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.
4. Tool or trowel exposed surfaces to neat finish.
5. Remove excess compound promptly as work progresses and upon completion.

3.4 SEQUENCES OF OPERATION

1. Proceed with installation only when submittals have been reviewed byConsultant.
2. Install floor fire stopping before interior partition erections.
3. Metal deck bonding: fire stopping to precede spray applied fireproofing to ensure required bonding.
4. Mechanical pipe insulation: certified fire stop system component.
   4.1. Ensure pipe insulation installation precedes fire stopping.

3.5 FIELD QUALITY CONTROL

1. Inspections: notify Consultant when ready for inspection and prior to concealing or enclosing fire stopping materials and service penetration assemblies.
2. Manufacturer's Field Services:
   2.1. 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 PART 1 - SUBMITTALS.
   2.2. 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.
   2.3. Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE.

3.6 CLEANING

1. Proceed in accordance with Section 01 74 00 - 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.

3.7 SCHEDULE

1. Fire stop and smoke seal at:
   1.1. Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.
   1.2. Edge of floor slabs at curtain wall and precast concrete panels.
   1.3. Top of fire-resistance rated masonry and gypsum board partitions.
   1.4. Intersection of fire-resistance rated masonry and gypsum board partitions.

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

1.6. Penetrations through fire-resistance rated floor slabs, ceilings and roofs.

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

1.8. Around mechanical and electrical assemblies penetrating fire separations.

1.9. Rigid ducts: greater than 129 cm^2: 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.

END OF SECTION

SECTION 07 92 00
Joint Sealants

Part 1 General

1.1 REFERENCE STANDARDS

1. ASTM International
   1.1. ASTM C919-18, Standard Practice for Use of Sealants in Acoustical Applications.
2. Canadian General Standards Board (CGSB)
   2.1. CGSB 19-GP-5M-1984, Sealing Compound, One Component, Acrylic Base, Solvent Curing (Issue of 1976 reaffirmed, incorporating Amendment No. 1).
   2.2. CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.
   2.3. CGSB 19-GP-14M-1984, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing (Reaffirmation of April 1976).
   2.4. CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.
   2.5. CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.
3. General Services Administration (GSA) - Federal Specifications (FS)
   3.1. FS-SS-S-200-E(2)1993, Sealants, Joint, Two-Component, Jet-Blast-Resistant, Cold Applied, for Portland Cement Concrete Pavement.
4. Health Canada/Workplace Hazardous Materials Information System (WHMIS)
   4.1. Safety Data Sheets (SDS).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
   2.1. Submit manufacturer's instructions, printed product literature and data sheets for joint sealants and include product characteristics, performance criteria, physical size, finish and limitations.
   2.2. Manufacturer's product to describe:
      2.2.1. Caulking compound.
      2.2.2. Primers.
      2.2.3. Sealing compound, each type, including compatibility when different sealants are in contact with each other.
3. Samples:
   3.1. Submit 2 samples of each type of material and colour.
   3.2. Cured samples of exposed sealants for each colour where required to match adjacent material.
4. Manufacturer's Instructions:
   4.1. Submit instructions to include installation instructions for each product used.
5. Sustainable Design Submittals:
   5.1. Construction Waste Management:
      5.1.1. Submit project Waste Management Plan highlighting recycling and salvage requirements.

1.3 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.

1.4 DELIVERY, STORAGE AND HANDLING

1. Deliver, store and handle materials in accordance with Section 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:
   - 3.1. Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
   - 3.2. Store and protect joint sealants from nicks, scratches, and blemishes.
   - 3.3. Replace defective or damaged materials with new.
4. Packaging Waste Management: remove for reuse and return of packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 19 - Waste Management and Disposal.

1.5 SITE CONDITIONS

1. Ambient Conditions:
   - 1.1. Proceed with installation of joint sealants only when:
     - 1.1.1. Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4.4 degrees C.
     - 1.1.2. Joint substrates are dry.
     - 1.1.3. 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:
   - 2.1. 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:
   - 3.1. Proceed with installation of joint sealants only after contaminants capable of interfering with adhesion are removed from joint substrates.

1.6 ENVIRONMENTAL REQUIREMENTS

1. Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Safety Data Sheets (SDS) acceptable to Health Canada.

Part 2 Products

2.1 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. 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.
3. Where sealants are qualified with primers use only these primers.

2.2 SEALANT MATERIAL DESIGNATIONS

1. Polysulfide two part:
2. Silicones one part: to CAN/CGSB-19.13.
   2.1. ASTM C920, Type S, Grade NS, Class 25; non-sag type, standard colours
3. Acrylic latex one part: to CAN/CGSB-19.17.
   3.1. ASTM C834, paintable standard white colour.
4. Acoustical sealant: to ASTM C919.
5. Preformed compressible and non-compressible back-up materials:
   5.1. Polyethylene, urethane, neoprene or vinyl foam:
      5.1.1. Extruded closed cell foam backer rod.
      5.1.2. Size: oversize 30 to 50 %.
   5.2. Neoprene or butyl rubber:
      5.2.1. Round solid rod, Shore A hardness 70.
   5.3. High density foam:
      5.3.1. Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m^{3}density, or neoprene foam backer, size as recommended by manufacturer.
   5.4. Bond breaker tape:
      5.4.1. Polyethylene bond breaker tape which will not bond to sealant.

2.3 JOINT CLEANER

1. Non-corrosive and non-staining type, compatible with joint forming materials and sealant in accordance with sealant manufacturer's written recommendations.
2. Primer: in accordance with sealant manufacturer's written recommendations.

Part 3 Execution

3.1 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.
   1.1. Visually inspect substrate in presence of Consultant.
   1.2. Inform Consultant of unacceptable conditions immediately upon discovery.
   1.3. Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consutlant.

3.2 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 which 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.

3.3 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.

3.4 BACKUP MATERIAL

1. Apply bond breaker tape where required to manufacturer's instructions.
2. Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.5 MIXING

1. Mix materials in strict accordance with sealant manufacturer's instructions.

3.6 APPLICATION

1. Sealant:
    1.1. Apply sealant in accordance with manufacturer's written instructions.
    1.2. Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
    1.3. Apply sealant in continuous beads.
    1.4. Apply sealant using gun with proper size nozzle.
    1.5. Use sufficient pressure to fill voids and joints solid.
    1.6. Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
    1.7. Tool exposed surfaces before skinning begins to give slightly concave shape.
    1.8. Remove excess compound promptly as work progresses and upon completion.
2. Curing:
    2.1. Cure sealants in accordance with sealant manufacturer's instructions.
    2.2. Do not cover up sealants until proper curing has taken place.

3.7 CLEANING

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
    1.1. Leave Work area clean at end of each day.
    1.2. Clean adjacent surfaces immediately.
    1.3. Remove excess and droppings, using recommended cleaners as work progresses.
    1.4. 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 00 - Cleaning.

3. Waste Management: separate waste materials for reuse or recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

3.8 PROTECTION

1. Protect installed products and components from damage during construction.
2. Repair damage to adjacent materials caused by joint sealants installation.

END OF SECTION

SECTION 08 11 00
Metal doors and frames

Part 1 General

1.1 REFERENCE STANDARDS

1. American Society for Testing and Materials International (ASTM)
   1.1. ASTM A653/A653M-06a, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   1.2. ASTM B29-03, Standard Specification for Refined Lead.
   1.3. ASTM B749-03, Standard Specification for Lead and Lead Alloy Strip, Sheet and Plate Products.
2. Canadian General Standards Board (CGSB)
   2.1. CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
   2.2. CGSB 41-GP-19Ma-84, Rigid Vinyl Extrusions for Windows and Doors.
3. CSA Group (CSA)
   3.1. CSA-G40.20-04 /G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
   3.2. CSA W59-03, Welded Steel Construction (Metal Arc Welding).
4. Canadian Steel Door Manufacturers' Association (CSDMA)
   4.1. CSDMA, Recommended Specifications for Commercial Steel Doors and Frames, 2000.
   4.2. CSDMA, Selection and Usage Guide for Commercial Steel Doors, 1990.
5. National Fire Protection Association (NFPA)
   5.1. NFPA 80-99, Standard for Fire Doors and Fire Windows.
   5.2. NFPA 252-03, Standard Methods of Fire Tests of Door Assemblies.
6. Underwriters' Laboratories of Canada (ULC)
   6.1. CAN/ULC-S701-01, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
   6.2. CAN/ULC-S702-97, Standard for Thermal Insulation, Mineral Fibre, for Buildings.
   6.3. CAN/ULC-S704-03, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
   6.4. CAN4-S104-M80, Standard Method for Fire Tests of Door Assemblies.
   6.5. CAN4-S105-M85, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN4-S104.

1.2 SYSTEM DESCRIPTION

1. Design Requirements:
   1.1. Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35 degrees C to 35 degrees C.
   1.2. Maximum deflection for exterior steel entrance screens under wind load of 1.2 kPa not to exceed 1/175th of span.

1.3. Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104 NFPA 80, NFPA 252 for ratings specified or indicated.

1.4. Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN4-S104, NFPA 80, NFPA 252 and listed by nationally recognized agency having factory inspection services.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

1. Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
2. Provide product data: in accordance with Section 01 33 00 - Submittal Procedures.
3. Provide shop drawings: in accordance with Section 01 33 00 - Submittal Procedures.
   3.1. Submit drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada.
   3.2. Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, louvred, arrangement of hardware fire rating and finishes.
   3.3. Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings ,reinforcing, fire rating and finishes.
   3.4. Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.
   3.5. Submit test and engineering data, and installation instructions.
4. Provide samples in accordance with Section 01 33 00 - Submittal Procedures.

1.4 DELIVERY, STORAGE AND HANDLING

1. Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
2. Waste Management and Disposal:
   2.1. Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

Part 2 Products

2.1 MATERIALS

1. Hot dipped galvanized steel sheet: to ASTM A653M, ZF75, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.
   1.1. Minimum base steel thickness:
      1.1.1. Frames: 1.6mm
      1.1.2. Typical doors: 1.2mm
      1.1.3. Lock/strike reinforcements: 1.6mm
      1.1.4. Hinge reinforcements: 2.7mm
      1.1.5. All other reinforcements: 1.6mm
      1.1.6. Top and bottom channels: 1.2mm
      1.1.7. Glazing stops: 0.9mm
      1.1.8. Guard boxes: 0.9mm
      1.1.9. Jamb spreaders: 0.9mm

2. Reinforcement channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A653M, ZF75.
3. Composites: balance of core materials used in conjunction with lead: in accordance with manufacturers' proprietary design.

2.2 DOOR CORE MATERIALS

1. Stiffened: face sheets welded, insulated core.
   1.1. Interior Doors: Mineral fibre insulation with min. face density 24 kg/m^3.
   1.2. Fire Rated Doors: Mineral fibre insulation to CAN/ULC S702, Type 1A with min. face density 24 kg/m^3.
2. Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door to 250 degrees C at 60 minutes. Core to be tested as part of a complete door assembly, in accordance with CAN4-S104, NFPA 80, NFPA 252, covering Standard Method of Tests of Door Assemblies and listed by nationally recognized testing agency having factory inspection service.

2.3 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.
3. Lock-seam doors: fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive.

2.4 PRIMER

1. Touch-up prime CAN/CGSB-1.181.
   1.1. Maximum VOC limit 50 g/L to GC-03.

2.5 PAINT

1. Field paint steel doors and frames in accordance with Section 09 91 23 - Interior Painting. Protect weatherstrips, door silencers, labels and hardware from paint. Provide final finish free of scratches or other blemishes.
   1.1. Maximum VOC emission level 50 g/L to GS-11.

2.6 ACCESSORIES

1. Door silencers: single stud rubber/neoprene type.
2. Interior and Exterior bottom and top caps: steel.
3. Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.
4. Door bottom seal: In accordance with Door Hardware Schedule.
5. Metallic paste filler: to manufacturer's standard.
6. Fire labels: Brass plate, riveted to door and door frame, in accordance with ULC requirements..
7. Sealant: In accordance with Section 07 92 00 .
   7.1. Maximum VOC limit 250 g/L to SCAQMD Rule 1168.
8. Glazing: In accordance with Section 08 80 00.
9. Make provisions for glazing as indicated and provide necessary glazing stops.

9.1. Provide removable stainless steel glazing beads for use with glazing tapes and compounds and secured with countersunk stainless steel screws.

9.2. Design exterior glazing stops to be tamperproof.

2.7 FRAMES FABRICATION GENERAL

1. Fabricate frames in accordance with CSDMA specifications.
2. Fabricate frames to profiles and maximum face sizes as indicated.
3. Exterior frames: 1.6 mm thermally broken and welded type construction.
4. Interior frames: 1.6 mm welded type construction.
5. Blank, reinforce, drill and tap frames for mortised, templated hardware, electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.
6. Protect mortised cutouts with steel guard boxes.
7. Prepare frame for door silencers, 3 for single door, 2 at head for double door.
8. Manufacturer's nameplates on frames and screens are not permitted.
9. Conceal fastenings except where exposed fastenings are indicated.
10. Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.
11. Insulate exterior frame components with polyurethane insulation.

2.8 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 2 anchors for rebate opening heights up to 1520 mm and 1 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.

2.9 FRAMES: WELDED TYPE

1. Welding in accordance with CSA W59.
   1.1. Finished product to have no visible seams or joints, square, true and free of distortion.
   1.2. Welding to be continuous meeting requirements of CSA W47.1, unless specified otherwise.
2. Accurately mitre or mechanically joint frame product and securely weld on inside of profile.
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 sand to uniform smooth finish.
5. Securely attach floor anchors to inside of each jamb profile.
6. Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.
7. Securely attach lead to inside of frame profile from return to jamb soffit (inclusive) on door side of frame only.

2.10 DOOR FABRICATION GENERAL

1. Doors: swing type, flush, with provision for glass and/or louvre openings as indicated.

2. Exterior doors: slab insulated hollow steel construction. Interior doors: insulated hollow steel 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. Blank, reinforce, drill doors and tap for mortised, templated hardware electronic hardware.
5. Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.
6. Reinforce doors where required, for surface mounted hardware. Provide flush steel top caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.
7. Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.
8. Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in conformance with NFPA 80, NFPA 252, CAN4-S104, ASTM E152 and list 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.
9. Manufacturer's nameplates on doors are not permitted.

2.11 HOLLOW STEEL CONSTRUCTION

1. Form face sheets for exterior doors from 1.6 1.2 mm sheet steel.
2. Form face sheets for interior doors from 1.2mm sheet steel.
3. Reinforce doors with vertical stiffeners, securely welded to face sheets at 150 mm on centre maximum.
4. Fill voids between stiffeners of exterior doors with rigid poly/isocyanurate core.
5. Fill voids between stiffeners of interior doors with fibreglass core.

2.12 THERMALLY BROKEN DOORS AND FRAMES

1. Fabricate thermally broken doors by using insulated core and separating exterior parts from interior parts with continuous interlocking thermal break.
2. Thermal break: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma.
3. Fabricate thermally broken frames separating exterior parts form interior parts with continuous interlocking thermal break.
4. Apply insulation.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

1. Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION GENERAL

1. Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.
2. Install doors and frames to CSDMA Installation Guide.

3.3 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 1200 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. Caulk perimeter of frames between frame and adjacent material.
6. Maintain continuity of vapour retarder.

3.4 DOOR INSTALLATION

1. Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 - Doors Hardware.
2. Provide even margins between doors and jambs and doors and finished floorand thresholds as follows.
   2.1. Hinge side: 1.0 mm.
   2.2. Latchside and head: 1.5 mm.
   2.3. Finished floor, and thresholds: 13 mm.
3. Adjust operable parts for correct function.
4. Install louvres.

3.5 FINISH REPAIRS

1. Touch up with primer finishes damaged during installation.
2. Fill exposed frame anchors surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

3.6 GLAZING

1. Install glazing for doors frames in accordance with Section 08 80 50 - Glazing.

END OF SECTION

SECTION 08 71 00
Door Hardware

Part 1 General

1.1 REFERENCE STANDARDS

1. American National Standards Institute (ANSI)/Builders Hardware Manufacturers Association (BHMA)
   1.1. ANSI/BHMA A156.1-2000, American National Standard for Butts and Hinges.
   1.2. ANSI/BHMA A156.2-2003, Bored and Preassembled Locks and Latches.
   1.3. ANSI/BHMA A156.3-2001, Exit Devices.
   1.4. ANSI/BHMA A156.4-2000, Door Controls - Closers.
   1.5. ANSI/BHMA A156.5-2001, Auxiliary Locks and Associated Products.
   1.6. ANSI/BHMA A156.6-2005, Architectural Door Trim.
   1.7. ANSI/BHMA A156.8-2005, Door Controls - Overhead Stops and Holders.
   1.8. ANSI/BHMA A156.10-1999, Power Operated Pedestrian Doors.
   1.9. ANSI/BHMA A156.12-2005, Interconnected Locks and Latches.
   1.10. ANSI/BHMA A156.13-2002, Mortise Locks and Latches Series 1000.
   1.11. ANSI/BHMA A156.14-2002, Sliding and Folding Door Hardware.
   1.12. ANSI/BHMA A156.15-2006, Release Devices - Closer Holder, Electromagnetic and Electromechanical.
   1.13. ANSI/BHMA A156.16-2002, Auxiliary Hardware.
   1.14. ANSI/BHMA A156.17-2004, Self-closing Hinges and Pivots.
   1.15. ANSI/BHMA A156.18-2006, Materials and Finishes.
   1.16. ANSI/BHMA A156.19-2002, Power Assist and Low Energy Power - Operated Doors.
   1.17. ANSI/BHMA A156.20-2006, Strap and Tee Hinges and Hasps.
2. Canadian Steel Door and Frame Manufacturers' Association (CSDMA)
   2.1. CSDMA Recommended Dimensional Standards for Commercial Steel Doors and Frames - 2009.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
   2.1. Submit manufacturer's instructions, printed product literature and data sheets for door hardware and include product characteristics, performance criteria, physical size, finish and limitations.
3. Hardware List:
   3.1. Submit contract hardware list.
   3.2. Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.
4. Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

1.3 CLOSEOUT SUBMITTALS

1. Submit in accordance with Section 01 78 00 - Closeout Submittals.
2. Operation and Maintenance Data: submit operation and maintenance data for door hardware for incorporation into manual.

1.4 MAINTENANCE MATERIAL SUBMITTALS

1. Extra Stock Materials:
   1.1. Supply maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
   1.2. Tools:
      1.2.1. Supply 2 sets of wrenches for locksets.

1.5 QUALITY ASSURANCE

1. Regulatory Requirements:
   1.1. Hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.
2. Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.6 DELIVERY, STORAGE AND HANDLING

1. Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
2. Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
3. Package items of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.
4. Storage and Handling Requirements:
   4.1. Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
   4.2. Store and protect door hardware from nicks, scratches, and blemishes.
   4.3. Protect prefinished surfaces with strippable coating.
   4.4. Replace defective or damaged materials with new.

Part 2 Products

2.1 HARDWARE ITEMS

1. Refer to attached schedule

Part 3 Execution

3.1 INSTALLATION

1. Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
2. Supply metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.

3. Supply manufacturers' instructions for proper installation of each hardware component.
4. Install hardware to standard hardware location dimensions in accordance with CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction).
5. Where door stop contacts door pulls, mount stop to strike bottom of pull.
6. Install key control cabinet.
7. Use only manufacturer's supplied fasteners.
   7.1. Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.
8. Remove construction cores when directed by Owner.
   8.1. Install permanent cores and ensure locks operate correctly.

3.2 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.

3.3 CLEANING

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
   1.1. Leave Work area clean at end of each day.
   1.2. Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.
   1.3. Remove protective material from hardware items where present.
   1.4. Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
2. Waste Management: separate waste materials for reuse or recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
   2.1. Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.4 DEMONSTRATION

1. Keying System Setup and Cabinet:
   1.1. 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.
   1.2. Place file keys and duplicate keys in key cabinet on their respective hooks.
   1.3. Lock key cabinet and turn over key to Owner.
2. Maintenance Staff Briefing:
   2.1. Brief maintenance staff regarding:
      2.1.1. Proper care, cleaning, and general maintenance of projects complete hardware.
      2.1.2. Description, use, handling, and storage of keys.
      2.1.3. Use, application and storage of wrenches for locksets.
3. Demonstrate operation, operating components, adjustment features, and lubrication requirements.

3.5 PROTECTION

1. Protect installed products and components from damage during construction.
2. Repair damage to adjacent materials caused by door hardware installation.

3.6 SCHEDULE

1. See attached hardware schedule

END OF SECTION

Rivett Architectural Hardware Ltd.
Door Listing
PINE RIDGE S.S - CHANGERM RENO - 2155 LIVERPOOL RD, PICKERING

Schedule 200767
Date Jul 22/25

Door Number	Set Number
D109	1
D110	2
D111A	3
D111B	4
D111C	5
D111D	5
D111E	5
D111F	5
D111G	5
D111H	5
D111J	5
D111K	5
D111L	5
D111M	5
D111N	5
D111P	5
D111Q	5
D111R	5
D112	6
D112C	7
D112D	7
D112E	7
D112F	7
D112G	7
D112H	7
D112J	7
D112K	7
D112L	7
D112M	7
D112N	7
D112P	7
D112Q	7
D112R	7
D113	8
D114	9
D115	10
D116A	11
D116B	12

D119A	3
D119B	4
D120	6
D121	8
D122	9
D123	10

Rivett Architectural Hardware Ltd.
Hardware Schedule
PINE RIDGE S.S - CHANGERM RENO - 2155 LIVERPOOL RD, PICKERING

Schedule 200767
Date Jul 22/25

Set # 1

1 PAIR DRS. # D109 GYMNASIUM 1123X TO EQUIPEMENT STORAGE 109 LHRA RHR

1 -1930 x 2150 x 45 x PSF x HMD

		Qty			
:	:	6	EA	HINGE	BB1168-114 X 101-NRP-626
:	:	1	EA	CLASSROOM LOCK	L9070P X 03B X 626
:	:	2	EA	CLOSER C/W STOP	4040XPH X CUSH X 689
:	:	2	EA	FLUSH BOLT	282D X 626
:	:	2	EA	KICKPLATE	190S X 203 X 914 X 630
:	:	1	EA	ASTRAGAL	W25 X 7'-0" X 628

Set # 2

1 SGLE. DR. # D110 EXISTING CORRIDOR TO B/F WASHROOM 110 RH

1 -965 x 2150 x 45 x PSF x HMD x 20 MIN RATED

		Qty			
:	:	3	EA	HINGE	BB1168-114 X 101- 626
:	:	1	EA	STOREROOM LOCK	L9080P X 03B X 626
:	:	1	EA	DOOR OPERATOR	SW200i X SINGLE HSG X 628
:	:	1	EA	DOOR OPERATOR ADD ON	SW200i ADD FOR INSWING ARM
:	:	1	EA	OCCUPIED & EMERGENCY KIT SURF	#OCC-2-EMR-S ILL KIT
:	:	1	EA	ELECTRIC STRIKE	1600CLB X 630
:	:	1	EA	WALL STOP	232W X 626
:	:	1	EA	KICKPLATE	190S X 203 X 914 X 630
:	:	1	EA	SWEEP	W24S X 4'-0" X 628
:	:	1	EA	DOOR SIGNAGE	SUPPLIED BY OTHERS
:	:	1	EA	V-1072-ST/V-1072B-ST INTERCOM	SUPPLIED BY OTHERS

OCC-2-EMR-S KIT INCLUDES

2 EA BUTTON CM45/4 X 630

2 EA ILLUMINATED BOX CM-54GR

2 EA SIGN CM-54/SE1

CONTROLLER CX-33

1 EA ASSISTANCE REQUESTED CM-AF501SO (RECESSED BOX BY OTHERS)

1 EA POWER CONTROLER CX-PS13 V3

3 SURFACE BOXES CM-34BL

1 EA PUSH TO LOCK BUTTON CM45/8 X 630

1 EA SURFACE BOX CM-43CBL

1 EA DOOR CONTACT CX-MDC

1 EA CM-AF540SO PUSH FOR EMERGENCY BUTTON/ANNUNCIATOR (RECESSED BOX BY OTHERS)

1 EA TRANSFOMER 24VAC

1 EA SIGN CM-SE21A

MAIN 110V POWER SUPPLY & LOW VOLTAGE WIRING & MOUNTING BOXES FOR ASSOCIATED ACTUATORS & ACCESSORIES TO BE DONE BY ELECTRICAL DIVISION.
INSTALLATION OF POWER OPERATOR AND ASSOCIATED ELECTRONIC ACCESSORIES TO BE DONE BY HARDWARE SUPPLIER.

Rivett Architectural Hardware Ltd.

Hardware Schedule

PINE RIDGE S.S - CHANGERM RENO - 2155 LIVERPOOL RD, PICKERING

Schedule 200767
Date Jul 22/25

Set # 3

1 SGLE. DR. # D111A GYMNASIUM 1123X TO CHANGEROOM A 111 LH
1 SGLE. DR. # D119A GYMNASIUM 1123X TO CHANGEROOM B 119 RH

2 -965 x 2150 x 45 x PSF x HMD x 45 MIN RATED

		Qty			
:	:	6	EA	HINGE	BB1168-114 X 101-NRP-626
:	:	2	EA	CLASSROOM LOCK	L9070P X 03B X 626
:	:	2	EA	CLOSER	4040XP X 689
:	:	2	EA	WALL STOP	232W X 626
:	:	2	EA	KICKPLATE	190S X 203 X 914 X 630
:	:	2	EA	SMOKE SEAL	W22 X 18'-0"

Set # 4

1 SGLE. DR. # D111B CORRIDOR 116 TO CHANGEROOM A 111 LH
1 SGLE. DR. # D119B CORRIDOR 116 TO CHANGEROOM B 119 RH

2 -965 x 2150 x 45 x PSF x HMD

		Qty			
:	:	6	EA	HINGE	BB1168-114 X 101- 626
:	:	2	EA	CLASSROOM LOCK	L9070P X 03B X 626
:	:	2	EA	CLOSER - REG MOUNT	4040XP X 689
:	:	2	EA	KICKPLATE	190S X 203 X 914 X 630
:	:	2	EA	SURFACE HOLDER	904H X 630

Rivett Architectural Hardware Ltd.

Hardware Schedule

PINE RIDGE S.S - CHANGERM RENO - 2155 LIVERPOOL RD, PICKERING

Schedule 200767
Date Jul 22/25

Set # 5

1 SGLE. DR. # D111C CHANGEROOM A 111 TO CHANGEROOM STALL 111C LH
1 SGLE. DR. # D111D CHANGEROOM A 111 TO CHANGEROOM STALL 111D LH
1 SGLE. DR. # D111E CHANGEROOM A 111 TO CHANGEROOM STALL 111E LH
1 SGLE. DR. # D111F CHANGEROOM A 111 TO CHANGEROOM STALL 111F LH
1 SGLE. DR. # D111G CHANGEROOM A 111 TO CHANGEROOM STALL 111G LH
1 SGLE. DR. # D111H CHANGEROOM A 111 TO CHANGEROOM STALL 111H LH
1 SGLE. DR. # D111J CHANGEROOM A 111 TO CHANGEROOM STALL 111J LH
1 SGLE. DR. # D111K CHANGEROOM A 111 TO CHANGEROOM STALL 111K LH
1 SGLE. DR. # D111L CHANGEROOM A 111 TO CHANGEROOM STALL 111L LH
1 SGLE. DR. # D111M CHANGEROOM A 111 TO CHANGEROOM STALL 111M LH
1 SGLE. DR. # D111N CHANGEROOM A 111 TO CHANGEROOM STALL 111N RH
1 SGLE. DR. # D111P CHANGEROOM A 111 TO CHANGEROOM STALL 111P RH
1 SGLE. DR. # D111Q CHANGEROOM A 111 TO CHANGEROOM STALL 111Q RH
1 SGLE. DR. # D111R CHANGEROOM A 111 TO CHANGEROOM STALL 111R RH

14 -815 x 2150 x 45 x PSF x HMD

		Qty			
:	:	42	EA	HINGE	BB1279-114 X 101- 626
:	:	14	EA	PRIVACY C/W INDICATOR	L9044P X 03B OS-OCC X 626
:	:	14	EA	CLOSER	1461 X 689
:	:	14	EA	WALL STOP	232W X 626
:	:	14	EA	KICKPLATE	190S X 203 X 762 X 630
:	:	14	EA	SWEEP	W24S X 3'-0" X 628

Rivett Architectural Hardware Ltd.

Hardware Schedule

PINE RIDGE S.S - CHANGERM RENO - 2155 LIVERPOOL RD, PICKERING

Schedule 200767
Date Jul 22/25

Set # 6

1 SGLE. DR. # D112 CHANGEROOM A 111 TO B/F WASHROOM & SHOWER 112 RH
1 SGLE. DR. # D120 CHANGEROOM B 119 TO B/F WASHROOM & SHOWER 120 LH

2 -965 x 2150 x 45 x PSF x HMD

		Qty			
:	:	6	EA	HINGE	BB1168-114 X 101- 626
:	:	2	EA	STOREROOM LOCK	L9080P X 03B X 626
:	:	2	EA	DOOR OPERATOR	SW200i X SINGLE HSG X 628
:	:	2	EA	DOOR OPERATOR ADD ON	SW200i ADD FOR INSWING ARM
:	:	2	EA	OCCUPIED & EMERGENCY KIT SURF	#OCC-2-EMR-S ILL KIT
:	:	2	EA	ELECTRIC STRIKE - FAIL SAFE	1600CLB X FS X 630
:	:	2	EA	CONCEALED STOP @ 110 DEG OPEN	104S X 630
:	:	2	EA	KICKPLATE	190S X 203 X 914 X 630
:	:	2	EA	SWEEP	W24S X 4'-0" X 628
:	:	2	EA	DOOR SIGNAGE	SUPPLIED BY OTHERS
:	:	2	EA	V-1072A-ST/V-1072B-ST INTERCOM	SUPPLIED BY OTHERS

OCC-2-EMR-S KIT INCLUDES

2 EA BUTTON CM45/4 X 630

2 EA ILLUMINATED BOX CM-54GR

2 EA SIGN CM-54/SE1

CONTROLLER CX-33

1 EA ASSISTANCE REQUESTED CM-AF501SO (RECESSED BOX BY OTHERS)
1 EA POWER CONTROLER CX-PS13 V3

3 SURFACE BOXES CM-34BL

1 EA PUSH TO LOCK BUTTON CM45/8 X 630

1 EA SURFACE BOX CM-43CBL

1 EA DOOR CONTACT CX-MDC

1 EA CM-AF540SO PUSH FOR EMERGENCY BUTTON/ANNUNCIATOR (RECESSED BOX BY OTHERS)
1 EA TRANSFOMER 24VAC

1 EA SIGN CM-SE21A

MAIN 110V POWER SUPPLY & LOW VOLTAGE WIRING & MOUNTING BOXES FOR ASSOCIATED ACTUATORS & ACCESSORIES TO BE DONE BY ELECTRICAL DIVISION.
INSTALLATION OF POWER OPERATOR AND ASSOCIATED ELECTRONIC ACCESSORIES TO BE DONE BY HARDWARE SUPPLIER.

Rivett Architectural Hardware Ltd.

Hardware Schedule

PINE RIDGE S.S - CHANGERM RENO - 2155 LIVERPOOL RD, PICKERING

Schedule 200767
Date Jul 22/25

Set # 7

1 SGLE. DR. # D112C CHANGEROOM B 112 TO CHANGEROOM STALL 112C RH
1 SGLE. DR. # D112D CHANGEROOM B 112 TO CHANGEROOM STALL 112D RH
1 SGLE. DR. # D112E CHANGEROOM B 112 TO CHANGEROOM STALL 112E RH
1 SGLE. DR. # D112F CHANGEROOM B 112 TO CHANGEROOM STALL 112F RH
1 SGLE. DR. # D112G CHANGEROOM B 112 TO CHANGEROOM STALL 112G RH
1 SGLE. DR. # D112H CHANGEROOM B 112 TO CHANGEROOM STALL 112H RH
1 SGLE. DR. # D112J CHANGEROOM B 112 TO CHANGEROOM STALL 112J RH
1 SGLE. DR. # D112K CHANGEROOM B 112 TO CHANGEROOM STALL 112K RH
1 SGLE. DR. # D112L CHANGEROOM B 112 TO CHANGEROOM STALL 112L RH
1 SGLE. DR. # D112M CHANGEROOM B 112 TO CHANGEROOM STALL 112M RH
1 SGLE. DR. # D112N CHANGEROOM B 112 TO CHANGEROOM STALL 112N LH
1 SGLE. DR. # D112P CHANGEROOM B 112 TO CHANGEROOM STALL 112P LH
1 SGLE. DR. # D112Q CHANGEROOM B 112 TO CHANGEROOM STALL 112Q LH
1 SGLE. DR. # D112R CHANGEROOM B 112 TO CHANGEROOM STALL 112R LH

14 -815 x 2150 x 45 x PSF x HMD

		Qty			
:	:	42	EA	HINGE	BB1279-114 X 101- 626
:	:	14	EA	PRIVACY C/W INDICATOR	L9044P X 03B OS-OCC X 626
:	:	14	EA	CLOSER	1461 X 689
:	:	14	EA	WALL STOP	232W X 626
:	:	14	EA	KICKPLATE	190S X 203 X 762 X 630
:	:	14	EA	SWEEP	W24S X 3'-0" X 628

Set # 8

1 SGLE. DR. # D113 CHANGEROOM A 111 TO TEAM ROOM A 113 RH
1 SGLE. DR. # D121 CHANGEROOM B 119 TO TEAM ROOM B 121 LH

2 -965 x 2150 x 45 x PSF x HMD

		Qty			
:	:	6	EA	HINGE	BB1168-114 X 101- 626
:	:	2	EA	CLASSROOM LOCK	L9070P X 03B X 626
:	:	2	EA	CLOSER - REG MOUNT	4040XP X 689
:	:	2	EA	KICKPLATE	190S X 203 X 914 X 630
:	:	2	EA	SURFACE HOLDER	904H X 630

Rivett Architectural Hardware Ltd.
Hardware Schedule
PINE RIDGE S.S - CHANGERM RENO - 2155 LIVERPOOL RD, PICKERING

Schedule 200767
Date Jul 22/25

Set # 9

1 SGLE. DR. # D114 CHANGEROOM A 111 TO WASHROOM 114 LH
1 SGLE. DR. # D122 CHANGEROOM B 119 TO WASHROOM 122 RH

2 -815 x 2150 x 45 x PSF x HMD

		Qty			
:	:	6	EA	HINGE	BB1168-114 X 101- 626
:	:	2	EA	PRIVACY C/W INDICATOR	L9044P X 03B OS-OCC X 626
:	:	2	EA	CLOSER	4040XP X 689
:	:	2	EA	WALL STOP	232W X 626
:	:	2	EA	KICKPLATE	190S X 203 X 762 X 630
:	:	2	EA	SIGNAGE	SUPPLIED BY OTHERS

Set # 10

1 SGLE. DR. # D115 CHANGEROOM A 111 TO SHOWER 115 RH
1 SGLE. DR. # D123 CHANGEROOM B 119 TO SHOWER 123 LH

2 -815 x 2150 x 45 x PSF x HMD

		Qty			
:	:	6	EA	HINGE	BB1168-114 X 101- 626
:	:	2	EA	PRIVACY C/W INDICATOR	L9044P X 03B OS-OCC X 626
:	:	2	EA	CLOSER	4040XP X 689
:	:	2	EA	WALL STOP	232W X 626
:	:	2	EA	KICKPLATE	190S X 203 X 762 X 630
:	:	2	EA	SIGNAGE	SUPPLIED BY OTHERS

Set # 11

1 SGLE. DR. # D116A GYMNASIUM 1123X TO CORRIDOR 116 LHR

1 -965 x 2150 x 45 x PSF x HMD x 45 MIN RATED DR#116A

		Qty			
:	:	3	EA	HINGE	BB1168-114 X 101- 626
:	:	1	EA	PANIC DEVICE - 4' BAR	BE98L-F X 996L X LHR X 630
:	:	1	EA	CLOSER	4040XP X 689
:	:	1	EA	KICKPLATE	190S X 203 X 914 X 630
:	:	1	EA	SMOKE SEAL	W22 X 18'-0"

Rivett Architectural Hardware Ltd.

Hardware Schedule

PINE RIDGE S.S - CHANGERM RENO - 2155 LIVERPOOL RD, PICKERING

Schedule 200767
Date Jul 22/25

Set # 12

1 SGLE. DR. # D116B EXISTING CORRIDOR TO CORRIDOR 116 RHR

1 -965 x 2150 x 45 x PSF x HMD x 20 MIN RATED

		Qty			
:	:	3	EA	HINGE	BB1168-114 X 101-NRP-626
:	:	1	EA	PANIC DEVICE - 4' BAR	98L-F X 996L X RHR X 630
:	:	1	EA	RIM CYL.	20-021 X 626
:	:	1	EA	DOOR OPERATOR	SW200i X SINGLE HSG X 628
:	:	2	EA	PUSH TO OPEN BUTTON	#CM-45/4 X 630
:	:	1	EA	ELECTRIC STRIKE	9500 X UL X 630
:	:	1	EA	SURFACE BOX SINGLE	#CM-34BL
:	:	1	EA	KEYSWITCH WITH LED	#CM-1110-7224
:	:	1	EA	MORTISE CYL.	20-001 X 1.125 X 626
:	:	1	EA	KICKPLATE	190S X 203 X 914 X 630
:	:	1	EA	SMOKE SEAL	W22 X 18'-0"

MAIN 110V POWER SUPPLY & LOW VOLTAGE WIRING & MOUNTING BOXES FOR ASSOCIATED ACTUATORS & ACCESSORIES TO BE DONE BY ELECTRICAL DIVISION.
INSTALLATION OF POWER OPERATOR AND ASSOCIATED ELECTRONIC ACCESSORIES TO BE DONE BY HARDWARE SUPPLIER.

SECTION 08 80 00
Glazing

Part 1 General

1.1 REFERENCE STANDARDS

1. ASTM International
   1.1. ASTM C542-05, Standard Specification for Lock-Strip Gaskets.
   1.2. ASTM D790-07e1, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
   1.3. ASTM D1003-07e1, Standard Test Method for Haze and Luminous Transmittance of Plastics.
   1.4. ASTM D1929-96 (R2001)e1, Standard Test Method for Determining Ignition Temperature of Plastics.
   1.5. ASTM D2240-05, Standard Test Method for Rubber Property - Durometer Hardness.
   1.6. ASTM E84-10, Standard Test Method for Surface Burning Characteristics of Building Materials.
   1.7. ASTM E330-02, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
   1.8. ASTM F1233-08, Standard Test Method for Security Glazing Materials and Systems.
2. Canadian General Standards Board (CGSB)
   2.1. CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass.
   2.2. CAN/CGSB-12.2-M91, Flat, Clear Sheet Glass.
   2.3. CAN/CGSB-12.3-M91, Flat, Clear Float Glass.
   2.4. CAN/CGSB-12.4-M91, Heat Absorbing Glass.
   2.5. CAN/CGSB-12.6-M91, Transparent (One-Way) Mirrors.
   2.6. CAN/CGSB-12.8-97, Insulating Glass Units.
   2.7. CAN/CGSB-12.8-97 (Amendment), Insulating Glass Units.
   2.8. CAN/CGSB-12.9-M91, Spandrel Glass.
   2.9. CAN/CGSB-12.10-M76, Glass, Light and Heat Reflecting.
   2.10. CAN/CGSB-12.11-M90, Wired Safety Glass.
   2.11. CAN/CGSB-12.12-M90, Plastic Safety Glazing Sheets.
   2.12. CAN/CGSB-12.13-M91, Patterned Glass.
3. Environmental Choice Program (ECP)
   3.1. CCD-045-95 (R2005), Sealants and Caulking Compounds.
4. Glass Association of North American (GANA)
   4.1. GANA Glazing Manual - 2008.
   4.2. GANA Laminated Glazing Reference Manual - 2009.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:

2.1. 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.

3. Shop Drawings:
   3.1. Submit drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada.
4. Samples:
   4.1. Submit for review and acceptance of each unit.
   4.2. Samples will be returned for inclusion into work.
   4.3. Submit duplicate 300x300 mm size samples of and sealant material.
5. Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
6. Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
   6.1. Submit testing and analysis of glass under provisions of Section 01 45 00 - Quality Control.

1.3 CLOSEOUT SUBMITTALS

1. Submit in accordance with Section 01 78 00 - Closeout Submittals.
2. Operation and Maintenance Data: submit operation and maintenance data for glazing for incorporation into manual.

1.4 QUALITY ASSURANCE

1. Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.5 DELIVERY, STORAGE AND HANDLING

1. Deliver, store and handle materials in accordance with Section with manufacturer's written instructions 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:
   3.1. Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
   3.2. Store and protect glazing and frames from nicks, scratches, and blemishes.
   3.3. Protect prefinished aluminum surfaces with wrapping.
   3.4. Replace defective or damaged materials with new.
4. Packaging Waste Management: remove for reuse and return of packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 19 - Waste Management and Disposal.

1.6 AMBIENT CONDITIONS

1. Ambient Requirements:
   1.1. Install glazing when ambient temperature is 10 degrees C minimum. Maintain ventilated environment for 24 hours after application.

1.2. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.7 DESIGN REQUIREMENTS

1. Glass Design:
   1.1. Design glass using a probability of breakage of 8 lites per 1000 at the first application of design load.
   1.2. Design glass to CAN/CGSB-12.20-M. Perform stress analysis. Design units to accommodate live, dead, lateral, wind, seismic, handling, transportation, and erection loads.
   1.3. Perform a thermal stress analysis on each glass unit with Low-E coating and provide heat strengthening and/or tempered units as necessary to prevent thermal breakage.
   1.4. Perform a thermal stress analysis on each insulating thermal unit and provide heat strengthening and/or tempered units as necessary to pervent themal breakage.
   1.5. Where required, design glazing units so as not to allow thermal stress fracture due to heat build-up behind insulating units.
2. Structural Glazing:
   2.1. Carry out design of structural silicone joints by rational analysis including all movements specified herein. Maximum stress shall not exceed 138 kPa (20 psi) in tension or shear for short term loading. Maximum stress in shear for long term loading due to the dead load of glass shall not exceed 7 kPa (1 psi) or the limit imposed by sealant manufacturer, whichever is less.
   2.2. The joint shall be essentially rectangular in shape and shall include no internal corners which could precipitate tearing or create high local stresses.
   2.3. Single Source Responsibility for Sealants, Gaskets and Other Glazing Accessories: In order to ensure consistent quality of performance, provide all glazing sealants and seals from a single manufacturer.
   2.4. Preconstruction Compatibility and Adhesion Testing: Submit to sealant manufacturer, samples of each glass, gasket, glazing accessory and glass- framing member that will contact or affect glazing sealants for compatibility and adhesion testing. Schedule submission of test samples to provide sufficient time for testing and analysis of results to prevent delay in the progress of work.
3. Limit glass deflection to flexural limit of glass with full recovery of glazing materials.
4. Utilize inner light of multiple light sealed units for continuity of air and vapour seal.
5. Design window glazing with the following properties:
   5.1. U-Value: R3.
   5.2. Solar heat gain: 0.38.
   5.3. Shading Coefficient: 0.44.

Part 2 Products

2.1 MATERIALS

1. Flat Glass:
   1.1. Float glass: to CAN/CGSB-12.3, glazing quality, 6 mm thick.
   1.2. Glass in doors, side lights screens to be fire -rated, impact-rated, transparent, 5mm thick.
      1.2.1. Fire resistance rating : 20 minutes
      1.2.2. Acceptable Product: FireLite Plus by TGP

1.3. Safety glass: to CAN/CGSB-12.1, transparent, 12.7 mm thick.
1.3.1. Type tempered.
1.3.2. Class B-float.
1.3.3. Category 11.
1.3.4. Edge treatment: Polished.
1.4. Fire Rated impact-rated Glass : transparent, 27 mm thick.
1.4.1. Fire Resistance Rating:60Min.
1.4.2. STC:44
1.4.3. Fire Barrier
1.4.4. Acceptable Product: FIREGLASS by Pilkinton Pyrostop.
1.5. Silvered mirror glass: 6 mm thick.
1.5.1. Type 1B-float glass for high humidity use.
1.5.2. Custom Size and as indicated in the drawings.

2. Plastic Film: in accordance with Section 08 87 53 - Security Films.
3. Sealant: in accordance with Section 07 92 00 - Joint Sealants.
3.1. VOC limit 250 g/L maximum to SCAQMD Rule 1168.
3.1.1. VOC limit: 5 % maximum by weight to CCD-045.
3.1.2. Ensure sealant does not contain chemical restrictions to CCD-045.

2.2 ACCESSORIES

1. Setting blocks (regular): EPDM, 80- 90 Shore A durometer hardness to ASTM D2240, to suit glazing method, glass light weight and area.
2. Setting blocks (structural): Silicone setting blocks with Shore, Type A durometer hardness of 85, plus or minus 5 to ASTM D2240, sized to suit glazing method, glass unit weight and area.
3. Edge blocks: EPDM, 60-70 Shore A Durometer hardness, sized with 3 mm clearance from glass edge and spanning glass thickness(es). Capable of withstanding weight of glass unit, self adhesive on face.
4. Spacer shims: EPDM, 50-60 Shore A durometer hardness to ASTM D2240, 75 mm long x one half height of glazing stop x thickness to suit application. Self adhesive on one face.
5. Glazing and rebate primers, sealants, sealers, and cleaners: Compatible with each other. Type as recommended by glass manufacturer.
6. Glazing Sealant (regular): Silicone sealant as recommended by glazing manufacturer. Verify compatibility with insulating glass unit secondary sealant.
7. Glazing Sealant (structural):
7.1. Silicone, One Part in accordance with ASTM C920, Type S or M, Grade NS, Class 25.
7.2. Structural glazing tensile bead: 'Spectrem 2 Sealant' by Tremco or 'Dow 795' by Dow Corning.
7.3. Structural glazing weather bead:'Spectrem 2 Sealant' by Tremco or 'Dow 795' by Dow Corning.
7.4. Structural glazing (factory glazed): Two-part, neutral cure silicone sealant, 'Proglaze II' by Tremco or 'Dow 983' by Dow Corning.
7.5. Colour to be selected by Consultant.
8. Glazing gasket: 'Visionstrip' by Tremvo Ltd., extruded composite glazing seal, size as recommended by manufacturer.

9. Heel & toe bead: Silicone sealant as recommended by glazing manufacturer.
10. Glazing tape:
    10.1. 'Polyshim II' glazing tape EPDM shim.
11. Glazing splines: resilient EPDM or neoprene, extruded shape to suit glazing channel retaining slot, black colour as selected by consultant.
12. Glazing clips: manufacturer's standard type.
13. Lock-strip gaskets: to ASTM C542.
14. Glass presence markers: Easily removable, non-residue depositing.
15. Screws, bolts and fasteners: Type 304 stainless steel.

Part 3 Execution

3.1 EXAMINATION

1. 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.
    1.1. Verify that openings for glazing are correctly sized and within tolerance.
    1.2. Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.
    1.3. Visually inspect substrate in presence of Consultant.
    1.4. Inform Consultant of unacceptable conditions immediately upon discovery.
    1.5. Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.2 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.

3.3 INSTALLATION: INTERIOR - DRY METHOD (TAPE AND 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.
6. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
7. Knife trim protruding tape.

3.4 INSTALLATION: MIRRORS

1. Set mirrors with adhesive, applied in accordance with adhesive manufacturer's instructions.
2. Set mirrors with clips. Anchor rigidly to wall construction.
3. Set in frame.

4. Place plumb and level.

3.5 INSTALLATION: PLASTIC FILM

1. Install plastic film with adhesive, applied in accordance with film manufacturer's instructions.
2. Place without air bubbles, creases or visible distortion.
3. Fit tight to glass perimeter with razor cut edge.

3.6 CLEANING

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
   1.1. Leave Work area clean at end of each day.
      1.1.1. Remove traces of primer, caulking.
      1.1.2. Remove glazing materials from finish surfaces.
      1.1.3. Remove labels.
      1.1.4. Clean glass and mirrors using approved non-abrasive cleaner in accordance with manufacturer's instructions.
   1.2. Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
2. Waste Management: separate waste materials for reuse or recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
   2.1. Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.7 PROTECTION

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.
   2.1. Do not mark heat absorbing or reflective glass units.
3. Repair damage to adjacent materials caused by glazing installation.

END OF SECTION

SECTION 08 87 23
Surface films

Part 1 General

1.1 SUMMARY

1. Section Includes:
   1.1. Glazing film for interior screens

1.2 REFERENCE STANDARDS

1. International Window Film Association (IWFA)
   1.1. IWFA Visual Quality Standard for Applied Window Film 1999.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

1. Submittals in accordance with Section 01 33 00 - Submittal Procedures.
2. Shop Drawings
   2.1. Indicate dimension, seams, colours and film type
3. Samples
   3.1. For non-custom films, provide 300mm x300mm sample for reach film type.
   3.2. For custom printed films, Provide test print of a representative area of the graphic for each film type/unique graphic.

1.4 QUALITY ASSURANCE

1. Perform work in accordance with manufacturer's instructions.
2. Film to be installed by a Certified Applicator in order for a full manufacturer's warranty to apply.

1.5 WARRANTY

1. Contractor hereby warrants that Films will stay in place without delaminating, peeling or blistering in accordance with CCDC 2 GC24, but for 2 years.
2. Ensure warranty includes items as follows:
   2.1. Maintaining adhesion properties without blistering, bubbling or delaminating from glass surface.
   2.2. Maintaining appearance without discolouration.
   2.3. Removing, replace and reapply defective materials.
   2.4. In event of product failure under warranty terms, remove and re-apply film without glass replacement at no cost to Owner.

Part 2 Products

2.1 MATERIALS

1. Custom safety film for interior Glazing (**FLM1**)
   1.1. Clear film with printed graphic. Allow for frosted and up to 2 custom colours

1.2. See drawings for location of glazing film. Account for 50% coverage on glazing surfaces indicated

1.3. Graphic artwork to be submitted by consultant

1.4. Supplier: TI Group/BGM Imaging. Contact: Jasmin Chandler 416-271-9716

2. Custom Colour Film Change Room A
   2.1. Solar graphics, 4520 Lavender (**FLM2**)
   2.2. Graphic artwork to be submitted by consultant
   2.3. Supplier: TI Group/BGM Imaging. Contact: Jasmin Chandler 416-271-9716
3. Custom Colour Film Change Room B
   3.1. Solar graphics, 6360 Jade Green(**FLM3**)
   3.2. Graphic artwork to be submitted by consultant
   3.3. Supplier: TI Group/BGM Imaging. Contact: Jasmin Chandler 416-271-9716
4. Graphic Film for Textured Surfaces
   4.1. 3M IJ8624 Scotchcal Graphic Film (**FLM4**)

Part 3 Execution

3.1 PREPARATION

1. Examine glass surfaces to receive a new film and verify that they are free from defects and imperfections.
2. The window and window framing will be cleaned thoroughly with a neutral cleaning solution. The surface of the window glass where the film is to be applied shall be bladed with industrial razors to ensure safe removal of any foreign contaminants.
3. Toweling or other absorbent material shall be placed in the window will or sash to absorb moisture generated by the installation of the film

3.2 INSTALLATION

1. The film must be applied as to the specifications of the Manufacturer by a Certified Dealer/Applicator.
2. Materials will be delivered to the job site with the manufacturer’s labels intact and legible.
3. To minimize waste, the film will be cut to specification. Film edges shall be cut neatly and squarely at a uniform distance of 1/8” to 1/16” from the window sealing device.
4. Clear, clean water with a small amount of slip solution will be used to activate the pressure sensitive adhesive and facilitate the proper positioning of the film on the glass.
5. To ensure efficient removal of excess water from the underside of the film and to maximize the bonding of the pressure sensitive adhesive, polyplastic bladed squeegees will be utilized.
6. Upon completion, the film may have a dimpled appearance from residual moisture. Said moisture, shall dry flat with no moisture dimples within a period of 30 days under reasonable weather conditions.
7. After application, any leftover material will be removed and work area will be returned to at least the original condition. All necessary means will be used to protect the film before, during and after installation.

3.3 FINAL CLEANING

1. The film can be washed using common window cleaning solutions, including ammonia based cleaners. Abrasive type cleaning agents and bristle brushes that could scratch the film must not be used. Synthetic sponges or soft cloths are recommended.

END OF SECTION

SECTION 09 21 16
Gypsum Board Assemblies

Part 1 General

1.1 REFERENCE STANDARDS

1. Aluminum Association (AA)
   1.1. AA DAF 45-03 (R2009), Designation System for Aluminum Finishes.
2. American Society for Testing and Materials (ASTM)
   2.1. ASTM C475-02 (2015), Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
   2.2. ASTM C514-04 (2014), Standard Specification for Nails for the Application of Gypsum Board.
   2.3. ASTM C557-03 (2009)e1, Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
   2.4. ASTM C840-16, Standard Specification for Application and Finishing of Gypsum Board.
   2.5. ASTM C954-15, Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
   2.6. ASTM C1002-14, 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.
   2.7. ASTM C1047-14a, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
   2.8. ASTM C1177/C1177M-13, Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
   2.9. ASTM C1178/C1178M-13, Standard Specification for Glass Mat Water-Resistant Gypsum Backing Board.
   2.10. ASTM C1280-13a, Standard Specification for Application of Gypsum Sheathing.
   2.11. ASTM C1396/C1396M-14a, Standard Specification for Gypsum board.
3. Association of the Wall and Ceilings Industries International (AWCI)
   3.1. AWCI Levels of Gypsum Board Finish-GA-214-2015.
4. Canadian General Standards Board (CGSB)
   4.1. CAN/CGSB-51.34-M86 (R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
   4.2. CAN/CGSB-71.25-M88, Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.
5. Green Seal Environmental Standards (GS)
   5.1. GS-11-2008, 2nd Edition, Paints and Coatings.
6. South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
   6.1. SCAQMD Rule 1113-A2007, Architectural Coatings.
   6.2. SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
7. Underwriters' Laboratories of Canada (ULC)

7.1. CAN/ULC-S102-10, Standard Method of Test of Surface Burning Characteristics of Building Materials and Assemblies.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
   2.1. Submit manufacturer's instructions, printed product literature and data sheets for gypsum board assemblies and include product characteristics, performance criteria, physical size, finish and limitations.

1.3 DELIVERY, STORAGE AND HANDLING

1. Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
2. Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address and applicable standard designation.
3. Exercise care in unloading gypsum board materials shipment to prevent damage.
4. Storage and Handling Requirements in accordance with ASTM C 840–16:
   4.1. Store gypsum board assemblies materials level flat indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
   4.2. Store and protect gypsum board assemblies from nicks, scratches, and blemishes.
   4.3. Protect gypsum board from direct exposure to rain, snow, sunlight, or other excessive weather conditions.
   4.4. Protect ready mix joint compounds from freezing, exposure to extreme heat and direct sunlight.
   4.5. Protect from weather, elements and damage from construction operations.
   4.6. Handle gypsum boards to prevent damage to edges, ends or surfaces.
   4.7. Protect prefinished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.
   4.8. Replace defective or damaged materials with new.

1.4 AMBIENT CONDITIONS

1. Maintain temperature 10 °C minimum, 21 °C maximum for 48 hours prior to and during application of gypsum boards and joint treatment, and for 48 hours minimumafter completion of joint treatment.
2. Apply board and joint treatment to dry, clean, 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.

Part 2 Products

2.1 MATERIALS

1. Standard board: to ASTM C1396/C1396M–14 Type X, 15.9mm thick, 1200 mm wide x maximum practical length, ends square cut, edges squared.
2. Impact Resistant Gypsum Board; Heavy duty glass mat facers with dense water resistant treated gypsum core ans embedded fiberglass mesh enforcement, to ASTM C1658 and ASTM C1629, Type X 15.9mm thick, 1200mm wide x maximum practical length. Score of 10 (no mould growth) as per ASTM D3273)

3. Glass mat water-resistant gypsum backing board: to ASTM C1178/C1178M-13, 16 mm thick, 1200 mm wide x maximum practical length.
4. Glass mat gypsum substrate sheathing: to ASTM C1177/C1177M-13, 16 mm thick, 1200 mm wide x maximum practical length.
5. Metal furring runners, hangers, tie wires, inserts, and anchors: to ASTM C840.
6. Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.
7. Resilient drywall furring: 0.5 mm base steel thickness galvanized steel for resilient attachment of gypsum board.
8. Nails: to ASTM C514-14.
9. Steel drill screws: to ASTM C1002-14.
10. Stud adhesive: to CAN/CGSB-71.25.
11. Laminating compound: as recommended by manufacturer, asbestos-free.
12. Casing beads, corner beads, control joints and edge trim: to ASTM C1047, ABS, 0.5 mm base thickness, perforated flanges, one piece length per location.
13. Shadow gap: Bailey D300 Metal trim, CGC Dur-a-bead or Nicolson Rollforming No 114, fillable edge trim, 0.55mm (0.022") base thickness commercial grade sheet steel with zinc wiped coating to ASTM A 525-93; perforated flanges; one piece length per location. To be used at the junction of all dissimilar materials.
14. Sealants: in accordance with Section 07 92 00 - Joint Sealants.
    14.1. VOC limit 250 g/L maximum to SCAQMD Rule 1168.
    14.2. Acoustic sealant: in accordance with Section 07 92 00 - Joint Sealants.
15. Polyethylene: to CAN/CGSB-51.34, Type 2.
16. Insulating strip: rubberized, moisture resistant, 3 mm thick cork strip, 12 mm wide, with self-sticking permanent adhesive on one face, lengths as required.
17. Joint compound: to ASTM C475, asbestos-free.
18. Tapeable Access Panels for GWB ceilings: Manufacturer: T.A.P. Thickness: 16mm, sizes 610x610, 460X460, 305x305 As required for equipment /valve access . Coordinate with Mechanical and Electrical trade.

2.2 FINISHES

1. Texture finish: asbestos-free standard white texture coating and primer-sealer, recommended by gypsum board manufacturer.
    1.1. Primer: VOC limit 50 g/L maximum to SCAQMD Rule 1113.

Part 3 Execution

3.1 EXAMINATION

1. Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for gypsum board assemblies installation in accordance with manufacturer's written instructions.
    1.1. Visually inspect substrate in presence of Consultant.
    1.2. Inform Consultant of unacceptable conditions immediately upon discovery.

1.3. Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from consultant.

3.2 ERECTION

1. Do application and finishing of gypsum board to ASTM C840-16 except where specified otherwise.
2. Do application of gypsum sheathing to ASTM C1280-13a.
3. Erect hangers and runner channels for suspended gypsum board ceilings to ASTM C840-16 except where specified otherwise.
4. Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
5. Install work level to tolerance of 1:1200.
6. Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles, etc.
7. Install 19 x 64 mm furring channels parallel to, and at exact locations of steel stud partition header track.
8. Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.
9. Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
10. Install wall furring for gypsum board wall finishes to ASTM C840–16, except where specified otherwise.
11. Furr openings and around built-in equipment, cabinets, access panels, etc, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.
12. Furr duct shafts, beams, columns, pipes and exposed services where indicated.
13. Erect drywall resilient furring transversely across studs, spaced maximum 600 mm on centre and not more than 150 mm from ceiling/wall juncture. Secure to each support with 25mm drywall screw.
14. Install 150 mm continuous strip of 12.7 mm gypsum board along base of partitions where resilient furring installed.

3.3 APPLICATION

1. Apply gypsum board after bucks, anchors, blocking, sound attenuation, electrical and mechanical work have been approved.
2. Apply double layer gypsum board to metal furring or framing using stud adhesive screw fasteners for the first layer, and laminating adhesive for second layer. Maximum spacing of screws 300 mm on centre.
   2.1. Single-Layer Application:
      2.1.1. Apply gypsum board on ceilings prior to application of walls to ASTM C840-16.
      2.1.2. Apply gypsum board on walls vertically or horizontally, providing sheet lengths that will minimize number of board edges or end joints.
   2.2. Double-Layer Application:
      2.2.1. Install gypsum board for base layer and exposed gypsum board for face layer.
      2.2.2. 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.
      2.2.3. Apply base layers at right angles to supports unless otherwise indicated.

2.2.4. 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. Apply single layer gypsum board to concrete concrete block surfaces, where indicated, using laminating adhesive.
   3.1. Comply with gypsum board manufacturer's recommendations.
   3.2. Brace or fasten gypsum board until fastening adhesive has set.
   3.3. Mechanically fasten gypsum board at top and bottom of each sheet.
4. Exterior Soffits and Ceilings: install exterior gypsum board perpendicular to supports; stagger end joints over supports. Install with 6 mm gap where boards abut other work.
5. Apply water-resistant gypsum board where wall tiles to be applied. Apply water-resistant sealant to edges, ends, cut-outs which expose gypsum core and to fastener heads. Do not apply joint treatment on areas to receive tile finish.
6. Apply 12 mm diameter bead of acoustic sealant continuously around periphery of each face of partitioning to seal gypsum board/structure junction where partitions abut fixed building components. Seal full perimeter of cut-outs around electrical boxes, ducts, , in partitions where perimeter sealed with acoustic sealant.
7. Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.
8. 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.
9. Install gypsum board with face side out.
10. Do not install damaged or damp boards.
11. Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

3.4 INSTALLATION

1. Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure using contact adhesive for full length.
2. Install casing beads around perimeter of suspended ceilings.
3. Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.
4. Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.
5. Install shadow mould at gypsum board/ceiling juncture as indicated. Minimize joints; use corner pieces and splicers.
6. Construct control joints of two back-to-back casing beads set in gypsum board facing and supported independently on both sides of joint.
7. Provide continuous polyethylene dust barrier behind and across control joints.
8. Locate control joints at changes in substrate construction.
9. Install control joints straight and true.
10. Ensure that screws or nails are properly applied in process of attaching gypsum board to framing without damaging of gypsum board edges and ends.

11. Construct expansion joints as detailed, at building expansion and construction joints. Provide continuous dust barrier.
12. Install expansion joint straight and true.
13. Install cornice cap where gypsum board partitions do not extend to ceiling.
14. Fit cornice cap over partition, secure to partition track with two rows of sheet metal screws staggered at 300 mm on centre.
15. Splice corners and intersections together and secure to each member with 3 screws.
16. Install access doors to electrical and mechanical fixtures specified in respective sections.
    16.1. Rigidly secure frames to furring or framing systems.
17. 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.
18. Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with AWCI Levels of Gypsum Board Finish:
    18.1. Levels of finish:
        18.1.1. Level 5: embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; apply a thin skim coat of joint compound to entire surface; surfaces smooth and free of tool marks and ridges.
19. 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.
20. Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board, invisible after surface finish is completed.
21. Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
22. Completed installation smooth, level or plumb, free from waves and other defects and ready for surface finish.
23. Apply one coat of white primer sealer over surface to be textured. When dry apply textured finish in accordance with manufacturer's instructions.
24. Mix joint compound slightly thinner than for joint taping.
25. Apply thin coat to entire surface using trowel or drywall broad knife to fill surface texture differences, variations or tool marks.
26. Allow skim coat to dry completely.
27. Remove ridges by light sanding or wiping with damp cloth.

3.5 CLEANING

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
    1.1. Leave Work area clean at end of each day.
    1.2. Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
2. Waste Management: separate waste materials for reuse or recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
    2.1. Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.6 PROTECTION

1. Protect installed products and components from damage during construction.
2. Repair damage to adjacent materials caused by gypsum board assemblies installation.

3.7 SCHEDULES

1. Construct fire rated assemblies where indicated.

END OF SECTION

SECTION 09 30 13
Ceramic Tiling

Part 1 General

1.1 RELATED REQUIREMENTS

1. Section 06 40 00 Architectural Woodwork
2. Section 09 21 16 Gypsum Board Assemblies.

1.2 REFERENCE STANDARDS

1. American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)
   1.1. ANSI A108.1-99, Specification for the Installation of Ceramic Tile (Includes ANSI A108.1A-C, 108.4-.13, A118.1-.10, ANSI A136.1).
   1.2. CTI A118.3-92, Specification for Chemical Resistant, Water Cleanable Tile Setting and Grouting Epoxy and Water Cleanable Tile Setting Epoxy Adhesive (included in ANSI A108.1).
   1.3. CTI A118.4-92, Specification for Latex Cement Mortar (included in ANSI A108.1).
   1.4. CTI A118.5-92, Specification for Chemical Resistant Furan Resin Mortars and Grouts for Tile Installation (included in ANSI A108.1).
   1.5. CTI A118.6-92, Specification for Ceramic Tile Grouts (included in ANSI A108.1).
2. American Society for Testing and Materials International (ASTM)
   2.1. ASTM C144-04, Specification for Aggregate for Masonry Mortar.
   2.2. ASTM C207-06, Specification for Hydrated Lime for Masonry Purposes.
   2.3. ASTM C847-06, Specification for Metal Lath.
   2.4. ASTM C979-05, Specification for Pigments for Integrally Coloured Concrete.
3. Canadian General Standards Board (CGSB)
   3.1. CAN/CGSB-51.34-M86 (R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
   3.2. CGSB 71-GP-22M-78 (AMEND.), Adhesive, Organic, for Installation of Ceramic Wall Tile.
   3.3. CAN/CGSB-75.1-M88, Tile, Ceramic.
   3.4. CAN/CGSB-25.20-95, Surface Sealer for Floors.
4. CSA Group (CSA)
   4.1. CSA A123.3-05, Asphalt Saturated Organic Roofing Felt.
   4.2. CAN/CSA-A3000-03 (R2006), Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
5. South Coast Air Quality Management District (SCAQMD), California State
   5.1. SCAQMD Rule 1168-05, Adhesives and Sealants Applications.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

1. Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
2. Provide product data in accordance with Section 01 33 00 - Submittal Procedures.
   2.1. Include manufacturer's information on:

2.1.1. Ceramic tile, marked to show each type, size, and shape required.

2.1.2. Chemical resistant mortar and grout (Epoxy and Furan).

2.1.3. Cementitious backer unit.

2.1.4. Dry-set cement mortar and grout.

2.1.5. Divider strip.

2.1.6. Elastomeric membrane and bond coat.

2.1.7. Reinforcing tape.

2.1.8. Levelling compound.

2.1.9. Latex cement mortar and grout.

2.1.10. Commercial cement grout.

2.1.11. Organic adhesive.

2.1.12. Slip resistant tile.

2.1.13. Waterproofing isolation membrane.

2.1.14. Fasteners.

3. Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
   3.1. Wall tile: submit duplicate, full size tile of each colour, texture, size, and pattern of tile.
   3.2. Trim shapes, each type, colour, and size.

1.4 QUALITY ASSURANCE

1. Quality Assurance Submittals:
   1.1. Manufacturer's Instructions: manufacturer's installation instructions.
   1.2. Manufacturer's Field Reports: manufacturer's field reports specified.

1.5 DELIVERY, STORAGE AND HANDLING

1. Packing, shipping, handling and unloading:
   1.1. Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

1.6 AMBIENT CONDITIONS

1. Maintain air temperature and structural base temperature at ceramic tile installation area above 12 degrees C for 48 hours before, during, and 48 hours after, installation.
2. Do not install tiles at temperatures less than 12 degrees C or above 38 degrees C.
3. Do not apply epoxy mortar and grouts at temperatures below 15 degrees C or above 25 degrees C.

1.7 MAINTENANCE

1. Extra Materials:
   1.1. Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
   1.2. Provide minimum 2% of each type and colour of tile required for project for maintenance use. Store where directed.
   1.3. Maintenance material same production run as installed material.

Part 2 Products

2.1 FLOOR TILE

1. Porcelain floor tile (**POR**)
2. Daltile Volume 1.0, VL71 Degrees Silver 12x24 (**POR1**)
3. location: as indicated in the drawings.
4. Exiting corridors. General contractor to review
   4.1. Floor Tile to match existing
   4.2. Base to match existing

2.2 WALL TILE

1. **CER1**
   Manufacturer: Daltile
   Collection: Keystones
   Size: 2" x 2"
   Colour: Deep purple
2. **CER2**
   Manufacturer: Daltile
   Collection: Colour Story Wall
   Size: 2"x8"
   Colour: 0068 Grace Glossy
   Installation: vertical brick ashlar
3. **CER3**
   Manufacturer: Daltile
   Collection: Keystones
   Size: 2"x2"
   Colour: D619 Lime Sherbet Matte
4. **CER4**
   Manufacturer: Daltile
   Collection: Colour Story Wall
   Size: 2"x8"
   Colour: 0076 Green Apple Glossy
5. **CER5**
   Manufacturer: Daltile
   Collection: Color Story Wall
   Size: 2"x8"
   Colour: 0058 Restore

2.3 MORTAR AND ADHESIVE MATERIALS

1. Cement: to CSA-A5, type 10.
2. Sand: to ASTM C144, passing 16 mesh.
3. Hydrated lime: to ASTM C207, Type SA.
4. Latex additive: formulated for use in cement mortar and thin set bond coat.
5. Water: potable and free of minerals and chemicals which are detrimental to mortar and grout mixes.

2.4 BOND COAT

1. Dry set cement mortar: to ANSI A108.1.
2. Organic adhesive: to ANSI A136.1.
   2.1. Maximum VOC limit 65 g/L to SCAQMD Rule 1168.
3. Latex Cement mortar: to ANSI A108.1, two-component universal dry-set mortar.
4. Epoxy bond coat: non-toxic, non-flammable, non-hazardous during storage, mixing, application, and when cured. To produce shock and chemical resistant mortars having the following physical characteristics:
   4.1. Compressive Strength: 246 kg/cm^2.
   4.2. Bond Strength: 53 kg/cm^2.
   4.3. Water Absorption: 4.0% Max.
   4.4. Ozone Resistance, 200 hours @ 200 ppm: no loss of strength.
   4.5. Smoke Contribution Factor: 0.
   4.6. Flame Contribution Factor: 0.
   4.7. Finished mortar and grout to be resistant to urine, dilute acid, dilute alkali, sugar, brine and food waste products, petroleum distillates, oil and aromatic solvents.
   4.8. Bond Coat: maximum VOC limit 65 g/L to SCAQMD Rule 1168.
5. Chemical-Resistant Bond Coat:
   5.1. Epoxy Resin Type: CTI A118.3.
   5.2. Furan Resin Type: CTI A118.5.
   5.3. Bond Coat: maximum VOC limit 65 g/L to SCAQMD Rule 1168.

2.5 GROUT

1. Colouring Pigments:
   1.1. Pure mineral pigments, limeproof and nonfading, complying with ASTM C979.
   1.2. Colouring pigments to be added to grout by manufacturer.
   1.3. Job coloured grout are not acceptable.
   1.4. Use in Commercial Cement Grout, Dry-Set Grout, and Latex Cement Grout.
2. Cement Grout: to ANSI A108.1.
   2.1. Use one part white cement to one part white sand passing a number 30 screen.
3. Commercial Cement Grout: to CTI A118.6.
4. Dry-Set Grout: to CTI A118.6.
5. Latex Cement Grout: to ANSI A108.1, 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.
6. Chemical-Resistant Grout:
   6.1. Epoxy grout: to ANSI A108.1, having quality, colour and characteristics to match epoxy bond coat. Adhesive and grout by same manufacturer.
   6.2. Furan grout: to CTI A118.5.

2.6 ACCESSORIES

1. Reinforcing mesh: 50 x 50 x 1.6 x 1.6 mm galvanized steel wire mesh, welded fabric design, in flat sheets.
2. Divider strips:
   2.1. For transitions between materials and at corners/edges on all wall applications always use a flush stainless steel metal edging.
   Exact model number to be determined by the contractor based on site conditions and height differential and to be approved by architect prior to installation.
      2.1.1. **FTS1** similar to Schluter Schiene.
      2.1.2. **FTS2** similar to Schluter Reno-U reducer.
   2.2. Heavy duty transition Trims applications always use a flush stainless steel metal edging.
   Exact model number to be determined by the contractor based on site conditions and height differential and to be approved by architect prior to installation.
      2.2.1. **TRIM1** similar to Schluter Schiene.
      2.2.2. **TRIM2** Heavy-Duty transition trim for outside corners Schluter ECK-E
      2.2.3. **TRIM3** Heavy-Duty Cove-shaped profile for inside wall corners and floor/wall transitions. Schluter®-DILEX-EHK
3. Metal lath: to ASTM C847 galvanized finish, 10 mm rib at 2.17 kg/m^2.
4. Transition Strips: purpose made metal extrusion; stainless steel type.
5. Reducer Strips: purpose made metal extrusion; stainless steel type; maximum slope of 1:2.
6. Prefabricated Movement Joints: purpose made, having a Shore A Hardness not less than 60 and elasticity of plus or minus 40 percent when used in accordance to TTMAC Detail 301EJ.
7. Sealant: in accordance with Section 07 92 00 - Joint Sealants.
   7.1. Sealants: maximum VOC limit 250 g/L to SCAQMD Rule 1168.
8. Floor sealer and protective coating: to tile and grout manufacturers recommendations.

2.7 MIXES

1. Cement:
   1.1. Scratch coat: 1 part cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand, 1 part water, and latex additive where required. Adjust water volume depending on water content of sand.
   1.2. Slurry bond coat: cement and water mixed to creamy paste. Latex additive may be included.
   1.3. Mortar bed for walls and ceilings: 1 part 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.
   1.4. Levelling coat: 1 part cement, 4 parts sand, minimum 1/10 part latex additive, 1 part water including latex additive.
   1.5. Bond or setting coat: 1 part cement, 1/3 part hydrated lime, 1 part water.
   1.6. Measure mortar ingredients by volume.
2. Dry set mortar: mix to manufacturer's instructions.
3. Organic adhesive: pre-mixed.
   3.1. Adhesives: maximum VOC limit 65 g/L to SCAQMD Rule 1168.

4. Mix bond and levelling coats, and grout to manufacturer's instructions.
5. Adjust water volumes to suit water content of sand.

2.8 PATCHING AND LEVELLING COMPOUND

1. Cement base, acrylic polymer compound, manufactured specifically for resurfacing and leveling concrete floors. Products containing gypsum are not acceptable.
2. Have not less than the following physical properties:
   2.1. Compressive strength - 25 MPa.
   2.2. Tensile strength - 7 MPa.
   2.3. Flexural strength - 7 MPa.
   2.4. Density - 1.9.
3. Capable of being applied in layers up to 50 mm thick, being brought to feather edge, and being trowelled to smooth finish.
4. Ready for use in 48 hours after application.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

1. Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 WORKMANSHIP

1. Do tile work in accordance with TTMAC Tile Installation Manual 2006/2007, "Ceramic Tile", except where specified otherwise.
2. Apply tile or backing coats to clean and sound surfaces.
3. Fit tile around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.
4. Maximum surface tolerance 1:800.
5. Make joints between tile uniform and approximately 1.5 mm wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.
6. Lay out tiles so perimeter tiles are minimum 1/2 size.
7. Sound tiles after setting and replace hollow-sounding units to obtain full bond.
8. Install divider strips at junction of tile flooring and dissimilar materials.
9. Allow minimum 24 hours after installation of tiles, before grouting.
10. Clean installed tile surfaces after installation and grouting cured.
11. Make control joints where indicated. Make joint width same as tile joints. Fill control joints with sealant in accordance with Section 07 92 00 - Joint Sealants. Keep building expansion joints free of mortar and grout.

3.3 WATERPROOFING

1. Apply in accordance with manufacturer's instructions.
2. Apply Schluter-Kerdi waterproofing membrane system along floors and full height of shower walls. In all corridor areas, the waterproofing membrane is to be applied along the floor and on the walls up to 900mm AFF. Apply system as per manufacturer's instructions complete with the following:

2.1.

- Thin-set mortar
- Kerdi-Kereck-F and Kerdi-Band preformed corners
- Kerdi-Seal-PS and Kerdi-Seal-MV at all pipe and valve penetrations
- Kerdi-Fix bonding and sealing compound

3. Note: if existing drains are to remain. Tie new waterproofing membrane to existing drains.

3.4 FIELD QUALITY CONTROL

1. Manufacturer's Field Services:
   1.1. 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.

3.5 CLEANING

1. Proceed in accordance with Section 01 74 00 - Cleaning.
2. Waste Management: Separate waste material for reuse or recycling in accordance with section 01 74 19 - Waste Management and Disposal.

END OF SECTION

SECTION 09 65 19
Resilient Tile Flooring

Part 1 General

1.1 REFERENCE STANDARDS

1. ASTM International
   1.1. ASTM F1066-04 (2010)e1, Standard Specification for Vinyl Composition Floor Tile.
   1.2. ASTM F1344-12e1, Standard Specification for Rubber Floor Tile.
2. Canadian General Standards Board (CGSB)
   2.1. CAN/CGSB-25.20-95, Surface Sealer for Floors.
   2.2. CAN/CGSB-25.21-95, Detergent-Resistant Floor Polish.
3. South Coast Air Quality Management District (SCAQMD)
   3.1. SCAQMD Rule 1168-A2011, Adhesive and Sealant Applications.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
   2.1. Submit manufacturer's instructions, printed product literature and data sheets for resilient tile flooring and include product characteristics, performance criteria, physical size, finish and limitations.
3. Samples:
   3.1. Submit duplicate tile in size specified, .

1.3 MAINTENANCE MATERIAL SUBMITTALS

1. Extra Materials:
   1.1. Provide maintenance materials of resilient tile flooring, base and adhesive in accordance with Section 01 78 00 - Closeout Submittals.
   1.2. Provide 10 $m^2$of each colour, pattern and type flooring material required for this project for maintenance use.
   1.3. Extra materials from same production run as installed materials.
   1.4. Identify each container of floor tile and each container of adhesive.
   1.5. Deliver to Owner, upon completion of the work of this section.
   1.6. Store where directed by Owner.

1.4 DELIVERY, STORAGE AND HANDLING

1. Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
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:

3.1. Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

3.2. Store and protect specified materials from nicks, scratches, and blemishes.

3.3. Replace defective or damaged materials with new.

1.5 SITE CONDITIONS

1. Ambient Conditions:

1.1. Maintain air temperature and structural base temperature at flooring installation area above 20 degrees C for 48 hours before, during and for 48 hours after installation.

Part 2 Products

2.1 MATERIALS

1. Vinyl Composition TIle.

1.1. **VCT1**
Armstrong
Colour: 51941 Polar White

1.2. **VCT2**
Armstrong
Colour: 51881 Blueberry

1.3. **VCT3**
Armstrong
Colour: 57543 Lavender Fields

1.4. **VCT4**
Armstrong
Colour: 51866 Little Green Apple

1.5. **VCT5**
Armstrong
Colour: 57510 Kickin' Kiwi

1.6. **VCT6**
Armstrong
Colour: 51866 Little Green Apple

1.7. **BASE**
Armstrong Rubber base
Colour: Allow for a minimum of 4 colors from full range of manufacturer standard colours.
Size: as indicated in the drawings

2. Primers and adhesives: waterproof, recommended by flooring manufacturer for specific material on applicable substrate, above, at or below grade.

2.1. Flooring adhesives:

2.1.1. Adhesive: maximum VOC limit 50 g/L to SCAQMD Rule 1168.

2.2. Cove base adhesives:

2.2.1. Adhesive: maximum VOC limit 50 g/L to SCAQMD Rule 1168.

3. Sub-floor filler and leveller: white premix latex requiring water only to produce cementitious paste as recommended by flooring manufacturer for use with their product.

4. Metal edge strips: aluminum extruded, smooth, mill finish with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.

Part 3 Execution

3.1 EXAMINATION

1. Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for resilient tile flooring installation in accordance with manufacturer's written instructions.
   1.1. Visually inspect substrate in presence of Consultant.
   1.2. Inform Consultant of unacceptable conditions immediately upon discovery.
   1.3. Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.2 INSPECTION

1. Ensure concrete floors are dry, by using test methods recommended by tile manufacturer.

3.3 SUB-FLOOR TREATMENT

1. 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.
2. Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.
3. Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.
4. Prime to flooring manufacturer's printed instructions.

3.4 TILE APPLICATION

1. Provide high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to outside. Do not let contaminated air recirculate through district or whole building air distribution system. Maintain extra ventilation for at least one month following building occupation.
2. Apply adhesive uniformly using recommended trowel in accordance with flooring manufacturer's instructions. Do not spread more adhesive than can be covered by flooring before initial set takes place.
3. Lay flooring with joints parallel to building lines to produce symmetrical tile pattern. Border tiles minimum half tile width.
4. Install flooring to ashlar/staggered pattern with continuous joints flowing with direction of mottle.
5. As installation progresses, and after installation, roll flooring in 2 directions resilient tile with 45 kg minimum roller to ensure full adhesion.
6. Cut tile and fit neatly around fixed objects.
7. Install feature strips and floor markings where indicated. Fit joints tightly.
8. Install flooring in pan type floor access covers. Maintain floor pattern.
9. Continue flooring through areas to receive movable type partitions without interrupting floor pattern.
10. Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.
11. Install metal edge strips at unprotected or exposed edges where flooring terminates.

3.5 BASE APPLICATION

1. Lay out base to keep number of joints at minimum. Base joints at maximum length available or at internal or premoulded corners.
2. Clean substrate and prime with one coat of adhesive.
3. Apply adhesive to back of base.
4. Set base against wall and floor surfaces tightly by using 3 kg hand roller.
5. Install straight and level to variation of 1:1000.
6. Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.
7. Cope internal corners. Use premoulded corner units for right angle external corners. Use formed straight base material for external corners of other angles, minimum 300 mm each leg. Wrap around toeless base at external corners.
8. Install toeless type base before installation of carpet on floors.

3.6 CLEANING

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
   1.1. 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 00 - Cleaning.
   2.1. Clean flooring base surfaces to flooring manufacturer's printed instructions.
3. Remove excess adhesive from floor, base and wall surfaces without damage.
4. Clean, seal and wax floor and base surface to flooring manufacturer's instructions. In carpeted areas clean, seal and wax base surface before carpet installation.
5. Waste Management: separate waste materials for reuse or recycling in accordance with Section 01 74 19 - Waste Management and Disposal.
   5.1. Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.7 PROTECTION

1. Protect new floors from time of final set of adhesive until final inspection.
2. Prohibit traffic on floor for 48 hours after installation.

END OF SECTION

SECTION 09 67 23
Resinous Flooring

Part 1 General

1.1 SECTION INCLUDES

1. This Section includes one resinous flooring system, one with epoxy body.
   1.1. Application Method: Metal, power or hand troweled.

1.2 RELATED REQUIREMENTS

1. Section 03 30 00 – Cast-In-Place Concrete: Concrete subfloor.
2. Section 06 10 00 - Rough Carpentry: Wood subfloor.
3. Section 07 92 00 - Joint Sealants: Joint between base and wall surface.
4. Division 22 – Plumbing: Recessed plumbing access cover frames.
5. Division 26 - Electrical: Recessed electrical access cover frames.

1.3 REFERENCE STANDARDS

1. ASTM C722-18 Standard specification for chemical-resistant monolithic floor surfacings
2. ASTM D570-22 Standard test method for water absorption of plastics
3. ASTM D638-22 Standard test method for tensile properties of plastics
4. ASTM D695-23 Standard test method for compressive properties of rigid plastics
5. ASTM D905-08 Standard test method for strength properties of adhesive bonds in shear by compression loading
6. ASTM D1044-24 Standard test method for resistance of transparent plastics to surface abrasion by the taber abraser
7. ASTM D1360-98 Standard test method for fire retardancy of paints (cabinet method). (Withdrawn)
8. ASTM E84-24 Standard test method for surface burning characteristics of building materials
9. ASTM E96/E96M-24 Standard test methods for gravimetric determination of water vapor transmission rate of materials
10. CAN/ULC-S102 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.4 ACTION SUBMITTALS

1. Section 01 33 00: Submission procedures.
2. Product Data: For each type of product indicated. Include manufacturer's technical data, application instructions, and recommendations for each resinous flooring component required.
3. Samples for Verification: For each resinous flooring system required, 5 inches (150 mm) square, applied to a rigid backing.
4. Product Schedule: Use resinous flooring designations indicated in Part 2 and room designations indicated on Drawings in product schedule.
5. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.

6. Maintenance Data: For resinous flooring to include in maintenance manuals.

1.5 CLOSEOUT SUBMITTALS

1. Section 01 78 00: Submission procedures.
2. Operation and Maintenance Data: Include maintenance procedures, recommended maintenance materials, procedures for stain removal, repairing surface, and suggested schedule for cleaning.

1.6 MAINTENANCE MATERIAL SUBMITTALS

1. Section 01 78 23: Maintenance and extra material requirements.

1.7 QUALITY ASSURANCE

1. No request for substitution shall be considered that would change the generic type of floor system specified (i.e. epoxy mortar based system with decorative quartz topping). Equivalent materials of other manufactures may be substituted only on approval of Architect . Request for substitution will only be considered only if submitted 10 days prior to bid date. Request will be subject to specification requirements described in this section.
2. Installer Qualifications: Engage an experienced installer (applicator) who is experienced in applying resinous flooring systems similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance, and who is acceptable to resinous flooring manufacturer.
   2.1. Engage an installer who is certified in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated.
   2.2. Contractor shall have completed at least 5(five) projects of similar size and complexity.
3. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, through one source from a single manufacturer, with not less than ten years of successful experience in manufacturing and installing principal materials described in this section. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.
4. Manufacturer Field Technical Service Representatives: Resinous flooring manufacture shall retain the services of Field Technical Service Representatives who are trained specifically on installing the system to be used on the project.
   4.1. Field Technical Services Representatives shall be employed by the system manufacture to assist in the quality assurance and quality control process of the installation and shall be available to perform field problem solving issues with the installer.
5. Pre-installation Conference
   5.1. General contractor shall arrange a meeting not less than thirty days prior to starting work.
   5.2. Attendance:
      5.2.1. General Contractor
      5.2.2. Architect/Owner's Representative.
      5.2.3. Manufacturer/Installer's Representative.

1.8 MOCK-UPS

1. Section 01 43 00: Requirements for mock-up.
2. Apply mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

2.1. Apply full-thickness mockups on 48-inch- (1200-mm-) square floor area selected by Architect.

2.1.1. Include 48-inch (1200-mm) length of integral cove base.

3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

1. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.
2. Store materials to prevent deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects. Store material per product data sheet.
3. All materials used shall be factory pre-weighed and pre-packaged in single, easy to manage batches to eliminate on site mixing errors. No on site weighing or volumetric measurements allowed.

1.10 SITE CONDITIONS

1. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.

1.1. Maintain material and substrate temperature between 65 and 85 deg F (18 and 30 deg C) during resinous flooring application and for not less than 24 hours after application.

2. Lighting:Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.
3. Close spaces to traffic during resinous flooring application and for not less than 24 hours after application, unless manufacturer recommends a longer period.
4. Concrete substrate shall be properly cure. A vapor barrier must be present for concrete subfloors on or below grade. Otherwise, an osmotic pressure resistant grout must be installed prior to the resinous flooring

1.11 WARRANTY

1. Manufacturer shall furnish a single, written warranty covering both material and workmanship for a period of (1) full years from date of installation, or provide a joint and several warranty signed on a single document by material manufacturer and applicator jointly and severally warranting the materials and workmanship for a period of (1) full year from date of installation. A sample warranty letter must be included with bid package or bid may be disqualified.

Part 2 Products

2.1 MANUFACTURERS

1. Stonhard Basis of design.

2.2 DESCRIPTION

1. Products:Subject to compliance with requirements:

1.1. Stonhard, Inc.; Stonshield HRI®.

2. System Characteristics:

2.1. Color and Pattern: Choose from Mfg. Standards and as follows:
Stonhard Stonshield HRI, Flagstone (EP01)

2.2. Wearing Surface: Standard or medium.

2.3. Integral Cove Base: Stonshield HRI

2.4. Overall System Thickness: nominal 3/16”

2.3 MATERIALS

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include,
   1.1. Must comply with troweled mortar base with broadcast topping. Liquid rich, slurry type systems will not be accepted, and will result in a disqualification from bid.
2. System Components: Manufacturer's standard components that are compatible with each other and as follows:
   2.1. 1.Primer:
      2.1.1. Material Basis: Stonhard Standard Primer
      2.1.2. Resin: Epoxy
      2.1.3. Formulation Description: (2) two component, 100 percent solids.
      2.1.4. Application Method: Squeegee and roller.
      2.1.5. Number of Coats: (1) one.
   2.2. Mortar Base:
      2.2.1. Material design basis: Stonshield HRI Base
      2.2.2. Resin: Epoxy.
      2.2.3. Formulation Description: (3) three component, 100 percent solids.
      2.2.4. Application Method: Metal Trowel.
         2.2.4.1. Thickness of Coats: nominal 1/8” (inch).
         2.2.4.2. Number of Coats: One.
      2.2.5. Aggregates: Pigmented Blended aggregate.
   2.3. Undercoat:
      2.3.1. Material Basis: Stonshield undercoat.
      2.3.2. Resin: Epoxy
      2.3.3. Formulation Description: (2) two-component, 100% solids, UV Stable.
      2.3.4. Type: Clear.
      2.3.5. Finish: Gloss.
      2.3.6. Number of Coats: one.
   2.4. Broadcast Media:
      2.4.1. Material Basis: Stonshield quartz aggregate
      2.4.2. Type: pigmented.
      2.4.3. Finish: standard.
      2.4.4. Number of Coats: one.
      2.4.5. Pattern: Tweed.
   2.5. Sealer:
      2.5.1. Material Basis: Stonkote CE4.
      2.5.2. Resin: Epoxy

2.5.3. Formulation Description: (2) two-component, 100% solids, UV Stable.

2.5.4. Type: Clear.

2.5.5. Finish: Gloss.

2.5.6. Number of Coats: one.

2.5.7. Texture level: Standard or medium.

3. Note: Components listed above are the basis of design intent; all bids will be compared to this standard including resin chemistry, color, wearing surface, thickness, and installation procedures, including number of coats. Contractor shall be required to comply with all the requirements of the Specifications and all of the components required by the Specifications, whether or not such products are specifically listed above.
4. System Physical Properties: Provide resinous flooring system with the following minimum physical property requirements when tested according to test methods indicated:
   4.1. Compressive Strength: 10,000 psi after 7 days per ASTM C579
   4.2. Tensile Strength: 2,000 psi per ASTM C307
   4.3. Flexural Strength: 4,300 psi per ASTM C580
   4.4. Flexural Modulus of Elasticity: 2.0 x 10^6 psi per ASTM C580
   4.5. Hardness: 85 to 90 per ASTM D2240, Shore D
   4.6. Impact Resistance: > 160 in./lbs. per ASTM D2794
   4.7. Abrasion Resistance: 0.06 gm max. weight loss per ASTM D 4060, CS-17
   4.8. Flammability: Class 1 per ASTM E-648.
   4.9. Thermal Coefficient of Linear Expansion: 1.3 x 10^{-5} in./in. ^oF
   4.10. Water Absorption: 0.1% per ASTM C 413
   4.11. 1.VOC Content per ASTM D2369:
      4.11.1. Stonshield HRI Base – 40 g/l
      4.11.2. Stonshield Undercoat – 34 g/l
      4.11.3. Stonkote CE4 – 34 g/l
   4.12. Cure Rate @ 77^{o}F/25^{o}C: 12 hours foot traffic, 24 hours normal operations

2.4 ACCESSORIES

1. Patching, Leveling and Fill Material: Resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.
2. Joint Sealant: Type recommended or produced by resinous flooring manufacturer for type of service and joint condition indicated. Allowances should be included for Stonflex MP7 joint fill material.

2.5 COLOURS

1. Matrix: Colour as selected.
2. Aluminum Strips: …….
   2.1. Colour: As selected.
3. Plastic Strips: Extruded rigid PVC, colour as selected.

Part 3 Execution

3.1 PREPARATION

1. General:Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean and dry substrate for resinous flooring application.
2. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.
   2.1. Mechanically prepare substrates as follows:
      2.1.1. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup, or Diamond Grind with dust free system.
   2.2. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written recommendations.
   2.3. Verify that concrete substrates meet the following requirements.
      2.3.1. Perform in situ probe test, ASTM F 2170. Proceed with application only after substrates do not exceed a maximum potential equilibrium relative humidity of 85 percent.
      2.3.2. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with application only after substrates have maximum moisture-vapor-emission rate of 6 lb of water/1000 sq. ft. of slab in 24 hours.
      2.3.3. Perform additional moisture tests recommended by manufacturer. Proceed with application only after substrates pass testing.
3. Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
4. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written recommendations. Allowances should be included for Stonflex MP7 joint fill material, and CT5 concrete crack treatment.

3.2 INSTALLATION - FLOORING

1. Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
   1.1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
   1.2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
   1.3. At substrate expansion and isolation joints, provide joint in resinous flooring to comply with resinous flooring manufacturer's written recommendations.
      1.3.1. Apply joint sealant to comply with manufacturer's written recommendations.
2. Integral Cove Base: Stonshield cove mortar, apply cove base mix to wall surfaces before applying flooring.Apply according to manufacturer's written instructions and details including those for taping, mixing, priming, troweling, sanding, of cove base. Round internal and external corners.
   2.1. Integral Cove Base: <TBD> inches high.
3. Apply primer where required by resinous system, over prepared substrate at manufacturer's recommended spreading rate.

4. Apply metal trowel single mortar coat in thickness indicated for flooring system into wet primer. Hand or power trowel and grout to fill voids. When cured, sand to remove trowel marks and roughness.
5. Undercoat: Remove any surface irregularities by lightly abrading and vacuuming the floor surface. Mix and apply undercoat with strict adherence to manufacturer's installation procedures and coverage rates.
6. Broadcast: Immediately broadcast quartz silica aggregate into the undercoat using manufacturer's specially designed spray caster. Strict adherence to manufacturer's installation procedures and coverage rates is imperative.
7. Apply topcoat(s) in number of coats indicated for flooring system and at spreading rates recommended in writing by manufacturer.

3.3 TERMINATIONS

1. Chase edges to “lock” the flooring system into the concrete substrate along lines of termination.
2. Penetration Treatment: Lap and seal resinous system onto the perimeter of the penetrating item by bridging over compatible elastomer at the interface to compensate for possible movement.
3. Trenches: Continue flooring system into trenches to maintain monolithic protection. Treat cold joints to assure bridging of potential cracks.
4. Treat floor drains by chasing the flooring system to lock in place at point of termination.

3.4 JOINTS AND CRACKS

1. Treat control joints to bridge potential cracks and to maintain monolithic protection.
2. Treat cold joints and construction joints and to maintain monolithic protection on horizontal and vertical surfaces as well as horizontal and vertical interfaces.
3. Vertical and horizontal contraction and expansion joints are treated by installing backer rod and compatible sealant after coating installation is completed. Provide sealant type recommended by manufacturer for traffic conditions and chemical exposures to be encountered.

3.5 FIELD QUALITY CONTROL

1. Material Sampling: Owner may at any time and any numbers of times during resinous flooring application require material samples for testing for compliance with requirements.
    1.1. Owner will engage an independent testing agency to take samples of materials being used. Material samples will be taken, identified, sealed, and certified in presence of Contractor.
    1.2. Testing agency will test samples for compliance with requirements, using applicable referenced testing procedures or, if not referenced, using testing procedures listed in manufacturer's product data.
    1.3. If test results show applied materials do not comply with specified requirements, pay for testing, remove noncomplying materials, prepare surfaces coated with unacceptable materials, and reapply flooring materials to comply with requirements.

3.6 CLEANING, PROTECTION AND CURING

1. Cure resinous flooring materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application and prior to completion of curing process. Close area of application for a minimum of 24 hours.
2. Protect resinous flooring materials from damage and wear during construction operation. Where temporary covering is required for this purpose, comply with manufacturer's recommendations for

protective materials and method of application. General Contractor is responsible for protection and cleaning of surfaces after final coats.

3. Cleaning: Remove temporary covering and clean resinous flooring just prior to final inspection. Use cleaning materials and procedures recommended by resinous flooring manufacturer. General contractor is responsible for cleaning prior to inspection.

END OF SECTION

SECTION 09 91 23
Interior Painting

Part 1 General

1.1 REFERENCE STANDARDS

1. Environmental Protection Agency (EPA)
   1.1. Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, EPA Method 24 - Surface Coatings.
   1.2. SW-846, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods.
2. Health Canada/Workplace Hazardous Materials Information System (WHMIS)
   2.1. Material Safety Data Sheets (SDS).
3. Master Painters Institute (MPI)
   3.1. The Master Painters Institute (MPI)/Architectural Painting Specification Manual (ASM) - current edition.
   3.2. Standard GPS-1-12, MPI Green Performance Standard.
   3.3. Standard GPS-2-12, MPI Green Performance Standard.
4. National Research Council Canada (NRC)
   4.1. National Fire Code of Canada 2015 (NFC).
5. Society for Protective Coatings (SSPC)
   5.1. SSPC Painting Manual, Volume Two, 8th Edition, Systems and Specifications Manual.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

1. Provide in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
   2.1. Provide manufacturer's instructions, printed product literature and data sheets for paint and paint products and include product characteristics, performance criteria, physical size, finish and limitations.
3. Samples:
   3.1. Submit full range colour sample chips to indicate where colour availability is restricted.
   3.2. Submit 200x300 mm sample panels of each coating with specified paint or coating in colours, gloss/sheen and textures required to MPI Architectural Painting Specification Manual standards submitted on a drawdown card.
   3.3. Retain reviewed samples on-site to demonstrate acceptable standard of quality for appropriate on-site surface.

1.3 CLOSEOUT SUBMITTALS

1. Provide in accordance with Section 01 78 00 - Closeout Submittals.
2. Operation and Maintenance Data: Provide operation and maintenance data for painting materials for incorporation into manual.
3. Include:

3.1. Product name, type and use.

3.2. Manufacturer's product number.

3.3. Colour numbers.

3.4. MPI Environmentally Friendly classification system rating.

1.4 MAINTENANCE MATERIAL SUBMITTALS

1. Extra Stock Materials:
   1.1. Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
   1.2. Submit one 3.78 litre can of each type and colour of finish coating. Identify colour and paint type in relation to established colour schedule and finish system.

1.5 QUALITY ASSURANCE

1. Qualifications:
   1.1. Contractor: to have a minimum of 5 years proven satisfactory experience. When requested, provide list of last 3 comparable jobs including, job name and location, specifying authority, and project manager.
   1.2. Qualified journeypersons as defined by local jurisdiction to be engaged in painting work.
   1.3. Apprentices: may be employed provided they work under direct supervision of qualified journeyperson in accordance with trade regulations.
   1.4. Conform to latest MPI requirements for exterior painting work including preparation and priming.
   1.5. Materials: in accordance with MPI Painting Specification Manual "Approved Product" listing and from a single manufacturer for each system used.
   1.6. Retain purchase orders, invoices and documents to prove conformance with noted MPI requirements when requested by Consultant.
   1.7. Standard of Acceptance:
      1.7.1. Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.
      1.7.2. Soffits: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.
      1.7.3. Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

1.6 DELIVERY, STORAGE AND HANDLING

1. Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
2. Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
   2.1. Labels: to indicate:
      2.1.1. Type of paint or coating.
      2.1.2. Compliance with applicable standard.
      2.1.3. Colour number in accordance with established colour schedule.
3. Storage and Handling Requirements:
   3.1. Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
   3.2. Observe manufacturer's recommendations for storage and handling.

3.3. Store materials and supplies away from heat generating devices.

3.4. Store materials and equipment in well ventilated area with temperature range 7 degrees C to 30 degrees C.

3.5. Keep areas used for storage, cleaning and preparation, clean and orderly. After completion of operations, return areas to clean condition.

3.6. Remove paint materials from storage only in quantities required for same day use.

3.7. Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.

3.8. Fire Safety Requirements:

3.8.1. Provide 9 kg dry chemical fire extinguisher adjacent to storage area.

3.8.2. 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.

3.8.3. Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada (NFC).

1.7 SITE CONDITIONS

1. Ambient Conditions:

1.1. Heating, Ventilation and Lighting:

1.1.1. Provide heating facilities to maintain ambient air and substrate temperatures above 10 degrees C for 24 hours before, during and after paint application until paint has cured sufficiently.

1.1.2. Provide continuous ventilation for 7 days after completion of application of paint.

1.1.3. Co-ordinate use of existing ventilation system with Owner and ensure its operation during and after application of paint as required.

1.1.4. 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.

1.1.5. Provide minimum lighting level of 323 Lux on surfaces to be painted.

1.1.6. Temperature, Humidity and Substrate Moisture Content Levels:

1.1.6.1. Unless pre-approved written approval by Paint Inspection Agency Authority and product manufacturer, perform no painting when:

1.1.6.1.1. Ambient air and substrate temperatures are below 10 degrees C.

1.1.6.1.2. Substrate temperature is above 32 degrees C unless paint is specifically formulated for application at high temperatures.

1.1.6.1.3. Substrate and ambient air temperatures are not expected to fall within MPI or paint manufacturer's prescribed limits.

1.1.6.1.4. The relative humidity is under 85 % or when the dew point is more than 3 degrees C variance between the air/surface temperature. Paint should not be applied if the dew point is less than 3 degrees C below the ambient or surface temperature. Use sling psychrometer to establish the relative humidity before beginning paint work.

1.1.6.1.5. Rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.

1.1.6.1.6. Ensure that conditions are within specified limits during drying or curing process, until newly applied coating can itself withstand 'normal' adverse environmental factors.

1.1.6.2. Perform painting work when maximum moisture content of the substrate is below:

1.1.6.2.1. 12 % for concrete and masonry (clay and concrete brick/block). Allow new concrete and masonry to cure minimum of 28 days.

1.1.6.2.2. 15 % for hard wood.

1.1.6.2.3. 17 % for soft wood.

1.1.6.2.4. 12 % for plaster and gypsum board.

1.1.6.3. Test for moisture using calibrated electronic Moisture Meter. Test concrete floors for moisture using "cover patch test".

1.1.6.4. Test concrete, masonry and plaster surfaces for alkalinity as required.

1.1.7. Surface and Environmental Conditions:

1.1.7.1. Apply paint finish 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.

1.1.7.2. Apply paint to adequately prepared surfaces and to surfaces within moisture limits.

1.1.7.3. Apply paint when previous coat of paint is dry or adequately cured.

1.1.8. Additional interior application requirements:

1.1.8.1. Apply paint finishes when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.

1.1.8.2. Apply paint in occupied facilities during silent hours only. Schedule operations to approval of Owner such that painted surfaces will have dried and cured sufficiently before occupants are affected.

Part 2 Products

2.1 MATERIALS

1. Only Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.
2. Provide paint materials for paint systems from single manufacturer.
3. Only qualified products with E2 "Environmentally Friendly" rating are acceptable for use on this project.
4. Conform to latest MPI requirements for interior painting work including preparation and priming.
5. Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids to be:
   5.1. Water-clean-able.
   5.2. non-flamable.
   5.3. Be manufactured without compounds which contribute to ozone depletion in the upper atmosphere.
   5.4. Be manufactured without compounds which contribute to smog in the lower atmosphere.
   5.5. Do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.

6. Ensure manufacture and process of both water-borne surface coatings and recycled water-borne surface coatings does not release:
   6.1. Matter in undiluted production plant effluent generating 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to natural watercourse or sewage treatment facility lacking secondary treatment.
   6.2. Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to natural watercourse or a sewage treatment facility lacking secondary treatment.
7. Water-borne paints and stains, recycled water-borne surface coatings and water borne varnishes to meet minimum "Environmentally Friendly" E2 rating.
8. Recycled water-borne surface coatings to contain 50 % post-consumer material by volume.
9. Recycled water-borne surface coatings must not contain:
   9.1. Lead in excess of 600.0 ppm weight/weight total solids.
   9.2. Mercury in excess of 50.0 ppm weight/weight total product.
   9.3. Cadmium in excess of 1.0 ppm weight/weight total product.
   9.4. Hexavelant chromium in excess of 3.0 ppm weight/weight total product.
   9.5. Organochlorines or polychlorinated biphenyls (PCBS) in excess of 1.0 ppm weight/weight total product.

2.2 COLOURS

1. Selection of colours will be from manufacturers full range of colours.
2. Where specific products are available in restricted range of colours, selection based on limited range.
3. For deep and ultra deep colours; 4 coats may be required.
4. Accent walls: The following colours are to be coordinated and confirmed with the project colour Schedule.
   4.1. Field colour walls and ceilings:
   (**PT1**)- Benjamin Moore Scuff-X
   4.2. Accent Wall colours:
   (**PT2**) Benjamin Moore, Hazy Lilac 2116-40
   (**PT3**) Benjamin Moore, Kalamata AF-630
   (**PT4**) Benjamin Moore, Potpourri Green
   (**PT5**) Benjamin Moore, Tequila Lime 2028-30
   (**PT6**) Match Existing Door + Frame Colour
   (**PT7**) Match Existing Wall Colour
   (**PT5**) Match Existing Locker Colour
   (Refer to drawings for custom pattern)

2.3 MIXING AND TINTING

1. Perform colour tinting operations prior to delivery of paint to site. Obtain written approval from Consultant for tinting of painting materials.
2. Mix paste, powder or catalyzed paint mixes in accordance with manufacturer's written instructions.
3. Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.
4. Thin paint for spraying in accordance with paint manufacturer's instructions.
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. Strain as necessary.

2.4 GLOSS/SHEEN RATINGS

1. Paint gloss is defined as sheen rating of applied paint, in accordance with following values:
   1.1. Level 1 - Matte(Flat) Finish
   Gloss @ 60 degrees: Max. 5
   Gloss@ 85 degrees: Max 10
   1.2. Level 2 - Velvet Finish
   Gloss @ 60 degrees: Max. 10
   Gloss@ 85 degrees: 10-35
   1.3. Level 3 - Eggshell Finish
   Gloss @ 60 degrees: 10-25
   Gloss@ 85 degrees: 10-35
   1.4. Level 4 - Satin (Pearl) Finish
   Gloss @ 60 degrees: 20-35
   Gloss@ 85 degrees: min 35
   1.5. Level 5 - Semi-gloss Finish
   Gloss @ 60 degrees: 35-70
   1.6. Level 6 - Gloss Finish
   Gloss @ 60 degrees: 70-85
   1.7. Level 7 - High Gloss Finish
   Gloss @ 60 degrees: More than 85
2. Gloss level ratings of painted surfaces to be provided on colour schedule.

2.5 INTERIOR PAINTING SYSTEMS

1. Interior dry fall paint for mechanical equipment and open ceiling areas. Benjamin Moore Latex Dry Fall, Flat or Architect approved similar.
2. Concrete masonry units: smooth and split face block and brick:
   2.1. INT 4.2D - High performance architectural latex (over latex block filler) Eggshell finish.
3. Structural steel and metal fabrications: columns, beams, joists:
   3.1. INT 5.1Q - Latex Eggshell finish (over Q.D. alkyd primer).
4. Galvanized metal: doors, frames, railings, misc. steel, pipes, overhead decking, and ducts.
   4.1. INT 5.3M - High performance architectural latex semi-gloss (over W.B. galvanized primer) finish.
5. Dressed lumber: including doors, door and window frames, casings, mouldings:
   5.1. INT 6.3Z - Polyurethane, Clear, 2 component finish.
6. Wood paneling and casework: partitions, panels, shelving, millwork:
   6.1. INT 6.4J - Polyurethane varnish satin finish.
   6.2. INT 6.4Q - Fire Retardant, Clear, S.B. Eggshell coating (ULC rated).
7. Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock type material", and textured finishes:
   7.1. INT 9.2B - High performance architectural latex Eggshell (over latex primer/sealer) finish.

2.6 SOURCE QUALITY CONTROL

1. Perform following tests on each batch of consolidated post-consumer material before surface coating is reformulated and canned. Testing by laboratory or facility which has been accredited by Standards Council of Canada.

1.1. 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.

1.2. Mercury is to be determined by Cold Vapour Atomic Absorption Spectroscopy using Technique no. 7471 as defined in EPA SW-846.

1.3. Organochlorines and PCBs are to be determined by Gas Chromatography using Technique no. 8081 as defined in EPA SW-846.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

1. Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheet.

3.2 GENERAL

1. Perform preparation and operations for interior painting in accordance with MPI Architectural Painting Specifications Manual except where specified otherwise.
2. Apply paint materials in accordance with paint manufacturer's written application instructions.

3.3 EXAMINATION

1. Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable to be painted in accordance with manufacturer's written instructions.
   1.1. Visually inspect substrate in presence of Consultant.
   1.2. Inform Consultant of unacceptable conditions immediately upon discovery.
   1.3. Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.
2. Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.
3. Maximum moisture content as follows:
   3.1. Stucco, plaster and gypsum board: 12 %.
   3.2. Concrete: 12 %.
   3.3. Clay and Concrete Block/Brick: 12 %.
   3.4. Hard Wood: 15 %.
   3.5. Soft Wood: 17%.

3.4 PREPARATION

1. Protection (not applicable to new painting work):
   1.1. 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 surfaces as directed by Consultant.
   1.2. Protect items that are permanently attached such as Fire Labels on doors and frames.
   1.3. Protect factory finished products and equipment.
   1.4. Protect passing pedestrians, building occupants in and about the building.
2. Surface Preparation (not applicable to new painting work):

2.1. Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.

2.2. Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.

2.3. Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Consultant.

3. Clean and prepare surfaces in accordance with MPI Architectural Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:

3.1. Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.

3.2. 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.

3.3. Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.

3.4. Allow surfaces to drain completely and allow to dry thoroughly.

3.5. Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.

3.6. Use trigger operated spray nozzles for water hoses.

3.7. Many water-based paints cannot be removed with water once dried. Minimize use of mineral spirits or organic solvents to clean up water-based paints.

4. Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.

5. Where possible, prime non-exposed surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.

5.1. Apply sealer to MPI #36 over knots, pitch, sap and resinous areas.

5.2. Apply wood filler to nail holes and cracks.

5.3. Tint filler to match stains for stained woodwork.

6. Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.

7. Carried out during shop priming: 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 and vacuum cleaning.

8. Touch up of shop primers with primer as specified.

9. Do not apply paint until prepared surfaces have been accepted by Consultant

3.5 EXISTING CONDITIONS

1. Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test" and report findings to Consultant. Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

2. Maximum moisture content as follows:

2.1. Stucco: 12 %.

2.2. Concrete: 12 %.

2.3. Clay and Concrete Block/Brick: 12 %.

2.4. Hard Wood: 15 %.

2.5. Soft Wood: 17%.

3.6 APPLICATION

1. Method of application to be as approved by Consultant. Apply paint by air sprayer, brush, airless sprayer and/or roller. Conform to manufacturer's application instructions unless specified otherwise.
2. Brush and Roller Application:
   2.1. Apply paint in uniform layer using brush and/or roller type suitable for application.
   2.2. Work paint into cracks, crevices and corners.
   2.3. Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.
   2.4. Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces free of roller tracking and heavy stipple.
   2.5. Remove runs, sags and brush marks from finished work and repaint.
3. Spray application:
   3.1. Provide and maintain equipment that is suitable for intended purpose, capable of atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
   3.2. Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.
   3.3. Apply paint in uniform layer, with overlapping at edges of spray pattern. Back roll first coat application.
   3.4. Brush out immediately all runs and sags.
   3.5. Use brushes and rollers to work paint into cracks, crevices and places which are not adequately painted by spray.
4. Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access.
5. Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
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. Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.
12. Wood, drywall, plaster, stucco, concrete, concrete masonry units and brick; if sprayed, must be back rolled.

3.7 MECHANICAL/ELECTRICAL EQUIPMENT

1. Paint finished area exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as indicated.
2. Boiler room, mechanical and electrical rooms: paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment.
3. Other unfinished areas: leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.
4. Do not paint over nameplates.
5. Keep sprinkler heads free of paint.
6. Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.
7. Paint fire protection piping red.
8. Paint disconnect switches for fire alarm system and exit light systems in red enamel.
9. Paint natural gas piping yellow.
10. Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.
11. Do not paint interior transformers and substation equipment.

3.8 SITE TOLERANCES

1. Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.
2. Ceilings: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.
3. Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

3.9 FIELD QUALITY CONTROL

1. Standard of Acceptance:
   1.1. Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.
   1.2. Ceilings: no defects visible from floor at 45 degrees degrees to surface when viewed using final lighting source.
   1.3. Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

3.10 CLEANING

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
   1.1. 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 00 - Cleaning.

3.11 RESTORATION

1. Clean and re-install 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 to approval of Consultant. Avoid scuffing newly applied paint.
5. Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Consultant.

END OF SECTION

SECTION 10 11 16
Markerboards

Part 1 General

1.1 REFERENCE STANDARDS

1. Aluminum Association (AA)
   1.1. DAF 45-03, Designation System for Aluminum Finishes.
2. American National Standards Institute (ANSI)
   2.1. ANSI A135.4-2004, Hardboard Standard.
   2.2. ANSI A208.1-2009, Particleboard.
   2.3. ANSI A208.2-2009, Medium Density Fiberboard for Interior Use.
3. ASTM International
   3.1. ASTM A653/A653M-11, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   3.2. ASTM A924/A924M-10a, Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
4. CSA Group (CSA)
   4.1. CSA O121-08, Douglas Fir Plywood.
   4.2. CSA O151-09, Canadian Softwood Plywood.
   4.3. CAN/CSA-Z809-08, Sustainable Forest Management.
5. Environmental Choice Program (ECP)
   5.1. CCD-046-95, Adhesives.
6. Green Seal Environmental Standards (GS)
   6.1. GS-11-11, Standard for Paints and Coatings.
   6.2. GS-36-11, Standard for Adhesives for Commercial Use.
7. Porcelain Enamel Institute (PEI)
   7.1. PEI 501 Properties of Porcelain Enamel.
8. South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
   8.1. SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.
9. Underwriters' Laboratories of Canada (ULC).
   9.1. CAN/ULC-S706-09, Standard for Wood Fibre Insulating Boards for Buildings.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

1. Submit in accordance with Section 01 33 00 - Submittal Procedures.
2. Product Data:
   2.1. Submit manufacturer's instructions, printed product literature and data sheets for Whiteboards and include product characteristics, performance criteria, physical size, finish and limitations.
3. Installation Drawings:

3.1. Submit installation drawings.

3.2. Indicate location, type, size, panel arrangement, backing, hardware, anchor or mounting details, frame or trim and accessories.

4. Samples:

4.1. Submit 300 x 300 mm sample of each type of whiteboard and trim.

1.3 DELIVERY, STORAGE AND HANDLING

1. Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
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:

3.1. Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

3.2. Store and protect whiteboards from nicks, scratches, and blemishes.

3.3. Replace defective or damaged materials with new.

Part 2 Products

2.1 MATERIALS

1. Dry Erase Whiteboards (WB)

1.1. Supplier: Claridge / CPE Design Solutions

1.2. Facing: Porcelain Enamel

1.3. Core: MDF

1.4. Backing: Galvanized steel

1.5. Backing: Galvanized steel

1.6. Size: 5'-0" high X width to suit - seamless to 16'-0"; Mount @ 7'-6" to top of board

1.7. Colour: LCS3 Whtie

1.8. Trim and Marker Trays:

1.8.1.CS #264 flat tray bottom

1.8.2.CS #205 perimeter trim

2.2 FABRICATION

1. Fabricate chalkboard panels to sizes indicated.
2. Refer to drawings for whiteboard locations

Part 3 Execution

3.1 EXAMINATION

1. Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for chalkboard installation in accordance with manufacturer's written instructions.

1.1. Visually inspect substrate.

1.2. Inform Consultant of unacceptable conditions immediately upon discovery.

3.2 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.

3.3 INSTALLATION

1. Install whiteboards in accordance with manufacturer's instructions, parallel to floor, plumb and level, to provide rigid, secure writing surface.
2. Install trim and trays around whiteboard panels.
   2.1. Make mitres and joints to hair-line fit, free of rough edges.
   2.2. Use concealed brackets to reinforce and hold joints tight and flush.
   2.3. No exposed fasteners permitted.
3. WB Attachment:
   3.1. Use recommended adhesive applied using spot method with daubs 40 mm diax25mm high at 200mm O.C. each way. Press firmly into adhesive to ensure adhesion.
   3.2. Use manufacturer provided cleats for mechanical fastening of Whiteboards.
   3.3. Contractor to provide required wood blocking at all WB locations to allow for fastening
4. WF Attachment:
   4.1. Apply to millwork M9 vertical surface
   4.2. Surface Prep: ensure all seams and fastener holes are filled smooth. Seal MDF with Acrylic Primer for wood (Zinsser Bin 123 or equivalent)
   4.3. Install as per manufacturer's Instructions.
   4.4. Install in a horizontal orientation (no vertical seams). Trim off any excess film top and bottom and apply Aluminum trim and marker tray as indicated on drawings.

3.4 CLEANING

1. Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
   1.1. 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 00 - Cleaning.

3.5 PROTECTION

1. Protect installed products and components from damage during construction.
2. Repair damage to adjacent materials caused by whiteboard installation

END OF SECTION

SECTION 10 28 00
Washroom Accessories

Part 1 General

1.1 RELATED REQUIREMENTS

1. Section includes washroom accessories as scheduled in this Section and as indicated on the Drawings..
2. Owner supplied accessories will be installed by General Contractor

1.2 ACTION AND INFORMATIONAL SUBMITTALS

1. Product Data:
   1.1. Provide manufacturer's printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations.

1.3 QUALITY ASSURANCE

1. Manufacturer: Provide products manufactured by a company with a minimum of 10 years successful experience manufacturing similar products
2. Single Source Requirements: To the greatest extent possible provide products from a single manufacturer.
3. Accessibility Requirements: Comply with requirements applicable in the jurisdiction of the project, including but not limited to ADA and ICC/ANSI A117.1 and Section 3.8 of the Ontario Building Code requirements as applicable.

1.4 DELIVERY, STORAGE AND HANDLING

1. Deliver, store and handle materials and products in strict compliance with manufacturer's instructions and recommendations. Protect from damage.

Part 2 Products

2.1 MANUFACTURERS

1. Manufacturer’s Warranty for Washroom Accessories: Manufacturer’s standard 1 year warranty for materials and workmanship.
2. Manufacturer’s Warranty for Electric Hand Dryers: Manufacturer’s standard 5 year warranty on parts, except 3 year warranty on motor brushes from date of purchase. (Refer to Electrical)

2.2 PERFORMANCE CRITERIA

1. Basis of Design Products: Based on the quality and performance requirements of the project, specifications are based solely on the products of Bobrick Washroom Equipment, Inc.. www.bobrick.com., or Architect approved similar.

2.3 MATERIALS

1. GLASS MIRROR WITH STAINLESS STEEL ANGLE FRAME: B-290 (**MIR**)
2. 32MM DIA. STAINLESS STEEL 762MM X 762MM 90-DEGREE GRAB BAR: B-5898 (**GBR1**)
3. 32MM DIA. STAINLESS STEEL 610MM GRAB BARS HORIZONTAL: B-6806 (**GBR3**)

4. 32MM DIA. STAINLESS STEEL 760MM GRAB BARS HORIZONTAL: B-6806 (**GBR4**)
5. 32MM DIA. STAINLESS STEEL 300MM GRAB BARS HORIZONTAL: B-6806 (**GBR5**)
6. 32MM DIA. STAINLESS STEEL 1000MM GRAB BARS VERTICAL: B-6806 (**GBR6**)
7. RECESSED PAPER TOWEL DISPENSER AND WASTE RECEPTACLE: B-43944 SATIN FINISH
8. COAT HOOK: B-542 SATIN FINISH (**CH**)
9. SURFACE-MOUNTED UTILITY SHELF, SATIN FINISH, 18" (455MM) LENGTH B-295 X18 (**SHELF1**)
10. BRADLEY SA16 SERIES RECESSED SOAP DISH (**SHELF2**)
11. REVERSIBLE COMPACT-GRADE LAMINATE FOLDING SHOWER SEAT B-5181-TD
12. HEAVY-DUTY SHOWER CURTAIN ROD, SATIN FINISH B-6107 x 72
13. SHOWER CURTAIN, OPAQUE MATTE WHITE VINYL, 70" WIDE (INCLUDE 12 HOOKS)
14. TOILET PAPER DISPENSER (**TPD**)(Owner Supplied)
15. NAPKING DISPOSAL (**ND**) (Owner Supplied)

Part 3 Execution

3.1 INSTALLATION

1. Install products in strict compliance with manufacturer’s written instructions and recommendations, including the following:
   1.1. Verify blocking has been installed properly.
   1.2. Verify location does not interfere with door swings or use of fixtures.
   1.3. Comply with manufacturer’s recommendations for backing and proper support
   1.4. Use fasteners and anchors suitable for substrate and project conditions
   1.5. Install units rigid, straight, plumb, and level, in accordance with manufacturer’s installation instructions and approved shop drawings
   1.6. Conceal evidence of drilling, cutting, and fitting to room finish.
   1.7. Test for proper operation

3.2 CLEANING

1. Clean exposed surfaces of compartments, hardware, and fittings using methods acceptable to the manufacturer.
2. Touch-up, repair or replace damaged products until Substantial Completion.
3. Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

3.3 PROTECTION

1. Protect installed products and components from damage during construction.
2. Repair damage to adjacent materials caused by toilet and bathroom accessories installation.

END OF SECTION

SECTION 10 51 13
Metal Lockers

Part 1 General

1.1 SECTION INCLUDES

1. Locker units with hinged doors.
2. Metal bases,tops and filler panels.

1.2 QUALIFICATIONS

1. Qualifications of alternative lockers will be evaluated only if they are submitted with supporting documents to show that they are equal to or better than these specification standards.

1.3 KNOCKED DOWN CONSTRUCTION

1. Each locker built shall have a door mounted in a frame. Individual top, bottom, side, back, shelves, with a common side separating compartments.

1.4 CHEMICAL SAFETY

1. All materials are completely asbestos free. The paint used shall be a powder coating completely free of all lead and chromate.

1.5 WARRANTY

1. Hadrian “EMPEROR” lockers are warranted for a period of two years
against defective parts and workmanship, excluding vandalism and improper installation.

1.6 INFORMATIONAL SUBMITTALS

1. Section 01 33 00: Submission procedures.
2. Installation Data: Manufacturer's special installation requirements including component installation assembly.

1.7 CLOSEOUT SUBMITTALS

1. Section 01 78 00: Submission procedures.

1.8 DELIVERY, STORAGE, AND HANDLING

1. Section 01 61 00: Transport, handle, store, and protect products.
2. Protect locker finish and adjacent surfaces from damage.

Part 2 Products

2.1 MATERIALS

1. All locker parts shall be made of mild cold rolled sheet steel free from surface imperfections and contaminants which would be detrimental to the acceptance of a high grade hybrid epoxy polyester powder finish. At a slight extra cost, locker parts may be made from galvanneal steel. Assembly fasteners shall be zinc plated flat head screws with hex nuts. Rivets (Advel #1661-0613) 3/16" aluminum dome head 8-25 dome with steel shaft are also available upon request.

2. **DOORS**
   Doors shall be of a double-pan design consisting of a 20-gauge outer panel welded to a 24-gauge inner panel to form a rigid box construction that resists prying. The outer panel to be double flanged on all four edges and the inner panel single flanged on all four edges, providing extraordinary rigidity when both panels are welded together. A structural and sound deadening 1" cell honeycomb core is bonded to the inner surfaces. The door shall be flush with the frame and include a recessed handle and recessed number plate, both of which eliminate protruding parts. As an up charge option, doors may be constructed with a 16-gauge outer panel. Doors are hinged on the right and swing from left to right.
3. **DOOR FRAMES**
   Both vertical members shall be not less than 16-gauge and formed into a rigid channel 5/8" wide exposed frame and 2 7/16"side depth. Hadrian's exclusive frame size offers wide door opening and ease of installing extra deep frame onto body, especially when rivets are used for assembly. The frame shall be completed by 3" high top and bottom cross members of not less than 18 gauge formed as an open box channel and welded to the verticals. The bottom frames' full-width lintel extends back and down to form a rigid box to support the bottom shelf. Both vertical frame members shall be formed to offer a full-length 7/16" wide continuous door strike. The latch vertical member shall include a welded 11-gauge padlock hasp together with a 7/16" O.D. air-cushioned rubber bumper. No fasteners shall be exposed on fronts of locker doors and frames.
4. **BODY**
   Sides and backs shall be no less than 24-gauge and should not contain extra unnecessary holes unless otherwise specifically used for the assembly of the lockers and accessories on the project. Edges shall be formed to provide a strong and rigid assembly when bolted or riveted together Locker backs are flanged at right angles providing a triple thickness of metal at the back corner connections. Shelves, tops and bottoms shall be interchangeable; not less than 22-gauge and formed into a sturdy pan with a lip formed front edge for additional strength and safety.
5. **LATCHING/LOCKING DEVICE – SINGLE POINT**
   Trouble-free use is achieved with no sliding rods, springs, turnhandles or moving latches. An 11-gauge 2" x ¾" padlock hasp shall be securely welded to the continuous strike midway up on the frame and centered at the handle location. The hasp shall be formed to protrude through an extruded aluminum recessed handle, which is cliplocked and bonded to the door. The handle's inner surface shall be concave and grooved for fingertip door control. To keep the door closed when not in use, a magnetic latch system shall be installed on the hasp to engage the door in one (1) location per door. Padlock is standard. For built-in locks (combination, key or coin/card operated) the hasp shall be replaced with a special 11-gauge security strike welded to the frame's continuous door strike. The lock bolt shall secure itself behind the strike. Access to the secured bolt shall be denied by the full-length stop on the door frame and by the top lip of the strike projecting forward and fitting into a slot in the door, preventing the door and frame from being pulled apart.
6. **HINGE-CONTINUOUS**
   A full-length 18-gauge continuous piano hinge shall be securely welded to the frame and fastened to the door with screws or rivets. Hinge shall maximize security and enhance resistance to abuse and vandalism.
7. **VENTILATION**
   Airflow is achieved through 4 sets of 5 unobstructed louvers ¾" wide x ¼" high in the vertical frame members. Provide 18 each 3/16" diameter perforations at outside perimeter of each top, shelf, and bottom to offer additional ventilation throughout the inside of each locker.
8. **NUMBER PLATE**
   Each door shall have a high strength black laminated plastic number plate, 2 ½" wide x 1 1/8" high with white numbers not less than 7/16" high. Plates shall accommodate up to four digits, be nestled in

a recess flush with door surface and shall be fastened to door with two rivets. Unless otherwise specified, lockers will be numbered consecutively from 1 – up.

9. **INTERIOR EQUPMENT**
   Standard equipment in the single-tier locker shall be one hat shelf and three single prong coat hooks. Double and triple- tier lockers shall have three single prong coat hooks per compartment. Double prong coat hooks and 1" O.D. coat rods with stainless steel brackets shall be made available. All hooks are chrome plated steel with ball point heads and attached to shelves with two fasteners.
10. **FINISH**
    All steel parts and aluminum pedestals shall be thoroughly machine cleaned, phosphatised, and finished with a high performance epoxy powder coating, baked on to provide a uniform, smooth, protective finish. Colors shall be selected from Hadrian's standard color card, including anti-graffiti and special effects colors. Locker frames to be standard as Black #510, although the other standard colors are available without price increase. All interior body parts are finished in standard Light Grey #535. Special colors, including special powder-coating textures are provided and priced on request.

Part 3 Execution

3.1 INSTALLATION

1. Install lockers to manufacturer's written instructions.
2. Install lockers plumb and square.
3. Place and secure on prepared base.
4. Secure lockers with anchor devices to suit substrate materials. Minimum pullout force 445 N.
5. Bolt adjoining locker units together to provide rigid installation.
6. Install bases, filler panels, end panels and sloped tops.
7. Install accessories.
8. Replace components that do not operate smoothly.
9. Upon completion of installation, inspect lockers and adjust as necessary for proper door closing. Touch up scratches and abrasions to match original finish.

3.2 CLEANING

1. Section 01 74 10: Cleaning installed work.
2. Clean locker interiors and exterior surfaces.

END OF SECTION