2. Specifications

2.1 General Conditions

2.1.0 Contents

2.1.1 Allowances

2.1.1.1 General Requirements

1. Include in the Contract Price all specified cash allowances.
2. Cash allowances, unless otherwise specified, cover net cost to Contractor of services, products, construction machinery and equipment, freight, handling, unloading, storage, installation and other authorized expenses incurred in performing Work.
3. Contract Price, and not cash allowance, includes Contractor's overhead and profit in connection with such cash allowance.
4. Contract Price will be adjusted by written order to provide for excess or deficit to each cash allowance.
5. 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.
6. Include progress payments on accounts of work authorized under cash allowances in Consultant's monthly certificate for payment.
7. 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.

Specifications - continued

8. Amount of each allowance, for Work specified in respective specification Sections is as follows:
9. Inspection and testing: $5,000.00

2.1.2 Submittal Procedures

2.1.2.1 Administrative

1. Submit to Consultant submittals listed for review. Submit promptly and in orderly sequence as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
2. Do not proceed with Work affected by submittal until review is complete.
3. Verify field measurements and affected adjacent Work to ensure co-ordination.
4. Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.
5. Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant review.
6. Keep one reviewed copy of each submission on site.
7. Consultant’s review only covers general conformance of the shop drawings with the intent of the design and in no way removes responsibility of the shop drawing design from the Professional Engineer who stamped the shop drawings.

2.1.2.2 Shop Drawings and Product Data

1. Where required submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario.
2. 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.
3. 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.

Specifications - continued

4. Submit electronic copy, in PDF format, of shop drawings for each requirement requested in specification Sections and as Consultant may reasonably request.

2.1.2.3 Samples

1. Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.

2.1.3 Health and Safety

2.1.3.1 Related Requirements

1. Designated Substance Review and Hazardous Building Materials Assessment

2.1.3.2 Action and Informational Submittals

1. Submit site-specific Health and Safety Plan: Within 10 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:

   .1 Results of site specific safety hazard assessment.
   .2 Results of safety and health risk or hazard analysis for site tasks and operation.

2.1.3.3 Filing of Notice

1. File Notice of Project with Provincial authorities prior to beginning of Work.

2.1.3.4 Compliance Requirements

1. Comply with Ontario Health and Safety Act, R.S.O.

2.1.4 Environmental Procedures

2.1.4.1 General Requirements

1. Prior to commencing construction activities or delivery of materials to site, provide Environmental Protection Plan for review and approval by Consultant.
2. Ensure Environmental Protection Plan includes comprehensive overview of known or potential environmental issues to be addressed during construction.

2.1.4.2 Fires

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

Specifications - continued

2.1.4.3 Drainage

1. Provide Erosion and Sediment Control Plan identifying type and location of erosion and sediment controls provided. Ensure plan includes monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations, EPA 832/R-92-005, Chapter 3 requirements.
2. Provide temporary drainage and pumping required to keep excavations and site free from water.
3. Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.
4. Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

2.1.4.4 Site Clearing and Plant Protection

1. Protect trees and plants on site and adjacent properties as indicated.
2. Wrap in burlap, trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m minimum.
3. Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.
4. Minimize stripping of topsoil and vegetation.
5. Restrict tree removal to areas indicated or designated by Consultant.

2.1.4.5 Pollution Control

1. Maintain temporary erosion and pollution control features installed under this Contract.
2. Control emissions from equipment and plant to local authorities' emission requirements.
3. Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.
4. Provide temporary enclosures as required.
5. Cover or wet down dry materials and rubbish to prevent blowing dust and debris.

Specifications - continued

2.1.5 Regulatory Requirements

2.1.5.1 Permits

1. It is the Bidder's responsibility to obtain and pay for any permits required prior to the commencement of the work.

2.1.5.2 References, Codes and Regulations

1. Perform Work in accordance with the Ontario Building Code (OBC) 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.
2. Obey all Federal, Provincial and Municipal Laws, Acts, Ordinances, Regulations, Orders-in-Council and Bylaws, which could in any way pertain to the work outlined in the Contract. Satisfy all statutory requirements imposed by the Occupational Health and Safety Act and Regulations made there under, on a Contractor, a Constructor and/or Employer with respect to or arising out of the performance of the Contractor's obligations under this contract.

2.1.5.3 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.

    .1 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Consultant.

    .2 Mould: stop work immediately when material resembling mould is encountered during demolition work. Notify Consultant.

2.1.5.4 Building Smoking Environment

1. Smoking within the building is prohibited.

2.1.6 Quality Control

2.1.6.1 Independent Inspection Agencies

1. Independent Inspection/Testing Agencies will be engaged by the Owner for purpose of inspecting and/or testing portions of Work of the continuity of the building air/vapour barrier, insulation and window/curtain wall systems.

Specifications - continued

2. 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 increase in cost to Contract. Pay costs for retesting and re-inspection.

2.1.6.2 Access to Work

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

2.1.6.3 Procedures

1. Notify appropriate agency and Consultant in advance of requirements 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.

2.1.6.4 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.

2.1.6.5 Equipment and Systems

1. Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.

2.1.6.6 Site Verify

1. Site verify all existing conditions prior to fabrication. If the required adjacent works are not in place to site very, coordinate with Contractor other Sub-trades as required to set guaranteed / required dimensions prior to fabrication.

    .1 No increase to the Contract price or schedule extension will be granted due to failure to comply with the above requirements.

Specifications - continued

2.1.7 Temporary Utilities

2.1.7.1 Installation and Removal

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

2.1.7.2 Dewatering

1. Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.
2. Provide for the disposal of the water removed from the excavation so that it shall not be injurious to public health, private property or to any operation of the work completed or under construction by the successful proponent or others.
3. Note that the Ontario Water Resources Act requires that a permit be obtained for taking water in excess of 50,000 liters/day from any ground surface source of water supply.
4. Stage the excavation, foundations and footings in section as required to maintain the dewatering requirements below the 50,000 liter/day threshold. In accordance with the geotechnical report this is to be done in small manageable sections.

2.1.7.3 Water Supply

1. Provide continuous supply of potable water for construction use. The existing building water may be used.

2.1.7.4 Temporary Heating and Ventilation

1. The existing building HVAC system may be used. Install filter media over all air supply and return vents in area of work.

2.1.7.5 Temporary Power and Light

1. Provide and maintain temporary lighting throughout project. Existing building power may be used.

2.1.7.6 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.

Specifications - continued

2.1.7.7 Fire Protection

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

2.1.8 Construction Facilities

2.1.8.1 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. Provide construction facilities in order to execute work expeditiously.
3. Remove from site all such work after use.

2.1.8.2 Scaffolding

1. Provide and maintain scaffolding, ramps, ladders, swing staging, platforms, and temporary stairs as required to carry out Work.

2.1.8.3 Hoisting

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

2.1.8.4 Sanitary Facilities

1. Existing building sanitary facilities may be used.

2.1.8.5 Protection and Maintenance of Traffic

1. Maintain and protect traffic on affected roads during construction period.
2. 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.
3. Protect travelling public from damage to person and property.
4. Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.

Specifications - continued

2.1.8.6 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.

2.1.9 Temporary Barriers

2.1.9.1 Hoarding

1. Erect temporary site enclosure, MODULOCK or equivalent fence.
2. Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

2.1.9.2 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.

2.1.9.3 Weather Enclosures

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

2.1.9.4 Dust Tight Screens

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

2.1.9.5 Access to Site

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

2.1.9.6 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.

2.1.9.7 Fire Routes

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

Specifications - continued

2.1.9.8 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.

2.1.9.9 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.

2.1.10 Common Product Requirements

2.1.10.1 Quality

1. 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.
2. Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
3. Should disputes arise as to quality or fitness of products, decision rests strictly with Consultant based upon requirements of Contract Documents.

2.1.10.2 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 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.
5. Remove and replace damaged products at own expense and to satisfaction of Consultant.

Specifications - continued

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

2.1.10.3 Manufacturer's Instructions

1. 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. Improper installation or erection of products, due to failure in complying with these requirements, authorizes Consultant to require the removal replacement and re-installation of products, at no increase in Contract Price or Contract Time.

2.1.10.4 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. Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Consultant, whose decision is final.

2.1.10.5 Concealment

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

2.1.10.6 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.

Specifications - continued

2.1.11 Execution

2.1.11.1 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.

2.1.11.2 Execution

1. Execute cutting, fitting, and patching, including excavation and fill, to complete Work.
2. Uncover Work to install ill-timed Work.
3. Remove and replace defective and non-conforming Work.
4. Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
5. Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
6. Restore work with new products in accordance with requirements of Contract Documents.
7. Fit Work to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
8. At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material in accordance with Firestopping requirements, full thickness of the construction element.
9. Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.
10. Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.
11. Site verify all dimensions prior to fabrication of all materials and products to ensure proper coordination.

Specifications - continued

2.1.11.3 Cleaning

1. Maintain Work in tidy condition, free from accumulation of waste products and debris.
2. Clear snow and ice from access to building, bank/pile snow in designated areas only or remove from site.
3. Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
4. Store volatile waste in covered metal containers, and remove from premises at end of each working day.
5. Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
6. Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
7. Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

2.1.11.4 Final Cleaning

1. 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.
2. Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.
3. Clean lighting reflectors, lenses, and other lighting surfaces.
4. Vacuum clean and dust building interiors, including behind grilles, louvres and screens.
5. Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.
6. Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
7. Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
8. Remove dirt and other disfiguration from exterior surfaces and wash clean.
9. Clean and sweep roofs, gutters, areaways, and sunken wells.
10. Sweep and wash clean paved areas.

Specifications - continued

11. Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
12. Clean roofs, downspouts, and drainage systems.
13. Remove debris and surplus materials from crawl spaces and other accessible concealed spaces.
14. Remove snow and ice from access to building.

2.1.12 Waste Management and Disposal

2.1.12.1 Site Assessment

1. Provide "blue box" recycling bins near the construction trailer for recycling waste generated by site workers and visitors.

2.1.12.2 Construction Waste Management

1. Invite suppliers to retrieve/retain packaging after delivery (for reuse).
2. Prevent damage of materials due to mishandling, improper storage, and contamination.
3. Contact local salvaging/recycling facilities and arrange for recycling services. Only facilities operating under a Certificate of Approval as required by the Environmental Protection Act of Ontario are acceptable. Incineration is not to be considered a means of diversion from landfill.
4. Provide on-site bins for the collection, handling, and storage of waste that are properly sized to accommodate expected waste quantities.
5. Follow the material acceptance requirements of the salvaging/recycling facilities so that materials are properly sorted, grouped, and packaged.

2.1.13 Closeout Submittals

2.1.13.1 Submittals

1. At completion of project submit project manuals, Three (3) sets with electronic copy on CD in PDF format. The project manuals are to include all:
   .1 Shop drawings
   .2 Tests and reports
   .3 Product literature required for cleaning, maintenance and ordering of replacement parts.
   .4 Product warranties

Specifications - continued

2.1.13.2 As–Built Documents and Samples

1. Contract Drawings and shop drawings: mark each item to record actual construction, including:

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

2.1.13.3 Maintenance Materials

1. Spare Parts and special tools: Provide spare parts, in quantities specified in individual specification sections and deliver to location as directed; place and store.
2. Extra Stock Materials: Provide maintenance and extra materials, in quantities specified in individual specification sections. Deliver to location as directed; place and store.

2.2 Existing Conditions

2.2.0 Contents

2.2.1 Demolition

2.2.1.1 Environmental Protection

1. Ensure that demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
2. Fires and burning of waste or materials are not permitted on site.
3. Do not bury rubbish waste materials.
4. Do not dispose of waste or volatile materials including but not limited to: mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers.

Specifications - continued

5. Ensure proper disposal procedures are maintained throughout project.
6. Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties.
7. Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with authorities having jurisdiction.
8. Protect trees, plants and foliage on site and adjacent properties where indicated.
9. Prevent extraneous materials from contaminating air beyond application area, by providing temporary enclosures during demolition work.
10. Cover or wet down dry materials and waste to prevent blowing dust and debris. Control dust on all temporary roads.

2.2.1.2 Existing Conditions

1. Structures to be demolished to be based on their condition on date that tender is accepted.
   .1 Remove, protect and store salvaged items as directed by Consultant. Salvage items as identified by Consultant. Deliver to location within the as directed by Consultant.

2.2.1.3 Protection

1. Prevent movement, settlement or damage of adjacent structures, services, walks, paving, trees, landscaping, adjacent grades parts of existing building to remain.
   .1 Provide bracing, shoring and underpinning as required.
   .2 Repair damage caused by demolition as directed by Consultant.
2. Support affected structures and, if safety of structure being demolished or adjacent structures or services appears to be endangered, take preventative measures, stop Work and immediately notify Consultant.
3. Prevent debris from blocking surface drainage system, elevators, mechanical and electrical systems which must remain in operation.

2.2.1.4 Preparation

1. Disconnect and make safe existing electrical services as required to carry out Work.
   .1 Electrical work to be carried out by a licensed electrician.

Specifications - continued

2. Do not disrupt active or energized utilities designated to remain undisturbed.
3. Remove rodent and vermin as required.

2.2.1.5 Demolition

1. Demolish parts of structure to permit construction of addition as indicated.
2. Remove existing equipment, services, and obstacles where required for refinishing or making good of existing surfaces, and replace as work progresses.
3. At end of each day's work, leave Work in safe and stable condition.
   .1 Protect interiors of parts not to be demolished from exterior elements at all times.
4. Demolish to minimize dusting. Keep materials wetted.
5. Contain fibrous materials (e.g. Insulation) to minimize release of airborne fibres while being transported within facility.
6. Use natural lighting to do Work where possible.
   .1 Shut off lighting except those required for security purposes at end of each day.

2.2.2 Hazardous Materials

2.2.2.1 General Requirements

1. Designated Substance Review and Hazardous Building Materials Assessment
   .1 A designated substance report is being prepared for the Owner. It will be available to the successful Proponent.

2.2.2.2 Action and Informational Submittals

1. Submit manufacturer's instructions, printed product literature and data sheets for hazardous materials and include product characteristics, performance criteria, physical size, finish and limitations.
2. Submit copies of WHMIS MSDS to Consultant for each hazardous material required prior to bringing hazardous material on site.

2.2.2.3 Delivery, Storage and Handling

1. Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.
2. Store and handle flammable and combustible materials in accordance with Ontario Fire Code of Canada requirements.

Specifications - continued

3. Keep no more than 45 litres of flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use.
   .1 Store flammable and combustible liquids in approved safety cans bearing the Underwriters' Laboratory of Canada or Factory Mutual seal of approval.
   .2 Storage of quantities of flammable and combustible liquids exceeding 45 litres for work purposes requires the written approval of the Consultant.
4. Transfer of flammable and combustible liquids is prohibited within buildings.
5. Transfer flammable and combustible liquids away from open flames or heat-producing devices.
6. Solvents or cleaning agents must be non-flammable or have flash point above 38 degrees C.
7. Store flammable and combustible waste liquids for disposal in approved containers located in safe, ventilated area. Keep quantities to minimum.
8. Observe smoking regulations, smoking is prohibited inside the building and in areas where hazardous materials are stored, used, or handled.
9. Storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids:
   .1 Store hazardous materials and wastes in closed and sealed containers.
   .2 Label containers of hazardous materials and wastes in accordance with WHMIS.
   .3 Store hazardous materials and wastes in containers compatible with that material or waste.
   .4 Segregate incompatible materials and wastes.
   .5 Ensure that different hazardous materials or hazardous wastes are stored in separate containers.
   .6 Store hazardous materials and wastes in secure storage area with controlled access.
   .7 Maintain clear egress from storage area.
   .8 Store hazardous materials and wastes in location that will prevent them from spilling into environment.
   .9 Have appropriate emergency spill response equipment available near storage area, including personal protective equipment.
   .10 Maintain inventory of hazardous materials and wastes, including product name, quantity, and date when storage began.

Specifications - continued

.11 Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.
.12 Report spills or accidents immediately to Consultant. Submit a written spill report to Consultant within 24 hours of incident.

2.2.2.4 Cleaning

1. Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.
2. Recycle hazardous wastes for which there is approved, cost effective recycling process available.
3. Send hazardous wastes to authorized hazardous waste disposal or treatment facilities.
4. Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.
5. Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.
6. Dispose of hazardous wastes in timely fashion in accordance with applicable provincial regulations.

2.3 - Concrete

2.3.0 Contents

2.3.0.1 Refer to Structural Drawings

2.4 - Masonry

2.4.0 Contents

2.4.0.1 Section Not Used

2.5 - Metals

2.5.0 Contents

2.5.1 Structural Steel (Refer to structural drawings)

Specifications - continued

2.5.2 Metal Fabrications

2.5.2.1 Action and Informational Submittals

1. Submit manufacturer's instructions, printed product literature and data sheets for sections, plates, pipe, tubing, bolts, and include product characteristics, performance criteria, physical size, finish and limitations.
2. Submit drawings stamped and signed by professional engineer registered or licensed in Province Ontario, Canada.
3. Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

2.5.2.2 Materials

1. Steel sections and plates: to CSA G40.20/G40.21, Grade 300W.
2. Steel pipe: to ASTM A 53/A 53M standard weight, black or galvanized finish as indicated on drawings.
3. Welding materials: to CSA W59.
4. Welding electrodes: to CSA W48 Series.
5. Bolts and anchor bolts: to ASTM A 307.
6. Aluminum sheet: 1.5 mm minimum thickness, clear anodized
7. Stainless steel tubing: to ASTM A 269, Type 316, seamless welded with AISI No. 4 finish.
8. Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

2.5.2.3 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. Site verify all dimensions prior to fabrication.
4. Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.
5. Mill all edges after cutting
6. Undercut each piece at all welds to minimize size of exposed weld. Where possible weld back side only.
7. Use plug weld ground smooth where possible. Use tig welds at exposed welds.
8. Hot dip galvanize after fabrication.
9. Site verify all dimension prior to fabrication.

Specifications - continued

2.5.2.4 Finishes

1. Galvanizing: hot dipped galvanizing with zinc coating to CAN/CSA-G164.
2. Shop coat primer (interior priming): MPI- INT 5.1A
3. Zinc primer (exterior priming): zinc rich, ready mix to MPI-EXT 5.2C

2.5.2.5 Isolation Coating

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

2.5.2.6 Shop Painting

1. Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.
2. Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 degrees C.
3. Clean surfaces to be field welded; do not paint.
4. Do not prime metal items that are to receive spray fireproofing.

2.5.2.7 Schedule

1. The schedule below lists specific requirements for some items. Review all drawings to determine full scope of work.
2. Bent plates:
   .1 Hot dip galvanized for exterior use and prime painted for interior use, sizes as indicated.
   .2 Secure as required to support all required loads, weld where possible.
3. Definitions:
   .1 Exterior use: items that form part of an exterior wall or are secured to the exterior face of the exterior wall.
   .2 Interior use: all other items not included in exterior use above.

Specifications - continued

2.5.2.8 Erection

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. Make field connections with bolts to CSA S16 or Weld field connection as directed by Consultant.
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.
9. Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

2.6 - Wood

2.6.0 Contents

2.6.1 Rough Carpentry

2.6.1.1 Framing and Structural Materials

1. Lumber: unless specified otherwise, softwood, S4S, moisture content 19% (S-dry) or less in accordance with following standards:
   .1 CSA O141.
   .2 NLGA Standard Grading Rules for Canadian Lumber.
2. Structural Composite Lumber (SCL) in accordance with ASTM D 5456.
3. Framing and board lumber: in accordance with OBC.
4. Furring, blocking, nailing strips, grounds, rough bucks, curbs, fascia backing and sleepers:

Specifications - continued

.1 S2S is acceptable.
.2 Board sizes: "Standard" or better grade.
.3 Dimension sizes: "Standard" light framing or better grade.
.4 Post and timbers sizes: "Standard" or better grade.

2.6.1.2 Panel Materials

1. Plywood, OSB and wood based composite panels: to CAN/CSA-O325.0.
   .1 No added Urea Formaldehyde (NAUF) Adhesives or Resins.
2. Douglas fir plywood (DFP): to CSA O121, standard construction.
   .1 No added Urea Formaldehyde (NAUF) Adhesives or Resins.
3. Canadian softwood plywood (CSP): to CSA O151, standard construction.
   .1 No added Urea Formaldehyde (NAUF) Adhesives or Resins.
4. Poplar plywood (PP): to CSA O153, standard construction.
   .1 No added Urea Formaldehyde (NAUF) Adhesives or Resins.
5. Interior mat-formed wood particleboard: to ANSI 208.1.
   .1 No added Urea Formaldehyde (NAUF) Adhesives or Resins.
6. Mat-formed structural panelboards (OSB wafer): to CAN3-O437.0.
   .1 No added Urea Formaldehyde (NAUF) Adhesives or Resins.

2.6.1.3 Accessories

1. Air seal: closed cell polyurethane or polyethylene.
2. General purpose adhesive: to CSA O112 Series.
3. Nails, spikes and staples: to CSA B111.
4. Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.
5. Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, recommended for purpose by manufacturer.
6. Nailing discs: flat caps, minimum 25 mm diameter, minimum 0.4 mm thick, sheet metal, formed to prevent dishing. Bell or cup shapes not acceptable.

2.6.1.4 Fastener Finishes

1. Galvanizing: to CAN/CSA-G164, use galvanized fasteners for exterior work, interior highly humid areas, pressure-preservative, fire-retardant, and treated lumber.
2. Stainless steel: use stainless steel type 304 alloy where indicated.

Specifications - continued

2.6.1.5 Installation

1. Comply with requirements of OBC 2012.
2. Install members true to line, levels and elevations, square and plumb.
3. Construct continuous members from pieces of longest practical length.
4. Install spanning members with "crown-edge" up.
5. Select exposed framing for appearance. Install lumber and panel materials so that grade-marks and other defacing marks are concealed or are removed by sanding where materials are left exposed.
6. Install wall sheathing in accordance with manufacturer's printed instructions.
7. 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.
8. Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
9. Install, fascia backing, nailers, curbs and other wood supports as required and secure using galvanized fasteners.
10. Install sleepers as indicated.
11. Use dust collectors and high quality respirator masks when cutting or sanding wood panels.

2.6.1.6 Erection

1. Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
2. Countersink bolts where necessary to provide clearance for other work.
3. Use nailing disks for soft sheathing as recommended by sheathing manufacturer.

2.6.1.7 Schedules

1. Framing and sheathing as indicated.

Specifications - continued

2.6.2 Finish Carpentry

2.6.2.1 Action and Informational Submittals

1. Submit manufacturer's instructions, printed product literature and data sheets for specified products and include product characteristics, performance criteria, physical size, finish and limitations.
2. Submit drawings. Indicate details of construction, profiles, jointing, fastening and other related details. Indicate materials, thicknesses, finishes and hardware.

2.6.2.2 Materials

1. Softwood lumber: S4S, moisture content 19% or less in accordance with following standards:
   .1 CSA O141.
   .2 AWMAC custom grade, moisture content as specified.
   .3 Machine stress-rated lumber is acceptable.
   .4 Hardwood lumber: moisture content 8 % or less in accordance:
      .1 AWMAC premium grade, moisture content as specified.
      .2 Types: Cherry, to match existing

2.6.2.3 Accessories

1. Nails and staples: to CSA B111; galvanized to CAN/CSA-G164 for exterior work; stainless steel finish elsewhere.
2. Wood screws: stainless steel, type and size to suit application.
3. Splines: wood.

2.6.2.4 Finishing

1. All finished carpentry is to be finished in shop where possible. Limit site work to touch-up work only.
2. Clear catalyzed lacquer: Primer and two finish coats, low sheen.

2.6.2.5 Installation

1. Do finish carpentry to Quality Standards of (AWMAC).
2. Scribe and cut as required, fit to abutting walls, and surfaces, fit properly into recesses and to accommodate piping, columns, fixtures, outlets, or other projecting, intersecting or penetrating objects.
3. Form joints to conceal shrinkage.

Specifications - continued

2.6.3 Architectural Woodwork

2.6.3.1 Action and Informational Submittals

1. Submit manufacturer's instructions, printed product literature and data sheets for architectural woodwork and include product characteristics, performance criteria, physical size, finish and limitations.
2. Submit shop drawings of each unit.
   .1 Submit samples for review and acceptance of each unit.
   .2 For each colour and finish, submit duplicate samples: sample size 300 x 300 mm or 300 mm long.
   .3 Submit duplicate samples of laminated plastic for each colour selection.
   .4 Submit duplicate samples of laminated plastic joints, edging, cutouts and post formed profiles.

2.6.3.2 Quality Assurance

1. All millwork is to be manufactured and installed to AWMAC certified standards, by an AWMAC member in effect at time of tender and shall be subject to an inspection at the manufacturing facility and/or site by an appointed AWMAC Certified Inspector. Inspection costs shall be included in the tender price for this project.
   .1 Shop drawings shall be submitted to the AWMAC Chapter office for review before work commences. Work that does not meet AWMAC’s architectural woodwork standards, as specified, shall be replaced, reworked and/or refinished by the architectural woodwork contractor, to AWMAC’s approval, at no additional cost to the owner.
   .2 If the architectural woodwork contractor is an AWMAC MSQ Qualified Manufacturer Member in good standing, a two (2) year AWMAC Guarantee Certificate will be issued.

2.6.3.3 Materials

1. Softwood lumber: unless specified otherwise, S4S, moisture content 15 % or less in accordance with following standards:
   .1 CSA O141.
   .2 AWMAC premium grade, moisture content as specified.
2. Machine stress-rated lumber is acceptable for all purposes.
3. Hardwood lumber: moisture content 8 % or less in accordance with following standards:
   .1 AWMAC premium grade, moisture content as specified.

Specifications - continued

.2 Types: Cherry, to match existing.

4. Douglas fir plywood (DFP): to CSA O121, standard construction.
   .1 Plywood resin to contain no added urea-formaldehyde.
5. Canadian softwood plywood (CSP): to CSA O151, standard construction.
   .1 Plywood resin to contain no added urea-formaldehyde.
6. Hardwood plywood: to ANSI/HPVA HP-1, FSC certified.
   .1 Plywood resin to contain no added urea-formaldehyde.
   .2 Veneer type: Cherry, to match existing.
7. Nails and staples: to CSA B111.
8. Wood screws: stainless steel, type and size to suit application.
9. Splines: metal.

2.6.3.4 Manufactured Units

1. Casework, drawers, shelves and doors:
   .1 Furring, blocking, nailing strips, grounds and rough bucks and sleepers.
      .1 S2S is acceptable.
      .2 Board sizes: "standard" or better grade.
      .3 Dimension sizes: "standard" light framing or better grade.
      .4 Urea-formaldehyde free.
   .2 Framing pine species, NHLA grade.
   .3 Hardwood plywood:
      .1 Thickness: 19 mm.
      .2 Exposed Faces: Plastic Laminate cherry, to match existing veneer.
         .1 Grain direction horizontal.
         .2 Interior faces: White melamine.
      .4 Solid wood: Cherry, to match existing.
      .5 Counters: Two layers of 19 mm plywood.
         .1 Finish: Plastic laminate to match existing.
2. New circulation desks:
   .1 Furring, blocking, nailing strips, grounds and rough bucks and sleepers.
      .1 S2S is acceptable.
      .2 Board sizes: "standard" or better grade.
      .3 Dimension sizes: "standard" light framing or better grade.
      .4 Urea-formaldehyde free.
   .2 Framing pine species, NHLA grade.
   .3 Hardwood plywood:
      .1 Thickness: 19 mm.

Specifications - continued

.2 Exposed Faces: Plastic laminate cherry to match existing veneer
.1 Grain direction vertical
.4 Solid wood: Cherry.
.5 Counters: 25 mm plywood.
.1 Finish: Quartzite, with quartzite noising.
.1 Main colour: Silestone Calypso.
.2 Accent / reveal colour: Silestone Iconic Black.

2.6.3.5 Fabrication

1. Fabricate to AWMAC certified standards.

2.6.3.6 Finishing

1. All millwork to be shop finished with stain and catalyzed lacquer finish, limit site work to touch-ups only.
2. Finish: Catalyzed lacquer, primer and two finish coats, low sheen.

2.6.3.7 Installation

1. Do architectural woodwork to Quality Standards of AWMAC.

2.6.3.8 Protection

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

2.7 - Thermal and Moisture Protection

2.7.0 Contents

2.7.1 Blanket Insulation

2.7.1.1 Product

1. Batt and blanket mineral fibre (Interior sound batts): to CAN/ULC S702.

Specifications - continued

.1 Roxul AFB, Owner Corning Thermafiber SAFB or approved equal.
.2 Type: 1.
.3 Thickness: as indicated.

2. Batt and blanket mineral fibre (exterior walls): to CAN/ULC S702.
   .1 Roxul comfortbatt, Owner Corning Thermafiber UltraBatt or approved equal.
   .2 Type: 1.
   .3 Thickness: as indicated

2.7.1.2 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.

2.7.2 Air/Vapour Barriers

2.7.2.1 Materials

1. Air/vapour barrier membrane components and accessories must be obtained as a single-source from the membrane manufacturer to ensure total system compatibility and integrity.
2. Membranes:
   .1 Primary sheet air/vapour barrier membrane (or peel and stick membrane): Shall be a 1.0 mm thick SBS modified bitumen, self-adhering sheet membrane complete with a cross-laminated polyethylene film.
3. Acceptable manufacturer’s
   .1 Blueskin SA by Henery-Bakor
      .1 Use Blueskin SA LT in cold weather as recommended.
      .2 Use Blueskin SA HT under flashings, sheet metal and metal roofing.
   .2 Perm-A-Barrier by Grace
      .1 Use Perm-A-Barrier Low Temperature in cold weather as recommended.
      .2 Use Perm-A-Barrier High Temperature under flashings, sheet metal and metal roofing.
      .3 Air-Shield by W.R. Meadows.
      .4 Sopraseal Stick 1100 T by Soprema
      .5 CCW-705 by Carlisle
      .6 ExoAir 110 by Tremco
      .7 AquaBarrier AVB by IKO

Specifications - continued

4. Adhesives, primers, mastics and sealants:
   .1 As recommended by manufacture.

2.7.2.2 Manufacturer's Instructions

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

2.7.3 Pre-Finished Composite Metal Panels

2.7.3.1 Action and Informational Submittals

1. Submit manufacturer's instructions, printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations.

2.7.3.2 Product

1. Acceptable manufacturers:
   .1 Alucobond Plus, wet system.
   .2 Vicwest Architectural Panel System 2.
   .3 Alpolic
   .4 Sobotec
2. Colour Anodized aluminum to match curtain wall

2.7.3.3 Manufacturer's Instructions

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

2.7.4 Fire Stopping

2.7.4.1 Action and Informational Submittals

1. Product Data: Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
2. Keep copies of all of the above information on site in a binder marked “Fire Stopping”. Take and keep on record, photos of all fire stopping installed. Mark locations of all installed fire stopping on plans and reference to photos. Fire stop location plans are to be included in the fire stopping binder.

Specifications - continued

2.7.4.2 Materials

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

2.7.4.3 Installation

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

2.7.4.4 Schedule

1. Fire stop and smoke seal at:
   .1 Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.
   .2 Top of fire-resistance rated masonry and gypsum board partitions.
   .3 Intersection of fire-resistance rated masonry and gypsum board partitions.

Specifications - continued

.4 Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls.
.5 Penetrations through fire-resistance rated floor slabs, ceilings and roofs.
.6 Openings and sleeves installed for future use through fire separations.
.7 Around mechanical and electrical assemblies penetrating fire separations.
.8 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.
.9 At all other location indicated on contract documents.
.10 At all locations required by the OBC.

2.7.5 Joint Sealants

2.7.5.1 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 Material Safety Data Sheets (MSDS) acceptable to Labour Canada.
2. Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

2.7.5.2 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 offgas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize offgas time.
3. Colors of sealant to be selected by the Consultant from the range of manufacturer’s standard colors.
4. Primers are to be type recommended by sealant manufacturer.
5. Joint backing material shall be
   .1 Vertical surfaces (excluding EIFS) - Sof Rod an extruded polyolefin foam by Tremco Ltd. or ITP Soft Type Backer Rod by Industrial Thermal Polymers Ltd.

Specifications - continued

.2 Horizontal surfaces and EIFS surfaces - Standard Backer Rod a closed cell polyethylene foam by Tremco Ltd. or ITP Soft Type Backer Rod by Industrial Thermal Polymers Ltd.

6. Bond breaker, where joint configuration does not allow for proper depth/width ration - a pressure sensitive plastic tape, which will not bond to the sealant such as 3M #226 or #481 or Valley Industries #40 shall be placed at the back of the joint.
7. Sealants used as part of a system are to be as recommended by system manufacture.

2.7.5.3 Sealant Material Designations and Selection

1. Type 1: One part Silicone or multi-component, polyurethane urethane sealant. To meet specified requirements of ASTM C 920 , CGSB specification CAN/CGSB-19.24-M90, Type 2, Class B,
   .1 Use at all locations, except where another type is specified.
   .2 Acceptable products:
      .1 DYmeric by Tremco Ltd.
      .2 Contractors Weatherproofing Sealant (CWS) by Dow Corning (exterior applications only)
      .3 SONOLASTIC® NP 2™ by BASF
      .4 Sikaflex® 2C NS EZ Mix by Sika
      .5 Sikasil WS-305 by Sika (exterior application only)
2. Type 2: Medium modulus, moisture curing, one part silicone sealant. Meeting the specified requirements of specification CAN/CGSB-19.13-M87, Classification MCG-2-25-A-L.
   .1 Use in glass to glass, glass to metal and metal to metal curtainwall joints.
   .2 Acceptable products:
      .1 Spectrem 2 by Tremco Ltd.
      .2 Dow Corning®795 Silicone Building Sealant or Dow Corning® 756 SMS Silicone Building Sealant by Dow Corning.
      .3 OMNISEAL™ 50 by BASF
      .4 Sikasil® WS-295 or Sikasil® WS-295 FPS by Sika.
3. Type 3: Mildew resistant, one component neutral cure silicone sealant. Meeting the specified requirements of specification CGSB-19GP22M.
   .1 Use on fixtures and vanity tops.
   .2 Acceptable products:
      .1 Tremsil 200 White by Tremco Ltd.

Specifications - continued

.2 Dow Corning 786 or Tub Tile and Ceramic by Dow Corning
.3 SONOLAC® by BASF
.4 Sikasil® N-Plus by Sika.

4. Type 4: One component, non-skinning, non-hardening acoustical sealant. Meeting the specified requirements of specification CAN/CGSB-19.21-M87.
   .1 Use at all vapour barrier joints and openings in drywall systems as shown on the drawings or specified.
   .2 Acceptable products:
      .1 Acoustical Sealant by Tremco Ltd.
5. Type 5: One component, paintable acrylic latex sealant. Meeting the specified requirements of specification CGSB-19-GP-17M.
   .1 Use in interior non-moving joints that may be painted.
   .2 Acceptable products:
      .1 Tremflex 834 by Tremco Ltd.
      .2 SONOLAC® by BASF
6. Type 6: Ultra low modulus, one component, moisture curing silicone sealant.
   .1 Acceptable products:
      .1 Spectrem 1 by Tremco Ltd.
      .2 Dow Corning® 790 Silicone Building Sealant or Dow Corning® Contractors Concrete Sealant by Dow Corning
      .3 SONOLASTIC® 150 Tint Base by BASF
      .4 Sikasil® WS-290 or Sikasil® WS-290 FPS by Sika.
7. Preformed Compressible and Non-Compressible back-up materials.
   .1 Type as recommended by joint sealant manufacture.

2.7.5.4 Installation

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

2.8 - Openings

2.8.0 Contents

Specifications - continued

2.8.1 Metal Doors and Frames

2.8.1.1 Action and Informational Submittals

1. Provide product data:
   - .1 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazing, arrangement of hardware, fire rating and finishes.
   - .2 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors, exposed fastenings, reinforcing and fire rating finishes.
   - .3 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

2.8.1.2 Materials

1. Hot dipped galvanized steel sheet: to ASTM A 653M, ZF75, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.
2. Reinforcement channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A 653M, ZF75.

2.8.1.3 Door Core Materials

1. Exterior Doors:
   - .1 Stiffened: face sheets welded, insulated core.
     - .1 Polyurethane: to CAN/ULC-S704 rigid, modified poly/isocyanurate, closed cell board. Density 32 kg/m³.

2.8.1.4 Accessories

1. Door silencers: single stud rubber/neoprene type.
2. Exterior and interior, top and bottom 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.

Specifications - continued

4. Metallic paste filler: to manufacturer's standard.
5. Fire labels: metal rivited.
6. Glazing: refer to Section Glazing section.
7. Make provisions for glazing as indicated and provide necessary glazing stops.
   .1 Provide removable stainless steel glazing beads for use with glazing tapes and compounds and secured with countersunk stainless steel screws.
   .2 Design exterior glazing stops to be tamperproof.

2.8.1.5 Frames Fabrication General

1. Fabricate frames in accordance with CSDMA specifications.
2. Maximum face dimension on all frames, 32 mm interior, 50 mm exterior.
3. Exterior frames: 1.6 mm welded, thermally broken type construction.
4. Blank, reinforce, drill and tap frames for mortised, templated hardware, and electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.
5. Protect mortised cutouts with steel guard boxes.
6. Prepare frame for door silencers, 3 for single door, 2 at head for double door.
7. Manufacturer's nameplates on frames and screens are not permitted.
8. Conceal fastenings except where exposed fastenings are indicated.
9. Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.
10. Insulate exterior frame components with polyurethane insulation.

2.8.1.6 Manufacturer's Instructions

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

Specifications - continued

2.8.2 Interior Aluminum Framing

2.8.2.1 Action and Informational Submittals

1. Product Data:
   .1 Submit manufacturer's instructions, printed product literature and data sheets for components, anchorage and fasteners, glass and infill, and internal drainage details and include product characteristics, performance criteria, physical size, finish and limitations and water flow diagrams.
2. Shop Drawings:
   .2 Indicate system dimensions, framed opening requirements and tolerances, adjacent construction, anchor details anticipated deflection under load, affected related Work, weep drainage network, expansion and contraction joint location and details, and field welding required.

2.8.2.2 Acceptable Manufacturers

1. PC350
   .1 130 Nolan Court, Markham, ON, L3R 2V7, (905) 475-6022, (866) 633-0233 Fax (905) 475-7394
2. C.R. Laurence of Canada – U.S. Aluminum
   .1 487 Series Office Partitions
   .2 65 Tigi Court, Concord, Ontario L4K 5E4, Phone: (905) 303-7966, Fax: (905) 303-7965

2.8.2.3 Materials

1. Aluminum: Controlled alloy billets of 6063 T5, to assure compliance with tight dimensional tolerances and maintain colour uniformity.

2.8.2.4 Fabrication

1. Pre-machine jambs and prepare for hardware, with concealed reinforcement plates, drilled and tapped as required and fastened within frame with concealed screws.
2. Provide corner reinforcements and alignment clips for precise butt or mitered connections.
3. Fabricate all components to allow secure installation without exposed fasteners.

Specifications - continued

2.8.2.5 Finishes

1. Clear anodic coating: Comply with AAMA 607.1.1. Class 2, AAM12C22A31 clear anodized coating, 0.4-.07 mill thickness minimum.

2.8.2.6 Installation

1. Comply with frame manufacturer's printed installation instructions and approved shop drawings. Strictly adhere to maintaining specified wall thickness to insure dimension does not exceed frame throat size specified.

2.8.3 Flush Wood Doors

2.8.3.1 Action and Informational Submittals

1. Product Data: Submit manufacturer's printed product literature, specifications and data sheet in accordance. Indicate door types and cutouts for lights and louvres, sizes, core construction, transom panel construction and cutouts.

2.8.3.2 Fire Rated Wood Doors

1. Wood doors: tested in accordance with CAN4-S104 to achieve rating as scheduled.

2.8.3.3 Wood Flush Doors

1. Solid core: to CAN/CSA-O132.2.1.
2. Face: Plastic laminate to match existing cherry veneer
3. Exposed Vertical Edges: Cherry, minimum thickness of 1/2 inch (13 mm), bonded to structural composite lumber, leaving edges of crossband exposed.
4. Horizontal Edges: Cherry, of same or compatible species as face, minimum thickness of 1/2 inch (13 mm), bonded to structural composite lumber
5. Core: Wood-based Particleboard (Urea-Formaldehyde Free)
6. Construction: Five plies. Stiles and rails are bonded to core, and then entire unit is abrasive planed before veneering.
7. WDMA I.S.1-A Performance Grade: Heavy-duty.
8. Adhesive: Type II (water resistant) for interior doors.

2.8.3.4 Glazing and Hardware

1. Glass: to Glazing section.
2. Hardware: to Door Hardware section.

Specifications - continued

2.8.3.5 Fabrication

1. Prepare doors for louvres and glazing. Provide hardwood species to match face veneer, glazing stops with mitred corners.
2. Bevel vertical edges of single acting doors 3 mm in 50 mm on lock side and 1.5 mm in 50 mm on hinge side.
3. Radius vertical edges of double acting doors to 60 mm radius.
4. Prepare doors for mortised, templated and electronic hardware.

2.8.3.6 Finish

1. Transparent finish top and sides:
   .1 Grade: Premium.
   .2 Finish: Manufacturer's standard UV cured polyurethane, equal to WDMA TR-6 catalyzed polyurethane.
   .3 Staining: None required.
   .4 Sheen: Satin.

2.8.3.7 Manufacturer's Instructions

1. Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

2.8.4 Access doors

2.8.4.1 Shop Drawings

1. Submit catalogue details for each type of door illustrating profiles, dimensions and methods of assembly.

2.8.4.2 Products

1. Sizes: Except as indicated otherwise, to be minimum sizes as follows:
   .1 For body entry: 600 x 600 mm, typical or 900 mm x 900 mm where indicated.
   .2 For hand entry: 300 x 300 mm.
   .3 Cable pass interior access door: 400 mm x 400 mm
2. Construction: Rounded safety corners, concealed hinges, screwdriver latch, anchor straps, able to open 180°.
   .1 Access doors located in fire separations are to be fire rated to suite the separation in which they are installed and are to be ULC listed.

Specifications - continued

3. Materials
   .1 Tiled surfaces, masonry and wood paneling: Stainless steel with brushed satin.
      .1 Wood ceiling: Hinged access panel to match adjacent wood ceiling complete with concealed hinge and latch, by Section 06 20 00 – Finish Carpentry.
      .2 Gypsum board: Concealed gypsum board inset, Bauco Plus II by Access Panel Solutions Inc. 1-877-592-7587.
      .3 Gypsum board fire separations: Prime coated steel.

2.8.4.3 Installation

1. Installation: Install to manufacturers printed instructions.

2.8.5 Overhead Coiling Security Grills

2.8.5.1 Submittals

1. Product Data: Manufacturer's data sheets on each product to be used.
2. Shop Drawings: Include detailed plans, elevations, details of framing members, required clearances, anchors, and accessories. Include relationship with adjacent construction.
3. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

2.8.5.2 Products

1. Overhead Coiling Aluminum Grilles: Overhead Door Corporation Model 670.
   .1 Curtain: Horizontal 5/16 inch (7.8 mm) diameter rods with network of vertically interlocking links to form a pattern. Bottom bar extruded aluminum tubular shape.
   .2 Material: Aluminum.
   .3 Vertical Rod Spacing:
   .4 2 inches (51 mm) on center.
   .5 Pattern: Straight lattice; horizontal spacing 9 inches (228 mm) on center.
   .6 Finish: Aluminum clear anodized.
   .7 Bottom Bar: Tubular extruded aluminum, clear anodized.
   .8 Guides: Guides free standing with tubular steel support frames supplied with grilles.

Specifications - continued

.9 Brackets: Minimum 3/16 inch (4.8 mm) steel to support barrel, counterbalance and hood as applicable.
.10 Counterbalance: Helical torsion spring type housed in a steel tube or pipe barrel, supporting the curtain with maximum deflection of 0.03 inches per foot of span. Counterbalance adjustable by means of an adjusting tension wheel.
.11 Hood: Aluminum, clear anodized with intermediate supports as required.
.12 Electric Motor Operation: Provide UL listed electric operator, size as recommended by manufacturer to move door in either direction at not less than 2/3 foot nor more than 1 foot per second.
.13 Sensing Edge Protection: Electric sensing edge.
.14 Special Operation: Card reader control.
.15 Locking: Cylinder lock for electric operation with interlock switch.

2.8.5.3 Installation

1. Install in accordance with manufacturer's instructions.
2. Remove labels and visible markings.
3. Touch-up, repair or replace damaged products before Substantial Completion.

2.8.6 Sliding Automatic Entrances

2.8.6.1 Submittals

1. Submit drawings and product data showing layout, profiles, product components including anchorage, accessories, finish and glazing details (where required).

2.8.6.2 Manufacturer

1. Horton Automatics, a division of Overhead Door Corporation, shall manufacture automatic sliding door(s) of type(s) and size(s) specified on plans and door schedule.
2. Manufactured door units: Shall include operator, header with roller track, carrier assemblies, framing, sliding door panel(s), sidelite(s), activation, safety devices and accessories required for complete installation.
   .1 Configuration: Biparting
   .2 Mounting Type: Perimeter mounted within rough opening with sliding panel(s) sliding along sidelite.

Specifications - continued

.3 Door Type: Type 310: Slide-swing panel(s) ‘SX’ shall slide along interior side. Unit has Swing-out sidelite ‘SO’.

3. Operator: The Electric Operating Mechanism shall be Profiler® Series 2000B Linear Drive. The operator shall be mounted and concealed within the header.
   .1 Operation shall be accomplished through a 1/8 HP DC permanent magnet working with a threadless, induction hardened stainless steel 1/2" (13mm) diameter linear drive shaft. Maximum current draw shall not exceed 3.15 amps. A linear travel block describes a helical path along the rotating shaft utilizing six aircraft quality ball bearings acting as an integral clutch. Linear drive shaft shall be self lubricating by means of integral oiler located in the travel block.
   .2 Master Control shall be 16 bit microprocessor controller with dual on-board seven-segment alphanumeric diagnostic display and position encoder. The encoder shall monitor revolutions of the operator shaft and send signals to microprocessor controller to define door position and speed. The control shall have minimum of 28 programmable parameters including the following functions as required by ANSI A156.10 - 2011:
      .1 Adjustable opening and closing speeds.
      .2 Adjustable back-check and latching.
      .3 Adjustable braking.
      .4 Adjustable hold-open time between 1 to 30 seconds.
      .5 Adjustable Reversing Circuit will reopen door unit if closing path is obstructed.
      .6 Separate day and night modes of operation with security over-ride.
   .4 Finger Safety: Strike rail of sliding panel will stop short of adjacent sidelite; resulting opening is net slide.
   .5 On/Off Switch shall be supplied. When switched OFF, unit reverts to free manual operation (likewise during electrical power failure).
   .6 Security and Safety Power Fail Options: Monitored Power Fail Options (battery back-up): Software Selectable Power Fail Close: If power fails the door slides closed.
   .7 Profiler® header: Shall be slim 4" (102mm) deep by 6" (152mm) high aluminum construction with extruded z-profile reinforcement for dead load and lateral strength. Header shall have removable face plate for service and adjustment of

operator and controls. Header mounts flush to 4” framing jambs.

.8 Carrier assemblies and header roller track: Carrier assemblies shall support door panels with minimum four rollers per panel. Rollers will be steel, high quality ball bearing wheels 1-1/4" (32 mm) diameter. Anti-Derailing shall be accomplished by means of a continuous aluminum extrusion full length of slide panel travel. Overhead header roller track shall be continuous aluminum, nylon covered, and replaceable.

.9 Sliding panel(s) and sidelite(s): Shall be aluminum, 1-3/4" (44 mm) deep with narrow stile rails. An intermediate, horizontal rail (muntin bar), 2 1/4” (57 mm) wide, shall be furnished for safety and division of glass. Standard bottom rail shall be 4" (102mm) tall. Sliding panels shall have concealed bottom guides to stabilize slide travel.

.1 Weather-stripping: Along perimeter of sliding panel(s) and swing-out sidelite(s). Weatherstripping material captured in extruded aluminum door panel. Surface applied self-adhesive weatherstripping not acceptable. Adjustable spring-loaded double astragal weather-stripping at lead edge, double mohair at interlock rails

.2 Glazing prep: 1” (25 mm) glass.

10. Breakout panels: Slide-swing panels can swing out min.90° from any position of slide movement and require no more than 50 lbf. (222 N) of force applied at the lock stile to open. Slide-swing panels and swing-out sidelites shall utilize spring loaded ball detent.

.1 Slide-swing panels and swing-out sidelites shall have torsion spring designed to re-close panel if pushed open in the direction of egress.

.2 Breakout mechanism shall provide support across full width of the door, in normal operating mode. In breakout mode, torsion assembly shall support weight of the door to minimize drop during emergency egress.

.3 Slide-swing panels shall include intermediate horizontal rail.

.4 Units with breakout feature are ETL listed as an exit away and are compliant with NFPA 101.

.11 Jambs/frame: Shall be aluminum. Jamb dimensions to be: 1 3/4" (44mm) deep by 4" (102mm) wide.

Specifications - continued

.12 Threshold: Shall be aluminum, 1/2" (13 mm) tall by 7” (178 mm) wide.

.13 Hardware: ANSI A156.5, Grade 1, 3-Point Locking provided and installed in strike rail shall include:

.1 Hookbolt Latch, 5/8” laminated stainless steel, latching into jamb or adjacent strike rail.

.2 3/8” hex-bolt into breakout carrier frame.

.3 Keyed interior and exterior locking1 5/32" (29 mm) Cylinder with 31/32" (25 mm) backset

.14 Basic sensor system: Shall be 24 VDC, class ll circuit and shall be adjusted and installed in compliance with ANSI A156.10. System shall include the following:

.15 Activation sensors: Microwave or active infrared sensor shall be header-mounted each side of door unit for detection of traffic from each direction.

.16 Threshold presence sensors:

.1 Header mounted sensors shall provide active infrared presence detection on each side of the door unit and shall remain active throughout the entire door opening and closing cycle.

.2 Hold-open beams: Two pulsed infrared photoelectric beams to be mounted in vertical rails of sidelite or in jambs. Sender/receiver arrangement parallels door opening.

.17 Finishes (for all exposed aluminum surfaces): Shall be one of the following: 204-R1 Clear: Arch. Class 2 Clear Anodized Coating, AA-MI2C22A31.

2.8.6.3 Installation

1. Installer shall be factory trained, certified by AAADM, and experienced to perform work of this section. Install door units plumb, level and true to line, without warp or rack of frames or sash with manufacturer's prescribed tolerances. Provide support and anchor in place. Provide weather-tight construction.

Specifications - continued

2.8.7 Glazed Aluminum Curtain Walls

2.8.7.1 Action and Informational Submittals

1. Shop Drawings:
   .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Ontario, Canada.
   .2 Indicate system dimensions, framed opening requirements and tolerances, adjacent construction, anchor details anticipated deflection under load, affected related Work, weep drainage network, expansion and contraction joint location and details, and field welding required.

2.8.7.2 Manufacture

1. Acceptable manufacturer's and systems are:
   .1 ThermaWall 2600 by Alumicor.
   .2 1600 UT (System 2) by Kawneer.
   .3 Reliance TC by Oldcastle.
   .4 Series 3252 by CRL, US Aluminum.
   .5 Series 8200 Thermal HP by Commdoor Aluminum

2.8.7.3 Design Criteria

1. Horizontally capped curtain wall with 133mm (5¼") back section.
2. Design curtain wall to AAMA CW-DG-1.
   .1 Design glazed aluminum curtain wall following rainscreen principles.
   .2 Ensure horizontal members are sealed to vertical members to form individual compartments in accordance with rainscreen principles.
   .3 Ventilate and pressure equalize air space outside exterior surface of insulation to exterior.
3. Design aluminum components to CAN/CSA S157.
4. Design and size curtain wall components to withstand dead and live loads caused by pressure and suction of wind, acting normal to plane of wall using design pressure expected in the area of this project, based on OBC climatic information with a 50 year probability.
   .1 Design curtain wall system for expansion and contraction caused by cycling temperature range of 95 degrees C over 12 hour period without causing detrimental effect to system components.

Specifications - continued

.2 Thermal expansion: Ensure curtain wall system can withstand temperature differential of 85 degrees C and is able to accommodate interior and exterior system expansion and contraction without damage to components or deterioration of seals.
.3 Design vertical expansion joints with baffled overlaps and compressed resilient air seal laid between mullion ends.
.4 Ensure system is designed to accommodate:
  .1 Movement within curtain wall assembly.
  .2 Movement between system and perimeter framing components.
  .3 Dynamic loading and release of loads.
  .4 Deflection of structural support framing.
  .5 Shortening of building concrete structural columns.
  .6 Creep of concrete structural members.
.5 Thermal resistance:
  .1 Spandrel areas: RSI 3.0 (R 16.8).
  .2 Vision glass areas: Refer to Glazing section.
  .3 Maximum U-Value of: 2.15 W/m²K
.6 Limit mullion deflection to flexure limit of glass 19 mm L/175 maximum with full recovery of glazing materials.
.7 Deadload prevention: Design curtain wall system with separate, integrated support for insulating glass units.
.8 Flatness criteria: 6 mm maximum in 6 m for each panel.
.9 Air infiltration: 0.3 L/s/m2 (0.63 cfm) maximum of wall area to ASTM E283 at differential pressure across assembly of 300 Pa (0.044 psi).
.10 Water infiltration: None to ASTM E331 at differential pressure across assembly of 720 Pa (0.104 psi).
.11 Maintain continuous air barrier and vapour retarder throughout building envelope and curtain wall assembly.
.12 Ensure no vibration harmonics, wind whistles, noises caused by thermal movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system occur.

5. Where curtain wall framing and glazing is less than 1.1 m above the finish floor it shall be designed to meet the requirements of OBC 3.3.1.18(6) and 4.1.5.1.5. Provide engineer’s stamped shop drawing confirming that the design complies with these OBC requirements.

Specifications - continued

2.8.7.4 Materials

1. Extruded aluminum: To ASTM B221, 6063 alloy with T5 temper.
   .1 Finish coatings: To AA DAF 45 Architectural Class I and AAMA 611, AA-M12C22A41, clear anodized 18 µm (0.0007 inches) thick minimum.
2. Sheet aluminum: To ASTM B209, utility grade for unexposed surfaces.
3. Air barrier liner: Reinforce panels to maintain flat surface.
   .1 Concealed locations: 0.952 mm (20 gauge) steel sheet to CSA-S136M with 458 g/m2 (1.25 oz/sq.ft) galvanized coating and corners sealed at concealed locations.
   .2 Interior exposed locations: 1.588 mm (16 gauge) clear anodized aluminum sheet.
4. Fasteners, screws and bolts: Tamperproof, cadmium plated stainless steel 300 or 400 series to meet curtain wall requirements and as recommended by manufacturer.
5. Anchors: Ensure anchors have three-way adjustment.
6. Aluminum panels: 3 mm (0.125 inches) thick factory formed panels.
   .1 Finish after forming to match curtain wall system.
7. Thermal Break: Glass fibre reinforced polyamide porthole extrusion.
8. Curtain wall back pan insulation: 100 mm (4 inches) thick.
   .1 Density: 64 kg/m3 (4 lbs/cu ft) minimum.
   .2 Thermal resistance: RSI 3.0 (R 16.8).
9. Bituminous paint: CAN/CGSB1.108, Type 1 without thinner.
10. Flashings and closers: 2mm anodized aluminum to match curtain wall.

2.8.7.5 Curtain Wall System Fabrication and Installation

1. Manufacturer's Instructions: comply with manufacturer's and written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

2.8.7.6 Finishes

1. Exterior exposed aluminum surfaces: To AA DAF-45-M12C22A41, Architectural Class I, clear anodized 18 µm (0.0007 inches) minimum thickness.
2. Interior exposed aluminum surfaces: To AA DAF-45-M12C22A41, Architectural Class I, clear anodized 18 µm (0.0007 inches) minimum thickness.

Specifications - continued

2.8.7.7 Accessories

1. Insulation:
   .1 Fibre board: to ASTM C612.
      .1 Thickness: 100 mm (4 inches) minimum, Acceptable material: Roxul Inc., CurtainRock.
      .2 Gasketing: To CCD-45 Silicone compatible rubber or extruded silicone gaskets.
      .3 Setting Blocks: To CCD-45 and ASTM D2240, neoprene, 80 - 90 Shore A Durometer hardness.
      .4 Spacers: To CCD-45 and ASTM D2240, neoprene, 50 - 60 Shore A Durometer hardness.
      .5 Sealant: To CAN/CGSB-19.13, Class 40, one-component, cold-applied, non-sagging silicone.
         .1 Acceptable material: Dow Corning 795.
      .6 Sealant Bond Breaker: Open cell foam backer rod sized to suit project requirements.
      .7 Flashings and angle bases: 3 mm (0.125 inches) thick aluminum flashing to profiles indicated.
      .8 Liquid Foam Insulation: Single component, moisture cure, low expansion rate spray-in-place polyurethane liquid foam insulation to ULC-S710.1 and in accordance with manufacturer’s written recommendations.
      .9 Miscellaneous Components: Covers, copings, special flashings, filler pieces, termination pieces, cap closures, expansion joint covers, and metal bellows to match curtain wall system as indicated.

2.8.7.8 Installation

1. Install curtain wall in accordance with manufacturer’s written instructions.

2.8.7.9 Site Tolerances

1. Maximum variation from plumb: 1.5 mm/m non-cumulative or 12 mm/30 m, whichever is less.
2. Maximum misalignment of two adjoining members abutting in plane: 0.8 mm.
3. Maximum sealant space between curtain wall and adjacent construction: 13 mm.

Specifications - continued

2.8.8 Cabinet and Miscellaneous Hardware

2.8.8.1 Action and Information Submittals

1. Product Data: Submit manufacturer's instructions, printed product literature and data sheets for cabinet hardware and include product characteristics, performance criteria, physical size, finish and limitations.
2. Hardware List: Indicate specified hardware, including make, model, material, function, finish and other pertinent information.

2.8.8.2 Hardware Items

1. Use one manufacturer's product for all similar items.

2.8.8.3 Cabinet Hardware

1. Cabinet hardware: to CAN/CGSB-69.25.
2. Hinges: Richelieu BP711Y25521180, 100 Full Overlay, Fully Adjustable, Concealed for Flush Mount, Brushed Stainless steel.
3. Pulls: Back Mounted, Stainless Steel by Richelieu, Model: # 3487105. Size: 185mm L x 35mm D. Finish: 170.
4. Shelf Supports:
   - .1 Type 1 (Typical Cabinets)
     - .1 Pilaster Strip: Richelieu ¾” Pilaster 2332G. Finish: Zinc.
     - .2 Shelf Support: Richelieu Light Duty Shelf Support Clip CP2562G. Finish: Zinc.
5. Grommets: Richelieu D032030, Stainless Steel Round Wire Grommet.
6. Cabinet Locks: Die Cast by Richelieu (Chrome Finish)
   - .1 Door Lock: Cam Lock BP 140 100 140.
   - .2 Drawer Lock: BP 140 200 140.
7. Silencers: Self Adhesive Cork Pads 3mm x 11mm diameter.
8. Cash drawer: Adesso 13” compact cash drawer with mounting brackets.
9. Drawer Glides: Richelieu Self Closing Euro Slides #102. Colour: White.
10. All exposed hardware to be brushed stainless steel finish.

2.8.8.4 Adjustable Desk System

1. Linak adjustable desk system
   - .1 kick and click adjustable system
   - .2 DL6 desklift column
   - .3 Desklift feet 560mm

Specifications - continued

.4 Lanik DPF1C desk panel mounting bracket 914759

2.8.8.5 Fastenings

1. Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.
2. Exposed fastening devices to match finish of hardware.

2.8.8.6 Keying

1. Cabinet locks to be as directed by Owner. Submit keying schedule for approval.
2. Supply keys in duplicate for every lock in this Contract.
3. Supply 3 master keys for each master key or grand master key group.
4. Stamp keying code numbers on keys and cylinders.
5. Install key cabinet where indicated.

2.8.8.7 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.

2.8.9 Door Hardware

2.8.9.1 Action And Informational Submittals

1. Product Data: Submit manufacturer's instructions, printed product literature and data sheets for door hardware and include product characteristics, performance criteria, physical size, finish and limitations.
2. Hardware List: Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.

2.8.9.2 Hardware Items

1. Use one manufacturer's products only for similar items.

2.8.9.3 Materials

1. Strikes
   .1 Lock strikes shall be standard template box strikes, with extended lips to protect door frames and trim from marking with the bolts and shall be set flush in hollow metal door frames.

Specifications - continued

.2 Blank standardized template strikes for hollow metal door frames shall be supplied as scheduled form such doors without locks.

2. Door Closers
   .1 Door closers shall be rack and pinion type with back checking feature and shall be of proper sizes to operate each respective door efficiently. Shaft packing shall be leak-proof.
3. Thresholds
   .1 Thresholds shall be supplied complete with countersunk holes, and with screws and anchors as required for proper anchorage.
4. Fasteners
   .1 Hardware shall be complete with screws, bolts, expansion shields and other fastening devices as required for the satisfactory installation and operating of the hardware.
   .2 Fastening devices shall be of the same finish as the hardware which is to be fastened.
   .3 Where a pull is scheduled on one side of the door, and a push plate on the other side issue installation directions to the trade responsible for fixing, so that the pull shall be secured through the door from the reverse side and the push plate installed to cover the screws. Flush pulls shall be supplied with machine screws for attaching as specified above.
5. Finishes
   .1 The type and finish of hardware shall be equal in all respects to the samples of hardware and as reviewed by Consultant.
   .2 Metal finishes shall be free from defects, clean and unstained, and of a uniform colour.
6. Fire Rated Doors
   .1 Finish hardware for fire rated doors shall meet requirements of ULC as part of fire rated door assembly and shall carry ULC label.

2.8.9.4 Door Hardware

1. Locks and latches:
   .1 Mortise locks and latches: to ANSI A156.13, to match existing.
   .2 Knobs Lever handles: design shown. All doors are to have lever handles.
   .3 Finishes: to match existing.
2. Butts and hinges:

Specifications - continued

.1 Butts and hinges: Dorex 179 454 NRP

3. Exit devices: Sargent 8810
4. Door Closers and Accessories:
   .1 Exterior: Sargent Powerglide, 351-PS
5. Thresholds: anodized aluminum.
6. Weatherstripping:
   .1 Head and jamb seal:
      .1 Extruded aluminum frame type by KN Crowder.
      .2 Adhesive backed neoprene vinyl covered foam material.
   .2 Door bottom seal:
      .1 Extruded aluminum frame type by KN Crowder.
7. Barrier Free Door Operator: Assa Abloy SW100.
8. Restroom controls: Camden Door Controls CX-WC14FM
9. Emergency call system: Camden Door Controls CX-WEC10
10. Louvers: CDL-CA, 600mm wide by 300mm high, anodized aluminum by KNC Crowder.
11. Exterior barrier free door actuator: Lazerpoint RF by Camden Door Controls CM-RFL604-69AWTL3

2.8.9.5 Fastenings

1. Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels.

2.8.9.6 Keying

1. Incorporate new doors into existing master key system.

2.8.9.7 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.

2.8.10 Glazing

2.8.10.1 Action and Informational Submittals

1. Product Data: 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.

Specifications - continued

2. Samples: Submit for review and acceptance of each unit, size: 300 mm x 300 mm.

2.8.10.2 Materials

1. Design Criteria:
   .1 Ensure continuity of building enclosure air/vapour barrier using glass and glazing materials as follow:
   .2 Utilize inner light of multiple light sealed units for continuity of air and vapour seal.
   .3 Size glass to withstand wind loads, dead loads and positive and negative live loads acting normal to plane of glass to design pressure consistent with the project location, 50 year wind event.
   .4 Limit glass deflection to 1/200 with full recovery of glazing materials.
2. Insulating glass units to CAN/CGSB-12.8, double units, 25 mm overall thickness.
   .1 Glass to CAN/CGSB-12.3, CAN/cgsb-12.1, CAN/CGSB-12.2, CAN/CGSB-12.4 and CAN/CGSB-12.10.
   .2 Insulating glass unites shall be manufactured to conform to IGMAC recommendations and the manufacture shall be a member of IGMAC. Sealed units shall bear IGMAC certification markings.

2.8.10.3 Glazing Types

1. (GL-1) Vision safety glass (tempered)
   .1 Safety glass to CAN/CGSB-12.1, transparent clear, 6 mm thick.
   .2 Type 2-tempered, Class B-float, Category 11, Edge treatment.
2. (GL-2) Vision sealed units
   .1 Outer light: 6 mm clear, tempered, Low-E on inner face (2nd face of insulated unit), Solar Ban 70XL by PPG or Cardinal 366.
   .2 Inner light: 6 mm clear, tempered.
   .3 Inter-cavity space thickness: 13 mm, Argon filled 90% concentration.
   .4 Spacer: Non-metallic thermally broken, INEX Spacer or Edgetech Super Spacer.
   .5 Solar heat gain coefficient: Maximum of 0.40 and minimum VT/SHGC of 1.10.

Specifications - continued

3. (GL-5) Spandrel sealed units.
    .1 Outer light: 6 mm clear, tempered, Low-E on inner face (2nd face of insulated unit), Solar Ban 70XL by PPG or Cardinal 366.
    .2 Inner light: 6 mm clear, tempered, back painted, colour: OPACI-COAT-300, metallic aluminum.
    .3 Inter-cavity space thickness: 13 mm, Argon filled 90% concentration.
    .4 Spacer: Non-metallic thermally broken, INEX Spacer or Edgetech Super Spacer.
    .5 Solar heat gain coefficient: Maximum of .27.
    .6 100 mm insulation.
    .7 3 mm anodized aluminum back pan (air barrier).

2.8.10.4 Accessories

1. Setting blocks: neoprene, 80-90 Shore A durometer hardness to ASTM D 2240, to suit glazing method, glass light weight and area.
2. Spacer shims: neoprene, 50-60 Shore A durometer hardness to ASTM D 2240, 75 mm long x one half height of glazing stop x thickness to suit application. Self adhesive on one face.
3. Glazing tape:
    .1 Preformed with integral resilient tube spacing device, 10-15 Shore A durometer hardness to ASTM D 2240; coiled on release paper; size to suit application; black colour.
4. Glazing splines: resilient polyvinyl chloride, extruded shape to suit glazing channel retaining slot, colour as selected by consultant.
5. Glazing clips: manufacturer's standard type.
6. Lock-strip gaskets: to ASTM C 542.

2.8.10.5 Installation: Exterior Wet/Dry Method

1. Perform work in accordance with GANA Glazing Manual and GANA Laminated Glazing Reference Manual for glazing installation methods.

2.8.10.6 Installation: Interior - Dry Method

1. Perform work in accordance with GANA Glazing Manual and GANA Laminated Glazing Reference Manual for glazing installation methods.

Specifications - continued

2.9 - Finishes

2.9.0 Contents

2.9.1 Gypsum Board Assemblies

2.9.1.1 Materials

1. Standard board: to ASTM C 1396/C 1396M, Type X, 16 mm thick, tapered edges.
2. Water-resistant backing board: to ASTM C 1396/C 1396M, Type X, 16 mm thick, squared edges.
3. Water-resistant board: to ASTM C 1396/C 1396M, ASTM D 3273, moisture-resistant gypsum core with coated fiberglass mats, Type X, 16 mm thick, 1200 mm wide x maximum practical length, tapered edges.
4. Metal furring runners, hangers, tie wires, inserts, anchors: to CSA A82.30 galvanized.
5. Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.
6. Resilient drywall furring: 0.5 mm base steel thickness galvanized steel for resilient attachment of gypsum board.
7. Steel drill screws: to ASTM C 1002.
8. Stud adhesive: to CAN/CGSB-71.25.
9. Laminating compound: as recommended by manufacturer, asbestos-free.
10. Casing beads, corner beads, control joints and edge trim: to ASTM C 1047, zinc-coated by hot-dip process, 0.5 mm base thickness, perforated flanges, one piece length per location.
11. Insulating strip: rubberized, moisture resistant, 3 mm thick closed cell neoprene strip, 12 mm wide, with self-sticking permanent adhesive on one face, lengths as required.
12. Joint compound: to ASTM C 475, asbestos-free.
13. Setting compound: to ASTM C 475, asbestos-free.
14. Paper tape: to ASTM C 475.

Specifications - continued

15. Fiberglass tape: to ASTM C 475

2.9.1.2 Erection

1. Comply with gypsum board manufacturer's recommendations.
2. Do application and finishing of gypsum board to ASTM C 840 except where specified otherwise.
3. Do application of gypsum sheathing to ASTM C 1280.
4. Erect hangers and runner channels for suspended gypsum board ceilings to ASTM C 840 except where specified otherwise.
5. Install work level to tolerance of 1:1200.
6. Install wall furring for gypsum board wall finishes to ASTM C 840, except where specified otherwise.
7. Install all framings and furring in ULC rated systems to the written requirements of the specified ULC system. Fire stop all penetrations. Obtain all required inspections prior to enclosing.

2.9.1.3 Application

1. Comply with gypsum board manufacturer's recommendations.
2. Apply water-resistant gypsum board in all washrooms, showers, kitchens, and janitor’s closets. Apply water-resistant sealant to edges, ends, cut-outs which expose gypsum core and to fastener heads.
3. Apply water-resistant backing board at all areas to receive tile. Apply water-resistant sealant to edges, ends, cut-outs which expose gypsum core.

2.9.1.4 Finishing

1. Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.
2. Finish face panels in wet areas with joint system consisting of joint setting compound and fiberglass tape and setting compound installed according to manufacturer's directions and feathered out onto panel faces.
3. Gypsum Board Finish: finish gypsum board walls and ceilings to AWCI Levels of Gypsum Board Finish, level 4.

Specifications - continued

2.9.2 Non-Structural Metal Framing

2.9.2.1 Materials

1. Non-load bearing channel stud framing: to ASTM C 645, stud size as indicated, roll formed from 0.84 mm thickness, 0.91 mm at single stud jambs, hot dipped galvanized steel sheet, for screw attachment of gypsum board. Knock-out service holes at 460 mm centres.
2. Floor and ceiling tracks: to ASTM C 645, in widths to suit stud sizes, 32 mm flange height.
3. Metal channel stiffener: 1.4 mm thick cold rolled steel, coated with rust inhibitive coating.
4. Acoustical sealant: In accordance with Section 07 92 00 – Joint Sealants.
5. Insulating strip: rubberized, moisture resistant 3 mm thick foam strip, 12 mm wide, with self-sticking adhesive on one face, lengths as required.
6. Acoustic sound insulation: In accordance with Section 07 21 16 – Blanket Insulation.
7. Hangers: Minimum 4.064 (8 IWG) zinc coated annealed steel wire, diameter as required to safely support indicated assembly and as recommend by framing system and gypsum board manufacture.
8. Tie wire: 1.65 (16 IWG) zinc coated, annealed wire.
9. Non-load bearing channels: 1.6 mm thick cold steel zinc coated for interior locations, Z275 galvanized for exterior locations.
   .1 38 mm x 12.7 mm where supported at 914 mm centers maximum.
   .2 38 mm x 19 mm where supported at 1220 mm centers maximum.
10. Furring channels:
    .1 0.89mm thick, cold rolled steel, hot dip galvanized, 22 mm depth x 35 mm face, hat type with knurled face.
    .2 RC-1 resilient channel, 13 mm depth by 52.07 mm width. 048 mm thick.

2.9.2.2 Installation

1. Do work to CAN/CSA-A82.31-M91 except where specified otherwise.
2. Install support systems, gypsum board wall finishes in accordance with CAN/CSA-A82.31.M91, except where specified otherwise.
3. Provide studs or channels or furring or combination of thereof, where gypsum board support systems are not specifically indicated

on Drawings necessary studs, framing and furring systems to provide proper support for gypsum board in accordance with good industry practice and manufacturers' specifications.

4. Give complete cooperation and direction to trades erecting, framing and furring over which this work is applied. Coordinate finished joist location with framing. Notify metal framing trades when framing, blocking and furring are inadequate as recommended by CAN/CSA-A82.31-M91.
5. Coordinate installation and cooperate with Mechanical and Electrical trades to accommodate mechanical electrical items and any other work required to be incorporated into or coordinated with the partitions, ceiling and soffit systems.
6. Provide clearances between work of this Section and structural elements to prevent transference of structural loads.
7. Extend all partitions to roof or floor deck, except where noted otherwise.

2.9.2.3 Furring General

1. Furring indicated on drawings is schematic. Do not regard as exact or complete. Provide all necessary bracing, framing and furring to support gypsum board in accordance with manufacturers' specifications.
2. Leave finished work rigid, secure, square, level, plumb, curved to detailed radius and erected to maintain finish gypsum board line dimensions and contours. Make allowance for thermal movement.

2.9.2.4 Suspended and Furred Ceilings

1. Arrange hangers for suspended gypsum board ceilings to provide support independent of walls, columns, pipes, ducts; erect plumb, and securely anchored to structural frame, or embed in concrete slabs.
2. Space hangers at 914 mm (36") o/c max. along runner channels, and not more than 150 mm (6") from ends.
3. Space runner channels at 1220 mm (48") o/c max. and not more than 150 mm (6") from boundary walls, interruptions of continuity, and changes in direction. Run channels transversely to structural framing members.
4. Where splices are necessary, lap members at least 200 mm (8") and wire each end with two (2) loops. Avoid clustering or lining up of splices.

Specifications - continued

5. Attach to rod hangers by bending hanger sharply under bottom of flange of runner, and securely wiring in place with saddle tie.
6. Erect cross furring channels transversely across runner channels at 400 mm (16”) o/c max., 305 mm (12”) o/c max. at fire rated assemblies, at not more than 150 mm (6”) from boundary wall openings, interruptions in ceiling continuity, and changes in direction.
7. Secure furring channels to each support with purpose-made slips or wire tie. Splice joints by lapping channels and tying together.
8. Install proprietary ceiling systems in accordance with manufacturer’s printed directions.
9. Level cross furring channels to maximum tolerance of 1:1000.
10. Similarly use cross furring at stair and landing soffits.
11. Brace suspension for exterior soffits and entrance vestibule ceilings to prevent upward movements due to wind pressure.

2.9.2.5 Wall Furring

1. Install steel furring for braced walls, free standing walls, walls that are furred out as indicated.
2. Frame openings and around built-in equipment, cabinets, access panels, on four (4) sides, with channels. Extend furring into reveals. Check clearances with equipment suppliers.
3. Construct bulkheads and boxed-in duct shafts, for beams, columns, pipes and around exposed services where indicated. Install 19 mm (¾) channels at corners and at 305 mm (12”) o/c.

2.9.2.6 Resilient Furring

1. Erect gypsum wallboard resilient furring maximum 610 mm (24”) o/c and not more than 150 mm (6”) from ceiling/wall juncture. Secure to each support with 25 mm (1”) gypsum wallboard screw.
2. Install 150 mm (6”) continuous strip of 12.7 mm (½”) gypsum board along base of partitions where resilient furring installed.

2.9.2.7 Metal Stud Partition Framing

1. Provide partition tracts at floor and underside of deck; align accurately; lay our according to partition layout. Secure floor tracks at 610 mm (24”) o/c with non-ferrous, metallic expansion sleeves and galvanized screws at masonry and concrete substrate.
2. Unless otherwise indicated, place interior studs vertically at centres indicated in following schedule, and not more than 50 mm (2”) from abutting walls, openings and each side of corners. Install studs at

Specifications - continued

400 mm (16”) o/c, and as specially spaced in accordance with details shown. Install studs in tracts at floor and ceiling. Provide freedom from deflection under beams, structural slabs and the like to avoid transmission of structural loads to studs, or install 50 mm (2”) leg ceiling tracks.

3. Install studs of depth indicated on drawings but in no case span partition studs of:
   .1 41 mm (1 5/8”) in depth more than 2700 mm (8’-10”) between supports;
   .2 64 mm (2 ½”) in depth more than 3660 mm (12’) between supports.
   .3 92 mm (3 5/8”) in depth more than 4.5 m (14’-8”) between supports.
4. Where horizontal runs of service lines are scheduled to be installed, arrange with applicable trades and install studs simultaneously with services.
5. At openings in stud walls, erect track at head and sills to accommodate intermediate studs. At each end of track, cut out flanges, turn up web, and fasten to studs. Install intermediate studs above and below openings in same manner and spacing as wall studs. Install double studs at each jamb and double tracks at head of door openings.
6. Provide additional framing to applicable requirements of CAN/CSA-A82.31-M91. At partitions requiring fire rating, erect in accordance with requirements of listing.
7. Install studs of depth indicated on Drawings but in no case span studs between supports at no greater span than L/240 according to manufacturers span tables.
8. Erect three (3) studs at corner and intermediate intersections of partitions.
9. Ensure that electrical boxes are not installed back to back in same stud space.
10. Coordinate work with others installing horizontal runs of service lines so that work of all is done simultaneously. Where standard holes are too small for installed services notch studs, and splice notched flanges with splice pieces 305 mm (12”) longer than notches, each fastened with two (2) screws.
11. Unless shown otherwise on drawings, partitions, together with wallboard facings and insulation batts shall extend through ceilings to underside of roof or floor deck above.

Specifications - continued

12. Install resilient furring channel transverse to framing members, or as indicated, spaced at maximum 610 mm (24”) o/c and within 150 mm (6”) of wall/ceiling juncture.
13. Erect metal studding to tolerance of 1:1000.
14. Coordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.
15. Coordinate erection of studs with installation of door/window frames and special supports or anchorage for work specified in other Sections.
16. Maintain clearance to avoid transference of structural loads to studs.

2.9.2.8 Installation of Sound Batts

1. In locations shown install sound batts. Extend batts to underside of floor and roof deck above.
2. Install continuously. Cut neatly to fill all areas of the cavity.
3. Install to manufacturer’s printed instructions.

2.9.2.9 Anchorage Strapping

1. Install one (1) continuous row of anchorage strapping where shelving against walls is shown.
2. Install anchorage strapping behind lavatory basins, toilet and bathroom accessories and other fixtures, including grab bars and towel rails attached to steel stud partitions.
3. Do not commence gypsum board installation until anchorage strapping is reviewed by Consultant.

2.9.3 Suspended acoustical tile and grid

2.9.3.1 Action and Informational Submittals

1. Include manufacturer's information and installation instructions for each type of product and material used.

2.9.3.2 Products

1. Acoustic units for suspended ceiling system: to CAN/CGSB-92.1.
   - .1 Type 1: Main tile:
     - .1 Size: 600 x 1 200 mm.
     - .2 Edge: Square lay-in.
     - .3 Thickness: 19 mm
     - .4 Colour: white
     - .5 Acceptable products:
       - .1 Mars Clima Plus by CGC Company.

Specifications - continued

.2 Ultima by Armstrong.
.3 Performa Symphony m by Certainteed
.4 Alaska by Rockfon

2. Suspension system:
   .1 Exposed tee bar grid components: shop painted satin sheen, white. Components die cut. Main tee with double web, rectangular bulb and 24 mm (15/16”) rolled cap on exposed face. Cross tee with rectangular bulb; web extended to form positive interlock with main tee webs; lower flange extended and offset to provide flush intersection.
   .2 Hanger wire: galvanized soft annealed steel wire:
      .1 3.6 mm diameter for access tile ceilings.
      .2 To ULC design requirements for fire rated assemblies.
      .3 2.6 mm diameter for other ceilings.
   .3 Hanger inserts: purpose made.
   .4 Carrying channels: galvanized steel as recommended by manufacture.
   .5 Accessories: splices, clips, wire ties, retainers and wall moulding flush, to complement suspension system components, as recommended by system manufacturer.
   .6 Edge trim: 50 mm edge trim at locations indicated.

2.9.3.3 Installation

1. Suspension system:
   .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.
   .2 Installation: in accordance with ASTM C 636 except where specified otherwise.
   .3 Install suspension system to manufacturer's instructions and Certification Organizations tested design requirements.
   .4 Do not erect ceiling suspension system until work above ceiling has been inspected by Consultant.
   .5 Secure hangers to overhead structure using attachment methods recommended by manufacture.
   .6 Install hangers spaced at maximum 1200 mm centres and within 150 mm from ends of main tees.
   .7 Lay out in accordance with reflected ceiling plans.
   .8 Ensure suspension system is co-ordinated with location of related components.

.9 Install wall moulding to provide correct ceiling height.
.10 Completed suspension system to support super-imposed loads, such as, but not limited to, lighting fixtures, diffusers, grilles, and speakers.
.11 Support at light fixtures and diffusers with additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.
.12 Interlock cross member to main runner to provide rigid assembly.
.13 Frame at openings for light fixtures, air diffusers, speakers and at changes in ceiling heights.
.14 Finished ceiling system to be square with adjoining walls and level within 1:1000.
.15 Expansion joints:
.1 Supply and install "Z" shaped metal trim pieces at each side of expansion joint. Design to accommodate plus or minus 25 mm movement and maintain visual closure. Finish metal components to match adjacent exposed metal trim. Provide backing plates behind butt joints.

2. Acoustic Units:
.1 Do not install acoustical panels and tiles until work above ceiling has been inspected by Consultant.
.2 Install acoustical panels and tiles in ceiling suspension system.
.3 Co-ordinate ceiling work to accommodate components of other sections, such as light fixtures, diffusers, speakers, sprinkler heads, to be built into acoustical ceiling components.

2.9.4 Ceramic Tiling

2.9.4.1 Action and Informational Submittals

1. Include manufacturer's information and installation instructions for each type of product and material used.
2. Provide samples of each type of tile, colour, and profile.

2.9.4.2 Floor Tile

1. Porcelain floor tile: to CAN/CGSB-75.1.
.1 New floor tile: Olympia Tile, Arkistone Series, 12 x 24, Silver Matte.
.2 New base: Olympia Tile, Arkistone Series, 12 x 24, Dark Grey.

Specifications - continued

2.9.4.3 Wall and Ceiling Tile

1. Porcelain wall tile: to CAN/CGSB-75.1.
   .1 New wall tile: Olympia Tile, Shaderbrick Series, 3 x 12, 2 colours (1 field colour and 1 accent colour).

2.9.4.4 Stair Tile

1. Porcelain floor tile: to CAN/CGSB-75.1.
   .1 New floor tile: Olympia Tile, Arkistone Series, 12 x 24, Silver Matte.
   .2 Stair noising: Shluter TREP-B, black.

2.9.4.5 Trim Shapes

1. Conform to applicable requirements of adjoining floor and wall tile.
2. Use trim shapes sizes conforming to size of adjoining field wall tile, including existing spaces, unless specified otherwise.
3. Provide cove and bullnose shapes for where indicated and required to complete tile work.

2.9.4.6 Mortar and Adhesive Materials

1. Thick bed mortar acceptable manufacturers:
   .1 Latex-Portland Cement Mortar for thick beds, screeds, leveling beds and scratch/plaster coats: LATICRETE 3701 Fortified Mortar Bed with LATICRETE 254 Platinum slurry bond coat.
   .2 Latex-Portland Cement Mortar for thick beds, screeds, leveling beds and scratch/plaster coats: Dry pack Mortar mixed with Planicrete® AC.
   .3 Latex-Portland Cement Mortar for thick beds, screeds, leveling beds and scratch/plaster coats: Flextile Dry pack Mortar mixed with 43 Mortar additive with Flextile 57 slurry bond coat mixed with 43 Mortar additive.
2. Thin bed mortar acceptable manufacturers:
   .1 Latex Portland Cement Thin Bed Mortar: LATICRETE 254 Platinum.
   .2 Latex Portland Cement Thin Bed Mortar: Kerabond/Keralastic™ System.
   .3 Latex Portland Cement Thin Bed Mortar: Flextile 51 Premium Thin-Set Mortar mixed with Flextile 44 High Solids Mortar additive.
3. Expansion and control joint sealants:
   .1 As recommended by manufacture.

Specifications - continued

.2 VOC limit in accordance with SCAQMD Rule 1168-05, Adhesives and Sealants Applications.

2.9.4.7 Grout

1. Unsanded grouts are to be used on 1.5 mm joints and sanded grouts on 5 mm joints.
   .1 Unsanded grouts to be used on glazed and wall tiles and sanded grouts to be used on unglazed floor tiles.
   .2 LATICRETE® PermaColor™ by Laticrete.
   .3 KERACOLOR by Mapei.
   .4 FLEXTILE 500 or 600 by Flextile.
   .5 ARDEX FL or FG-C

2.9.4.8 Accessories

1. Divider strips: Schluter®-DECO
   .1 Description: profile with 1/4 inch (6 mm) wide visible surface and integrated trapezoid-perforated anchoring leg.
   .2 Material and Finish: E - Stainless Steel Type 304 = V2A
   .3 Height: Height as required.
2. Transition Strips: Schluter®-SCHIENE
   .1 Description: L-shaped profile with 1/8 inch (3.2 mm) wide top section and vertical wall section that together form the visible surface, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer.
   .2 Material and Finish: EB - Brushed Stainless Steel Type 304 = V2A
3. Reducer Strips: Schluter®-RENO-V
   .1 Description: ball-and-socket hinged profile with sloped exposed surface, tapered leading edge, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer.
   .2 Material and Finish: AE - Satin Anodized Aluminum
   .3 Height: Height as required
   .4 Ramp Length: 40 mm.
4. Prefabricated Movement Joints: Schluter®-DILEX-BWS
   .1 Description: profile with integrated rigid, recycled PVC, trapezoid-perforated anchoring legs, connected by a 3/16 inch (5 mm) wide soft CPE movement zone that forms the visible surface.
   .2 Color: To be selected by Consultant.
   .3 Height: Height as required

Specifications - continued

5. Outside corner trim: Schluter®-QUADEC
   .1 Description: Square finishing and edge protection profile for tiled edges and outside corners, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer.
   .2 Material and Finish: EB - Brushed Stainless Steel Type 304 = V2A
   .3 Locations: At all outside tile corners in rooms.
6. Inside corner trim: Schluter®-DILEX-EHK
   .1 Description: roll-formed stainless steel profile with integrated trapezoid-perforated anchoring legs, connected at a 90-degree angle by a cove-shaped section with 23/32 inch (18.5 mm) radius that forms the visible surface.
   .2 Material and Finish: EB - Brushed Stainless Steel Type 304 = V2A
   .3 Height: Height as required
   .4 Locations: At all wall and floor inside tile corners.
7. Top of base or tile termination trim: Schluter®-JOLLY
   .1 Description: L-shaped profile with 1/8 inch (3.2 mm) wide top section and vertical wall section that together form the visible surface, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer.
   .2 Material and Finish: ACGB - Brushed Chrome Anodized Aluminum
   .3 Locations: At all horizontal or vertical terminations of tile.
   .4 Floor sealer and protective coating: to tile and grout manufacturer’s recommendations.

2.9.4.9 Patching and Leveling Compound

1. Cement base, acrylic polymer compound, manufactured specifically for resurfacing and leveling concrete floors. Products containing gypsum are not acceptable. As recommended by manufacture.
2. Have not less than the following physical properties:
   .1 Compressive strength - 25 MPa.
   .2 Tensile strength - 7 MPa.
   .3 Flexural strength - 7 MPa.
   .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.

Specifications - continued

2.9.4.10 Installation

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

2.9.5 Vinyl Tile

2.9.5.1 Action and Informational Submittals

1. Submit duplicate 300 x 300 mm sample pieces of sheet material, 300 mm long feature strips, and edge strips.

2.9.5.2 Materials

1. Luxury vinyl tile (LVT): Interface Studio LVT, Style A007, colour: A00705 Titanium.
2. Primers and adhesives: of types recommended by resilient flooring manufacturer for specific material on applicable substrate, above, on or below grade.
3. Sub-floor filler and leveler: as recommended by flooring manufacturer for use with their product.
4. Metal edge strips:
5. Resilient sheet / tile to carpet: T-molding to suit application by Johnsonite or Roppe, colour as selected by consultant.
6. Sealer and wax: type recommended by resilient flooring material manufacturer for material type and location.

2.9.5.3 Installation

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

2.9.6 Carpet Tile

2.9.6.1 Action And Informational Submittals

1. Submit duplicate 300 x 300 mm sample pieces of sheet material, 300 mm long feature strips, and edge strips.

2.9.6.2 Materials

1. Carpet tile: New tile to match existing, Interface Chenille Warp, colour: yesterday.
2. Adhesive: As recommended by manufacturers of carpet and other carpeting products for intended application.

Specifications - continued

3. Miscellaneous Materials: As recommended by manufacturers of carpet and other carpeting products for intended application.
4. Releasable Adhesive for Carpet: Provide water-resistant, low VOC (not to exceed 10.0 milligram per square meter per hour), non-staining type as recommended by carpet manufacturer which complies with flame spread rating required for carpet installation.
5. Concrete Sealer: Provide concrete sealer compatible with carpet backing material and adhesive.
6. Sub-floor patching and leveling compound: Low VOC compound as recommended by manufacture.
7. Trims:
8. Carpet tile to resilient sheet flooring: T-molding to suit application by Johnsonite or Roppe, colour as selected by consultant.

2.9.6.3 Installation

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

2.9.7 Painting

2.9.7.1 Action and Informational Submittals

1. Submit product data and instructions for each paint system and coating product to be used.
2. Submit duplicate 200 x 300 mm sample panels of each paint with specified paint or coating in colours, gloss/sheen and textures required to MPI Architectural Painting Specification Manual standards.
3. Retain one set of reviewed samples on-site.

2.9.7.2 Site Conditions

1. Heating, Ventilation and Lighting:
   .1 Ventilate enclosed spaces.
   .2 Provide minimum lighting level of 323 Lux on surfaces to be painted.
2. Temperature, Humidity and Substrate Moisture Content Levels:
   .1 Ambient air and substrate temperatures are below 10 degrees C.
   .2 Substrate temperature is above 32 degrees C unless paint is specifically formulated for application at high temperatures.

Specifications - continued

.3 Substrate and ambient air temperatures are not expected to fall within MPI or paint manufacturer's prescribed limits.
.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.
.5 Ensure that conditions are within specified limits during drying or curing process, until newly applied coating can itself withstand 'normal' adverse environmental factors.

3. Perform painting work when maximum moisture content of the substrate is below:
   .1 Allow new concrete and masonry to cure minimum of 28 days.
   .2 15% for wood.
   .3 12% for plaster and gypsum board.

2.9.7.3 Materials

1. 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.

2.9.7.4 Colours

1. Colours: 3 main colours and 4 accent colours.
2. Where specific products are available in restricted range of colours, selection based on limited range.
3. Second coat in three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.
4. Assume that all colours will be dark, deep base, colours and may require more than three coats to achieve proper coverage.

2.9.7.5 Interior Painting Systems

1. All paint systems are premium grade, one primer coat and a minimum of two finish coats. Colours are to be assumed to be medium to dark deep toned colours. An additional finish coat may be required to achieve proper coverage, as determined by Consultant.
   .1 Structural steel primer is not to be considered the prime coat in the three coat system.
   .2 All exposed surfaces, including be not limited to, wall, ceilings, floors, structure and services, are to be painted with appropriate system listed below, unless otherwise noted.

Specifications - continued

2. Structural steel and metal fabrications: columns, beams, joists:
   .1 INT 5.1S - Institutional low odour/low VOC, G5 finish.
3. Galvanized metal: doors, frames, railings, misc. steel, pipes, overhead decking, and ducts.
   .1 INT 5.3M - High performance architectural latex G5 finish.
4. Plaster and gypsum board: gypsum wallboard, drywall:
   .2 INT 9.2B - High performance architectural latex, G3 finish.

2.9.7.6 Interior Re-Painting Systems

1. Concrete vertical surfaces: including horizontal soffits:
   .1 RIN 3.1J - Hig**h** performance architectural latex, G3 finish.
2. Concrete horizontal surfaces: floors and stairs:
   .1 RIN 3.2F - Concrete floor sealer WB.
3. Concrete masonry units: smooth and split face block and brick:
   .1 RIN 4.2K - High performance architectural latex, G4 finish.
4. Structural steel and metal fabrications: columns, beams, joists:
   .1 RIN 5.1R - High performance architectural latex G5 finish.
5. Galvanized metal: doors, frames, railings, misc. steel, pipes, overhead decking, and ducts.
   .1 RIN 5.3J - High performance architectural latex G5 finish.
6. Aluminum: unanodized:
   .1 RIN 5.4F - High performance architectural latex, G3 finish.
7. Copper:
   .1 RIN 5.5F - High performance architectural latex, G3 finish.
8. Plaster and gypsum board: gypsum wallboard, drywall:
   .1 RIN 9.2B - High performance architectural latex, G3 finish.

2.9.7.7 Preparation and Installation

1. Comply with manufacturer's written recommendations and specifications, including product technical bulletins, handling, storage and installation instructions, and data sheets.
2. Comply with Mater Painter Institute (MPI) written recommendations and specifications, including product technical bulletins, handling, storage and installation instructions, and data sheets.

Specifications - continued

2.10 - Specialties

2.10.0 Contents

2.10.1 Manufactured Specialties

2.10.1.1 Action and Informational Submittals

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

2.10.1.2 Products

1. Foot grills:
   - .1 Acceptable products:
     - .1 Construction Specialties Inc. ‘Pedigrid G8’ complete with aluminum level base frame option 2. rail, 16A065000. Orient rails perpendicular to traffic flow.
     - .2 McGill Architectural Products, Model AG-400-L
     - .3 Balco Inc., AMR-2S Ultragrid.
     - .4 K.N. Crowder MFG. Inc., Model FG-5 with frame type C.
   - .2 Aluminum finish: Clear anodized finish.
   - .3 Rails: Serrated aluminum

2.10.1.3 Installation

1. Install the work of this section in strict accordance with the manufacturer's recommendations.

2.10.2 Toilet and Bath Accessories

2.10.2.1 Action and Informational Submittals

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

Specifications - continued

2.10.2.2 Products

1. Toilet tissue dispenser with shelf: Quantity: 1
   .1 Acceptable manufacturers:
      .1 B-2840 by Bobrick
      .2 Model 0697 by ASI
      .3 Model 5263 by Bradley
2. Paper towel dispenser: Supplied by Owner installed by this section, Quantity: 1
3. Soap dispenser: Supplied by Owner installed by this section, Quantity: 1
4. Hand dryer: listed under re-examination service of ULC and CSA approved.
   .1 Mounting: Surface, Dyson Airblade V, AB12 - Sprayed nickel, 120V, 60 Hz. Quantity: 1
5. Grab bars: 38 mm diameter x 1.6 mm wall tubing of stainless steel, 76 mm diameter wall flanges, concealed screw attachment, flanges welded to tubular bar, provided with steel back plates and all accessories. Knurl bar at area of hand grips. Grab bar material and anchorage to withstand downward pull of 2.2 kN.
   .1 Configurations:
      .1 L-shaped: 813 x 813 mm. Quantity: 1.
      .2 Straight: 610 mm. Quantity: 1.
   .2 Acceptable manufacturers, ASI, Columbia Accessories and Bradley Corporation.
6. Hooks:
   .1 Type 1: Satin-finish 0.8 mm stainless steel. Concealed 1.6 mm stainless steel mounting bracket. Install at locations as directed by Consultant. Quantity: 1
   .2 Acceptable manufacturers:
      .1 B-6827 by Bobrick.
      .2 Model 9134 by Bradley Corporation
7. Adult change table: Fixed mounted adult changing station. Quantity: 1
   .1 Acceptable manufacturers:
      .1 Pressalit Care VersaMax, (R8595) by Max-Ability complete with safety rail, safety belt, wall mounted controls (R8489), and mattress (R8487378), Power: 24V/1amp 120V wall outlet
         .1 Approvals: must be CSA approved.
8. Mirrors: Vertical wall mounted, welded stainless steel frame with tempered glass complete with mounting brackets.

Specifications - continued

.1 Type 1: 610 x 915 mm. Quantity: 1
.2 Acceptable manufacturers:
.1 B-290 by Bobrick.
.2 20650-B by ASI
.3 781-2 by Bradley Corporation

9. Folding utility shelf: Type 304 stainless steel, satin finish. Quantity: 1
.1 Acceptable manufacturers:
.1 B-287 by Bobrick
.2 Model 0698 by ASI
.3 Model 790 by Bradley
10. Swing up grab bar: Type 304 stainless steel, peened finish
.1 Acceptable manufacturers:
.1 B-4998.99 Bobrick
.2 Model 3513-P by ASI
.3 Model 8370-107-2 by Bradley

2.10.2.3 Installation

1. Install and secure accessories rigidly in place as follows:
.1 Stud walls: install steel back-plate to stud prior to plaster or drywall finish. Provide plate with threaded studs or plugs.
.2 Hollow masonry units, existing plaster or drywall: use toggle bolts drilled into cell or wall cavity.
.3 Solid masonry, marble, stone or concrete: use bolt with lead expansion sleeve set into drilled hole.
.4 Toilet and shower compartments: use male to female through bolts.
.5 Install grab bars on built-in anchors provided by bar manufacturer.
.6 Use tamper proof screws/bolts for fasteners.
.7 Fill units with necessary supplies shortly before final acceptance of building.

2.10.3 Toilet Partitions

2.10.3.1 Action and Informational Submittals

1. Submit manufacturer's printed product literature, specifications and datasheet, for washroom partitions and components, include product characteristics, performance criteria, physical size, finish and limitations.

Specifications - continued

2.10.3.2 Materials

1. Doors, Panels and Pilasters shall be constructed of two sheets of panel flatness zinc-coated galvanneal steel, ASTM A653 GR33, laminated under pressure to a masonite reinforced honeycomb core for sound deadening and rigidity. Formed edges to be welded together and inter-locked under tension with a brushed stainless-steel roll-formed oval crown locking bar, mitred, welded and ground smooth at the corners. Honeycomb to have a maximum 25mm (1”) cell size.

2.10.3.3 Doors

1. Shall be 25mm (1”) thick with cover sheets not less than 0.8mm (.030”) and powder coated with brushed stainless-steel locking bars.

2.10.3.4 Panels

1. Shall be 25mm (1”) thick with cover sheets not less than 0.8mm (.030”) and powder coated with brushed stainless-steel locking bars.

2.10.3.5 Pilasters

1. Shall be 32mm (1.25”) thick with cover sheets not less than 0.9mm (.036”) and powder coated with brushed stainless-steel locking bars.
2. Pilasters shall be securely and rigidly fastened to the floor and fitted with a jack levelling screw for vertical adjustment. The floor fastening shall be concealed and protected by a 102mm (4”) high, die-formed stainless-steel pilaster shoe.

2.10.3.6 Headrail

1. Shall be 25mm (1”) by 41mm (1.625”) extruded anodized aluminum with anti-grip design. Wall thickness to be 1.5mm (.060”) and shall be securely attached to wall and pilasters with manufacturer’s fittings in such a way as to make a strong and rigid installation. All joints in headrails shall be made at a pilaster.

2.10.3.7 Finish

1. With the exception of the brushed stainless-steel locking bars, all sheet metal to be thoroughly cleaned, phosphated and finished with a high-performance vandal-resistant powder coating, baked on to provide a uniform smooth protective finish. Color shall be as selected from manufacturer’s full color range.

Specifications - continued

2.10.3.8 Components

1. Emergency Access: Hinges, latch allow door to be lifted over keeper from outside compartment.
2. Materials: 18-8 S, Type 304, heavy-gauge stainless steel with satin finish.
3. Doorstops: Prevents in-swinging doors from swinging out beyond stile; on out-swing doors, doorstop prevents door from swinging in beyond stile.
4. Fastening: Hardware secured to door and stile by through-bolted, theft-resistant, pin-in-head Torx stainless steel machine screws into factory-installed, threaded brass inserts. Fasteners secured directly into core not acceptable.
   .1 Threaded Brass Inserts: Factory-installed; withstand direct pull force exceeding 1500 lb (680 kg) per insert.
5. Clothes Hooks: Projecting no more than 29 mm from face of door. Clothes hooks are to be installed beside door in barrier-free compartments.
6. Latching: Track of door latch prevents in-swing doors from swinging out beyond stile; on out-swing doors, door keeper prevents door from swinging in beyond stile; 2 mm sliding door latch, 3.2mm keeper; latch slides on shock-resistant nylon track. Black rubber bumper on latch serves as door bumper for in-swing door.
7. Hinges: 1.6 mm stainless steel with satin finish, self-closing, 3 section hinges, balanced, with field-adjustable cam to permit door to be fully closed or partially open when compartment is unoccupied.
8. Locking: Door locked from inside by sliding door latch into keeper.
9. Mounting Brackets: 1.2 mm stainless steel, mounted inside compartment; exposed brackets on exterior of compartment not acceptable with the exception of out-swing doors.
   .1 U-Channels: Secure panels to stiles.
   .2 Angle Brackets: Secure stiles-to-walls and panels-to-walls.
10. Door pulls: On barrier-free compartment:
   .1 Latch side, 150 mm long mounted vertically below the door latch. One located on the interior side of the compartment and one located on the exterior of the compartment.
   .2 Interior compartment hinge side, 150 mm long mounted horizontally with the center line of the pull located 200 to 300 mm from the hinge side edge of the door and 900 mm above the finished floor.
11. All hardware is to be vandal-resistant.

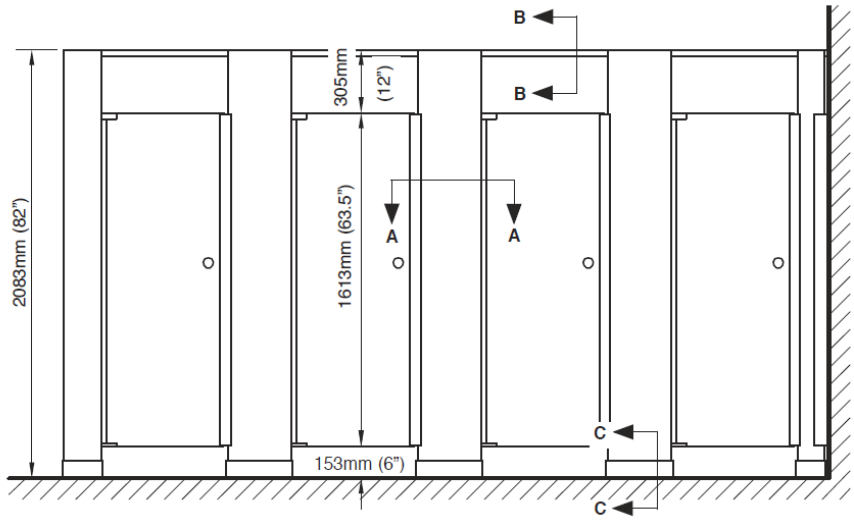
Specifications - continued

2.10.3.9 Fabrication

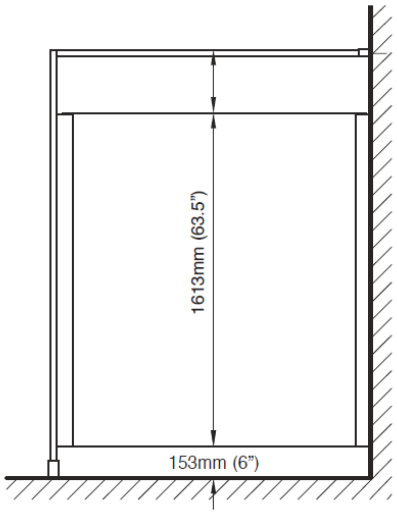
1. Fabricate washroom compartments and privacy screens to configurations shown. Site verify all dimensions prior to fabrication.
2. Toilet compartments:
   .1 Headrail braced.
   .2 Gap-free interlocking design with full height hardware.

2.10.3.10 Installation

1. Install products in strict compliance with manufacturer's written instructions and recommendations, including the following:
2. Verify blocking and supports in walls and ceilings has been installed properly at points of attachment.
3. Verify location does not interfere with door swings or use of fixtures.
4. Use fasteners and anchors suitable for substrate and project conditions
5. Install units rigid, straight, plumb, and level.
6. Conceal evidence of drilling, cutting, and fitting to room finish.
7. Test for proper operation.
8. Do work in accordance with CSA-B651.



front elevation



side elevation

Specifications - continued

2.10.4 Detectable Warning Surface

2.10.4.1 Action and Informational Submittals

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

2.10.4.2 Products

1. Metal: Stainless steel 303 or 316.
2. Raised truncated domes of 0.2” nominal height, base diameter of 0.9” and top diameter of 0.45”.
3. Acceptable manufacturers:
   .1 DW Dots (619-582-9600, chris@dwdots.com)
   .2 Urban Access Solutions (Large buttons UAS-SS3512.2 or small buttons USA-SS2218) STAINLESS STEEL ONLY.
   .3 Kinesik Engineered Products, Advantage One Attention Indicator Domes.

2.10.4.3 Manufacturer's Instructions

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

2.10.4.4 Installation

1. Install lift in accordance with manufacturer's printed instructions.
2. Touch up damaged finishes and repair damage to match original finish.

Specifications - continued

Appendix A – Security Gate Information

Appendix A
(Security gate information)

This file has been uploaded as a separate document. Note: this file has not been uploaded in an accessible format should this information in an accessible format, please contact the

Specifications - continued

Appendix B – Drawing Notes

Appendix B
(Drawing notes)

Specifications - continued

Phase 1 Demolition Notes: (Drawings A100 and A101

D1. Existing brick, poured concrete and curtain wall vestibule to be removed. Refer to electrical for additional information regarding work required to existing fire alarm annunciator.

D2. Existing aluminum curtain wall to be removed.

D3. Existing computer tables and chairs to be removed and turned over to owner. Disconnect power and data.

D4. Existing wood shelving. Carefully remove and reinstall in revised configuration after new flooring has been installed. Turn over any remaining shelving to owner.

D5. Existing tables and chairs to be removed and turned over to owner.

D6. Remove existing tile flooring and base. Clean and prep concrete slab on grade for new tile flooring.

D7. Remove existing tile flooring from stair treads and landings. Clean and prep for new tile flooring. (from ground floor to mezzanine and from mezzanine from second floor)

D8. Existing flooring to be removed and salvaged.

D9. Sawcut existing floor slab as required to extend new plumbing over to existing plumbing line. Camera survey existing line to determine exact location prior to starting the sawcutting. Reinstate concrete floor and finishes at completion of plumbing installation.

D10. Existing door and hardware to be removed. Blank off hinges with solid wood to match existing.

D11. Existing toilet and urinal partitions to be removed. Salvage all washroom accessories for reuse. Do not remove the existing partitions until the new partitions are on site and ready to install so as to minimize the closer of the washrooms. Close only one washroom at a time, never both.

D12. Approximate location of existing under floor sanitary drain line. Prior to saw cutting the floor, scope the existing line as required to determine location.

D13 existing light to be removed.

D14 existing ceiling and lighting in this area to be removed.

D15 modify existing ceiling as required to suit new layout.

Specifications - continued

D16 removed existing glazing and modify existing aluminum curtain wall as required. Salvage glazing for reinstallation where applicable.

D17 remove existing brick paver sidewalk as required to carry out removals and new foundation work. Reinstall sub-base and pavers over new rigid insulation frost protection (hatched area). Refer to structural drawings for additional information. Provide all barriers and signage as required to ensure public safety.

D18 existing millwork to be carefully removed, modified and relocated. Provide new end panels to match existing. Provide new hardwood baseboard at location of removal.

D19 remove existing brick paver sidewalk, modify sub-base and reinstall pavers as required to ensure a flush entrance at new entrance door.

D20 existing recessed entrance mat and frame to be removed. Modify existing floor as required for new entrance mat.

D21 remove existing fold down seat.

Phase 1 Drawing Notes: (Drawings A100 and A101)

General Note A - Make good all areas affected by removals, flush to and to match existing adjacent finishes.

General Note B - Make safe all electrical to be removed. Remove all redundant conduit and wiring back to nearest junction box.

General Note C - Repair all damage to walls/ceilings and repaint in areas of work. (refer to repainting diagrams).

1. New plywood hoarding. Dust screen.
2. Hoarding access door, lockable.
3. Modify existing aluminum curtain wall as required to add new door. Door to be temporary main entrance into library. 965mm by 2150mm insulated hollow metal door (painted). Hardware: panic, closer, weather stripping, threshold. Provide wireless push button bell to main desk. Provide sign on new door. "please ring bell if assistance is required. Temporary door does not have a barrier free operator".
4. Existing brick, poured concrete and curtain wall vestibule to be removed.
5. Install new tile flooring and base.
6. Reinstall existing salvaged shelving to configuration shown.
7. New led strip lighting at top of shelving.

Specifications - continued

8. Install new tile flooring on treads of existing stairs and landings, from ground floor to mezzanine and from mezzanine to second floor.
9. Install salvaged carpet.
10. New anodized aluminum frame screen with 6mm tempered glass (gl-1). Glazing joints to be sealed with clear sealant.
11. New 965mm wide by 2050mm high solid core wood door, veneer to match existing. 3 hinges, lever handle set to match existing (office function).
12. New universal washroom, refer to detail 2 on a100.
13. New gypsum board ceiling to be flush to existing adjacent.
14. Install new toilet and urinal partition. Reinstall salvaged washroom accessories. Carry out removals and new installation in such a manner as to minimize the closer of the washrooms. Close one washroom at a time never both.
15. New anodized aluminum curtain wall vestibule c/w sliding door system. Refer to drawing a101
16. New steel structure to support vestibule and existing curtain wall above.
17. New acoustical tile ceiling and suspension grid.
18. Relocated wood shelving c/w new wood tops and led lighting, refer to details 8 on a101.
19. Existing lighting replaced with new led lighting, refer to electrical for additional information.
20. New insulated glazing unit to replace existing.
21. Location of relocated millwork, see demolition note D18.
22. New recessed led lighting.
23. Sawcut existing concrete floor and install new in floor power and data conduits from existing security gate location to new security gate location. Security gates will be relocated in phase 2.
24. New recessed aluminum grill entrance mat.
25. Location of existing reinstalled fire alarm panel.
26. Location of new force flow heater.
27. 1.5mm anodized aluminum cladding, by section 8.7, on 13mm plywood on 92mm steel studs at 400mm o.c. front, sides and top.

Specifications - continued

28. Line of opening in ceiling above.
29. Install fold-down adult change table c/w two (2) built-up wood posts, refer to structural drawings for additional information.
30. Stainless steel truncated dome tactile warning strip, width of stairs, one tread width back and 300mm wide.
31. Install new gypsum board / suspended acoustical tile ceiling as shown.
32. New led cove light.
33. New led surface mounted strip light.

Specifications - continued

New Universal Washroom Notes: (Drawing A100)

General Note A: provide wood blocking as required for all wall mounted items.

1. Partition:
   - 16mm gypsum board (water resistant on the interior) both sides of
   - 92mm steel studs at 400mm o.c.
   - sound batts
   - tile finish on the interior and painted on the exterior.
2. Similar to 1 but with 152mm steel studs.
3. New 965 x 2050 solid core wood door to match existing, with hollow metal frame (painted). Lever handle with storeroom function, 3 hinges, wall stop, electric strike, under cut door 13mm.
4. Barrier free door operator in gypsum board ceiling pocket as required.
5. Barrier free operator actuator
6. Push to lock button.
7. Barrier free lavatory
8. Barrier free water closet
9. Fold down utility shelf
10. Coat hook
11. Mirror
12. Hands-free electric hand dryer
13. Soap dispenser
14. 600mm long grab bar.
15. L-shaped grab bar.
16. Toilet paper dispenser (double roll with shelf)
17. Emergency call button with visual and audible signal.
18. Floor drain.
19. Fold-down adult change table.
20. Wood supports and blocking for new adult change table. Refer to structural drawings for additional information.

Specifications - continued

Phase 2 Demolition Notes: (Drawings A200 and A201)

D1. Existing security gates to be carefully removed and salvaged for reuse.

D2. Existing wood and glass screen to be removed.

D3. Existing water closet to be removed. Sawcut and remove portion of existing concrete slab on grade as required to remove all plumbing and cap. Make good with new latex modified concrete flush to existing adjacent.

D4. Remove existing floor tile and base. Clean and prep for new flooring.

D5. Remove existing rolling security grill and track. Infill opening and reveneer and finish jamb to match existing.

D6. Remove existing temporary door installed in phase 1.

D7. Existing main desk to be removed.

D8. Existing track lighting to be removed.

D9. Remove first two panels of suspended perforated aluminum panel ceiling. Relocated existing end trim to end of modified panel.

D10. Existing linoleum flooring to be removed. Clean and prep floor for new flooring.

D11. Remove existing wall tile and base. Clean and prep for new wall tile.

D12. Existing exit sign to be relocated.

D13. Modify existing gypsum board ceiling as shown for new overhead coiling security grill pocket.

Specifications - continued

Phase 2 Drawing Notes: (Drawings A200 and A201)

General Note A - Make good all areas affected by removals, flush to and to match existing adjacent finishes.

General Note B - Make safe all electrical to be removed. Remove all redundant conduit and wiring back to nearest junction box.

General Note C - Repair all damage to walls/ceilings and repaint in areas of work. (refer to A400).

1. New plywood hoarding. Dust screen.
2. Hoarding access door.
3. Install new linoleum flooring.
4. New wood shelving, refer to detail 1 on a201.
5. Install new tile flooring and wall base.
6. Modify existing curtain wall as required to reinstate window/ glazing to pre-phase 1 condition.
7. Temporary main desk location during phase 2 work. Connect to existing power and data in floor
8. New main reception counter, refer to 1 on a300. Relocate power and data from existing desk location to new desk location as required.
9. New reception counter, refer to 2 on a300. Chip out and relocated power and data from existing desk location to new desk location as required.
10. New suspended led lighting.
11. Install new emergency call system c/w visual and audible signal. Disconnect existing unlock timer system.
12. Location of new security gates. Run new conduit down to basement level and over to existing security screen locking and connect to floor box. Provide new flush cover for existing floor box.
13. New overhead coiling security shutter c/w anodized aluminum fascia and closer. Refer to detail 5 on a200.
14. Overhead coiling security grill controls.
15. New anodized aluminum tube, 76mm x 76mm by 5mm. Secure to floor and to concrete structure above.

Specifications - continued

16. New anodized aluminum coiling security shutter track.
17. Remove existing lighting and install new led lighting.
18. New computer bar, refer to detail 10 on a300. Install new power and data from basement below. Firestop all penetrations. (separate price #1)
19. Stainless steel truncated dome tactile warning strip, width of stairs, one tread width back and 300mm wide.
20. Repair floor at existing desk removal with new carpet to match existing.
21. Install new ceramic wall tile.
22. Approximate location of relocated exit sign.

Repainting Notes: (Drawing A400)

General Note A - Patch all damaged areas of gypsum board prior to painting.

General Note B - Rope off areas of work to prevent public access.

General Note C - Ensure clear access to fire exits at all times. If a fire exit must be temporarily closed, coordinate with building owner/staff and post signage as required by authorities having jurisdiction.

General Note D - All surfaces to be painted are to receive a premium three coat system (primer and two top coats). Additional coats may be required for some colours to achieve proper coverage. The existing colours being covered are deep tone colours.

General Note E - Sequence work as required to ensure maximum access to stacks and services during repainted process.

General Note F - Protect all surfaces not to receive paint and make good all areas affect by this work.

Specifications - continued

Structural Drawing Notes

General Notes

01-01-01 The professional engineer's seal on these drawings applies only to the structural elements shown hereon.

01-01-09 All work shall comply with the current edition of the building code and all governing standards & regulations.

01-01-12 Read structural drawings in conjunction with all other contract documents.

01-01-14 Clarify with the engineer any queries regarding interpretation of the drawings before proceeding with any work.

01-01-15 The contractor shall verify and be responsible for all dimensions and shall report any discrepancy to the engineer before proceeding with any work.

Design Notes

01-02-01 The structural framing depicted on these drawings has been designed in accordance with the requirements of the 2012 Ontario building code.

01-02-03 Where standards are referenced, the edition of the given standard shall be the most recent edition at the time of the issuance of the building permit, except where the building code in effect at that time, or the standards it references, explicitly specify an earlier edition of the standard.

01-02-04 Importance category: normal

01-02-06 Reference velocity wind pressure, q50: 0.48 kPa

01-02-07 This structure has been designed using the internal pressure coefficients "cpi" for a category 3 structure.

Specifications - continued

Foundation Notes

Excavation & Backfilling

31-04-06 The contractor shall ensure that all excavations shall be undertaken in such a manner as to prevent movement that would cause damage to adjacent buildings at all phases of construction.

31-04-13 The material used as backfill or fill supporting a footing, foundation or a floor on grade shall be of a type that is not subject to detrimental volume change with changes in moisture content and temperature, and is not frost susceptible.

Foundation Insulation

31-05-01 Rigid insulation to be extruded polystyrene meeting ASTM C578, R5 per inch.

31-05-02 Rigid insulation shall have the following minimum compressive strengths, as determined in accordance with ASTM D1621. Type SM: 210kpa (30psi), type HL-40: 275 kPa (40 psi), type HL-60: 415 kPa (60 psi), type HL-100: 690 kPa (100 psi).

31-05-03 Unless noted otherwise, rigid insulation shall be type SM.

31-05-04 Stagger joints in insulation. Butt joints must be tight.

31-05-05 Protect insulation boards from physical damage and direct exposure to sunlight until covered with a minimum 150mm (6”) top soil, pavers, or a concrete slab. Contractor shall provide adequate protection to insulation where soil, pavers or concrete slab is not provided.

31-05-06 Insulation is shown on the structural drawings where required for protection of the foundations from damage due to frost action only. Typically, only structurally required insulation is shown on the structural drawings. Please refer to architectural and mechanical drawings and specifications for additional insulation requirements.

Specifications - continued

Structural Steel Notes

General Requirements & Applicable Standards

05-01-01 All structural steel elements have been designed in accordance with CSA standard CAN/CSA-S16 "limit states design of steel structures". Material properties

05-02-01 Structural steel: CSA G40.21 300W (44W), except

W sections: CSA G40.21 350W (50W)

Square and rectangular hollow sections:

1. Non-hot dip galvanized: CSA G40.21 350W (50W) class C or ASTM A500 grade C
2. Hot dip galvanized: CSA G40.21 350W (50w) class H

Round hollow sections:

1. Non-hot dip galvanized: CSA G40.21 350W (50W) class C
2. Hot dip galvanized: CSA G40.21 350W (50W) class H

Anchor rods: ASTM f1554, grade 36

CF sections: ASTM a570m grade 350W (50W)

05-02-04 Grout for base and bearing plates: sika m-bed or approved equivalent.

Fabrication and Execution

05-03-07 Welding shall conform to the requirements of CSA standard W59 and CSA standard s16.

05-03-08 The fabricator or contractor undertaking welding work shall be certified by the canadian welding bureau as being qualified under requirements of CSA standard W-47.1, certification of companies for fusion welding of steel structures division 2.1.

05-03-09 Unless otherwise specified, shop paint and surface preparation for painting shall conform to CAN/CGSB- 85.10.

Specifications - continued

Concrete Notes

General Requirements & Applicable Standards

03-01-01 All structural concrete elements have been designed in accordance with CSA standard CAN/CSA A23.3 "design of concrete structures".

03-01-02 The contractor shall ensure that concrete shall be mixed, placed & cured in accordance with CSA standard A23.1 "concrete materials and methods of concrete construction".

03-01-03 Formwork shall be in accordance with CAN/CSA - A23.1, falsework with CSA S269.1.

Material Properties

03-02-02 Concrete for grade beams shall conform to CSA standard A23.1 exposure class C-1 & have a min. Compressive strength at 28 days of 35 MPa.

03-02-04 Concrete shall have a slump of 80mm +/- 20mm

03-02-06 Concrete for slabs on grade shall have the following properties:

Strength: 12.4 MPa (1,800 psi) at 3 days, and 28 MPa (4,000 psi) at 28 days

Aggregate: 20mm maximum

Cement: 320 kg/cubic metre minimum

Slump: 80mm ± 20mm (3¼" ± ¾")

Exposure class: C-4

03-02-07 The maximum nominal aggregate size for concrete shall be 20mm (¾").

03-02-12 Reinforcing steel shall conform to CSA standard G30.18 grade 400 (grade 60).

03-02-14 Chairs, bolsters, bar supports and spacers for reinforcing shall conform to CAN/CSA - A23.1.

Specifications - continued

Fabrication and Execution

03-03-01 Hard trowelling of concrete containing air entrainment is not permitted.

03-03-02 Work shall be carried out in accordance with CAN/CSA - A23.1, CSA W186 and reinforcing steel - manual of standard practice.

03-03-03 Unless noted otherwise, all lap splices in concrete reinforcement to be class "B".

03-03-07 Hooks and bends in reinforcement shall be as defined in CSA standard CAN/CSA-A23.1.

03-03-18 Reinforcing, including dowels, shall be secure and in place prior to pouring of concrete. "wet setting" is not permitted.

Slabs on Grade

03-04-04 Place 150mm (6") minimum granular 'A' under slabs on grade. Compact to 95% modified proctor density.

03-04-07 Use 12mm (½") thick joint filler to separate slabs-on-grade from vertical surfaces and extend joint filler from bottom of slab to within 12mm (½") of finished slab surface unless indicated otherwise.

03-04-08 The surface tolerance of the compacted granular base beneath slabs on grade shall have a maximum variation of +/- 10mm (3/8”).

03-04-10 Slabs on grade containing air entrainment shall not be hard trowelled. Where the concrete finishing specifications call for hard (i.e. Steel) trowelled finish for air entrained concrete flatwork, notify the engineer and await written instructions.

Specifications - continued

Mechanical Drawing Notes

Mechanical General Requirements

1. General

Make site visit(s) as necessary before tender to establish and verify all existing conditions. Make allowance for any new or existing service and equipment relocations necessary to complete the work and include in the tender price. Extras will not be allowed for failure to properly

Evaluate existing conditions.

The drawings show the general intent of the work, not the details of installation. Co-ordinate the routing and installation of all mechanical services with all existing conditions, structure and the work of all other trades. Provide installation drawings as required.

Do not scale mechanical drawings. Take field dimensions prior to any installation.

Description

Provide work in accordance with full intent and meaning of drawings and specifications. The word “provide” where used in the contract documents, is to be interpreted as “supply and install”.

Regulatory requirements

Conform to governing municipal and provincial codes, rules and regulations and/or authorities having jurisdiction.

Permits and fees

Obtain all permits required for installation of mechanical trades work, arrange for inspections tests here with and pay all costs for permits, inspections, and associated fees. Obtain permits immediately after notification of award of contract.

Taxes

Ensure that provincial taxes are included where required,

Specifications - continued

Warranty

Provide a written warranty for all materials, equipment and labour for a one-year period to begin at the time when the work is designated acceptable by the consultant.

Certification

Provide manufacturer's written certification of the installation and operation of all systems and major equipment.

Existing service

Do not shut down or make connections to any existing service without written permission of the consultant. Be responsible for demolition and removal of mechanical equipment and services designated for removal on drawings.

Protection

Protect all work and materials, before and after erection, from weather and other hazards, and keep in a clean and orderly manner.

Adjustment and operation of systems

When work is complete, adjust all equipment items, of various systems, for proper operation within framework of design intent, and operating characteristics as published by equipment manufacturer

Miscellaneous steel

Supply and install miscellaneous structural supports, platforms, and braces, as required to hang or support all equipment, piping, ductwork and similar items.

Equipment installation

Install and start up all items of equipment, devices and systems in accordance with most recent manufacturer's published guidelines and recommendations. Contractor is responsible for ascertaining manufacturers installation guidelines and recommendations.

Specifications - continued

Cutting and patching

Where pipes and ducts are shown passing through existing walls, floors, and roof, cut and patch the necessary openings. Should cutting, repairing, and patching of previously finished work, of other trades, be required to allow installation of mechanical work, pay all costs for trade section concerned to perform work.

Changes in the work

Changes to the contract requiring additions to or deletions from the work of this division shall be carried out upon written request of the consultant. Extras to the contract or credits shall be submitted with a complete cost breakdown as follows:

Materials, quantities and unit prices for all equipment required or deleted.

Unit man hours

Total material cost.

Total man hours.

Hourly rate. (refer to supplementary conditions and general contract).

Total overhead and profit. (refer to supplementary conditions and

General contract).

2. Submittals

Shop drawings

Submit shop drawings for all equipment supplied by mechanical division. Submit electronic copies of such drawings to consultant for review. Each shop drawing and/or brochure must bear stamp and signature of responsible official in contractor's and subcontractor's organization, for each submission, as evidence that drawing has been checked against requirements as called for in specifications and drawings.

Operation and maintenance instruction manuals

Provide pdf copies of complete operation and maintenance instructions for equipment furnished under this contract. Manuals shall include the following information:

Control shop drawings and operating sequence, including wiring of components.

Wiring diagram of control panels.

Specifications - continued

Operating instructions, including start-up and shut-down procedure.

Maintenance instructions, including preventive maintenance instructions for components of equipment.

Complete parts list of assemblies and their component parts, showing manufacturer's name, catalogue number, and nearest replacement source.

List of recommended spare parts and quantity of each item to be stocked.

Manufacturers' warranties and guarantees.

Record drawings

Maintain an accurate dimensional record of deviations and changes from contract drawings. Transfer as-built mark-ups to autocad/revit and submit autocad and pdf files to the consultant with the o&m manuals at completion of project.

3. Materials and equipment

Equals and alternates

Use materials and equipment as specified herein, or specified equivalent. Design of mechanical systems has been based on first listed supplier and model number/size stated in equipment schedules. Some items of equipment, one or more additional names of acceptable equal manufacturers may be listed. The design, layout, space allocation, connection details, etc., are based on the products named first in the description and/or schedules. The general approval indicated by listing the names of other equal manufacturers is to establish the quality of manufacture only and is subject to final review of shop drawings, performance data, test reports, production samples (if required) by consultant

Suppliers wishing to submit other items of equipment for approval as an equal to those specified must apply to the consultant at least 3 days before tender closing date. Requests must be accompanied by complete description and technical data on the items proposed. Deviations from the specifications must be stated in writing at time of application for approval.

Items of equipment by manufacturers, not named in the specifications, may be offered as alternatives. Proposals must be accompanied by full descriptive and technical data, together with the statement of amount of addition or deduction from the base bid. After execution of the contract, substitution of equipment will not be considered.

Specifications - continued

Where equipment other than the equipment used as a basis for design, layout and space allocation is used, produce and submit revised layouts of equipment, pipes, ducts, etc., in the areas affected. Submit these drawings with the shop drawings. Failure to produce these drawings is an indication by the contractor that they are not required and the original space allocations are adequate for the substituted equipment.

Access doors

Provide accesses door of at least 200mmx200mm (8"x8") in size as required in walls and ceilings to ensure that access is provided for all equipment, valves or appurtenances, both new and existing. Provide access doors compatible with adjacent finishes and where applicable, with a fire rating equal to the surfaces in which installed.

4. Piping construction methods

Expansion and contraction

Install all piping so as to be free from strain and distortion due to expansion and contraction as governed by requirements of ansi b31.1, except as hereinafter modified. Allow for expansion and contraction by offsets, expansion u-bends or loops. Do not use expansion joints of any type unless specifically indicated on drawings.

Piping connections to mains:

Make branch connections of steam, gas, and compressed air lines, to respective horizontal piping of larger diameter, to upper quadrant of larger pipe. Make down feed piping connections, to horizontal supply and return water mains, on bottom quadrant of mains.

5. Pipe hangers and supports

General

Support or suspend all piping with necessary hangers, structural supports and/or brackets as required, to prevent sagging, warping and vibration.

Do not allow loads, of any nature, to be transmitted through piping connections to equipment.

Provide suitably dampened spring hangers for first three supports from equipment connection on piping subject to excessive movement. Do not hang any pipe, from another pipe, unless specifically indicated on Drawings.

Specifications - continued

Hangers

For all insulated piping up to nps 4, carrying liquids at temperatures 10.5°c (51°f) and higher, use standard weight clevis hangers. For insulated lines of nps 4 dia. And larger, carrying liquids at temperatures 10.5°c (51°f) or higher, use adjustable roller type hangers with locknuts. Support rollers at both ends with 2 adjustable rods with locknuts. For insulated piping carrying liquids at a temperature of 10°c (50°f) or less, use elongated clevis type hangers provide insulation protection bearing plates at all hangers and supports for all insulated.

For non-insulated piping use clevis type of wrought steel construction.

For copper tubing provide copper coated hangers. Attach hanger rods, to building structure, by means of malleable iron beam clamps or concrete inserts

Hanger spacing:

For horizontal runs of plumbing and drainage piping comply with hanger spacing requirements of obc part 7 (plumbing). For horizontal runs of black or galvanized steel pipe, other than for plumbing service, do not exceed maximum distances between supports and with minimum diameter rods as follows:

9mm (1/2”) through 75mm (3”) : 3.66m (12') spacing, 12mm (1/2”) rod dia. For horizontal runs of copper tubing for services other than plumbing, do not exceed 1.8 m (6 ft.) Between hangers. For horizontal runs of piping fabricated of pvc for services other than plumbing, do not exceed 1.22 m (48 in) in a horizontal run, pex tubing shall be supported at intervals not exceeding 800 mm (32 in), unless otherwise specified by the manufacturer.

Insulation

Provide piping insulation as indicated below.

1. Piping

Domestic cold water piping

Fibrous glass split sectional pipe insulation conforming to can/cgsb-51.9-92 25 mm (1") thickness with factory applied vapour barrier jacket and self-seal lap joint. Fire retardant elastomeric closed cell foam or neoprene tubing of 10 mm (3/8") nominal thickness may be used instead of fibrous glass insulation on cold water runouts to plumbing fixtures, not exceeding 1.5 m (5') in length.

Specifications - continued

Domestic hot water piping

Fibrous glass split sectional pipe insulation of the thickness hereinafter specified with factory applied vapour barrier jacket and self-seal lap joint. 13mm (1/2") through 32mm (1-1/4") pipe size = 25mm (1") thickness.

38mm (1-1/2") and larger pipe size = 38mm (1-1/2") thickness.

Sanitary drain piping

Insulate exposed horizontal above floor storm and sanitary drain piping within building, and concealed horizontal storm drains. Insulate vertical sections of rainwater conductors between body of roof drain and horizontal section of pipe, also any exposed vertical piping in high humidity areas such as locker and shower rooms. Insulate exposed waste pipe of handicapped lavatories. Insulation shall be fibrous glass split sectional pipe insulation conforming to can/cgsb-51.9-92 of 25 mm (1") thickness with factory applied vapour barrier jacket and self-seal lap joint.

2. Sheet metal

Sheet metal

Insulation for exposed rectangular ductwork shall be rigid board conforming to can/cgsb-51.10-92 of 48 kg/m3 (3 lb/cu.ft.) Density, minimum 38 mm (1-1/2") thickness, minimum r-value of r-8, and reinforced foil flame resistant kraft facing. Insulation installation to prevent water ponding. Insulation for concealed rectangular ductwork and concealed and exposed round ductwork, where shown on drawings, shall be flexible duct insulation of 12 kg/m3 (3/4 lb/cu.ft.) Density, minimum 38 mm (1-1/2") thickness, minimum r-valve of r-3.5 with reinforced foil flame resistant kraft facing.

Plumbing

1. Plumbing equipment, fixtures, and valves

Floor drains (fd)

Provide floor drains sizes as indicated on drawings, with tapped primer connection in drain body. Provide each floor drain installation with deep seal "p" trap unless otherwise indicated. Furnish trap primer connection tapping to conform with code requirements.

Cleanouts (co)

Specifications - continued

Provide drainage cleanout fittings in drainage piping at locations indicated on drawings, at base of each vertical stack or rainwater leader, and as close as possible to where storm and sanitary lines exit the building, as required to comply with applicable plumbing code. Where cleanouts are concealed in walls, provide an access cover on wall. The type of cover to suit wall surface and construction

Plumbing fixtures

Provide plumbing fixtures as indicated on drawings. Caulk all around bases of mop service sinks, built-in bathtubs, and other built-in equipment.

2. Plumbing venting

Plumbing venting may not be shown on drawings. Provide a complete plumbing venting system for all plumbing fixtures shown, in accordance with obc section 7.5.

Air distribution

1. Sheet metal work

General

Provide ductwork constructed to smacna 765 pa (3" w.g.) pressure classification. Provide ductwork of galvanized steel sheet unless indicated otherwise. Provide ducts of sizes indicated on drawings. Where ducts are to be furnished with internal acoustical liner, adjust duct size to accommodate acoustic liner thickness, with clear inside dimensions as indicated on drawings. Continuously solder or seal joints in exterior air intake ducts and plenums to prevent dripping of moisture. Round ductwork seal joints in round ductwork with high velocity duct sealer. Furnish ninety degree elbows with smooth centre line radius of 1.5 times duct diameter. Alternatively furnish elbows of 5 piece construction, subject to approval by consultant. Ductwork shall use spiral lock seam type duct. Slip joints in direction of flow, in accordance with smacna standards.

2. Supports and hangers

Round ductwork

Furnish strap band and hanger of 1"x20 ga. Galvanized sheet stock with edges folded over for ducts up through 900 mm (36") diameter. Band is to fit tight to duct all around, and connect to hanger strap with load rated fastener.

Specifications - continued

3. Equipment

Exhaust fans

Square in-line

Belt driven in-line exhaust fan with heavy gauge formed steel housings with duct mounting collars and on hinged side for access. Provide fans with capacities and accessories as indicated on drawings. Fan sound level shall not exceed zones noted in schedules

Controls

1. General

Electrical

Provide power both high >120v and low <120 voltage required for this section. Electrical interlock wiring of equipment specified under other sections of this division is the responsibility of trade section installing that equipment, unless indicated otherwise. Supply and install of electrical wiring including raceways for components furnished under this section. Install wiring in accordance with governing electrical code.

Pipe standards

Provide piping materials and fittings as indicated below.

1. Sanitary drain & vent

Buried sections within building area and to 1.5m (5'-0") outside building piping 200mm (8") and smaller: cast iron soil pipe and fittings conforming to csa b70-97. Use plain end pipe and fittings joined with neoprene sleeves with stainless steel gear type clamps except where local authorities do not approve their use, in which case use bell and spigot pipe and fittings with lead and oakum joints

Or

Abs or pvc drainage pipe and fittings with bell and spigot ends and conforming to can/csa-b182.1-m92 or b182.2-m. Rubber ring gaskets integral with bell. For non-combustible buildings (low-rise buildings, non-plenum spaces only):

System 15 pvc drain, as manufactured by ipex is permitted in low-rise buildings of non-combustible construction and in non-return air plenum spaces. Waste and vent pipe and

Specifications - continued

fittings shall be certified to csa b181.2. When combustible pipe and fittings are used in buildings required to be of non-combustible construction, they shall be listed by ulc to the standard can/ulc s102.2 and clearly marked with the certification logo indicating a flame spread rating not exceeding 25. Ipex system 15 pipe and fittings have been tested and certified by csa to the csa b181.2 standard.

2. Domestic hot and cold water piping

Above ground piping 75mm (3") and smaller type "l" hard drawn copper tubing conforming to astm b 88-99. Fittings: wrought copper, solder joint, pressure type. Provide solder to threaded adapters at screwed valves or equipment

Pex

Above ground piping 1-1/2" and below provide a complete pex potable water distribution system as described below and indicated on the drawings. System shall consist of cross-linked polyethylene tubing to csa-b137-m89. System shall include tubes, tube bends, tube bend supports, tube fittings, manifolds, manifold supports and brackets. On completion of installation the system shall be charged with potable water to a pressure which meets local plumbing codes. The system shall remain at this pressure for a minimum of 24 hours to ensure system integrity. Tubing, manifolds and fittings shall carry a twenty-five year non-prorated warranty against failure due to manufacturing defect or exposure to stress cracking agents.

CPVC

Aquarise cpvc, as manufactured by ipex, is permitted in buildings of non-combustible construction, high-rise buildings, and in return air plenums. Pipe and fittings shall be certified to csa b137.6. When used in non-combustible construction, high-rise buildings and air plenums, aquarise pipe shall be tested and listed in accordance with can/ulc s102.2 and clearly marked with the certification logo indicating a flame spread rating not more than 25 and a smoke developed classification not exceeding 50. Pipe shall be sdr 11 thickness and ips outside diameter. Firestopping systems shall be listed under can/ulc s115 and tested with a pressure differential of 50 pa. Solvents shall be certified to csa b137.6, listed to nsf 61. Piping through air plenums, shall be tested and listed in accordance with can/ulc s102.2 and clearly marked with the certification logo indicating a flame-spread rating not more than 25 and a smoke-developed classification not exceeding 50.

Specifications - continued

Sprinkler system

General

Provide a sprinkler system to protect the complete building, existing and new. Design for hazard occupancy in accordance with the requirements of nfpa no. 13 and the ontario building code. Installation of pipe, fittings, valves, and accessories shall conform to nfpa 13, manufacturers installation instructions and conditions of listings.

Location, spacing, and position of sprinkler heads and drains shall conform to nfpa 13. Refer to architectural, structural, mechanical and electrical drawings as well as site conditions for building elements, equipment, and services which may affect this work. Locate sprinkler heads in positions acceptable to the architect and nfpa 13. In 't' bar ceiling this is generally control of tile or at quarter points wi sprinklers located symmetrically with each other in the area or room. Section of sprinkler head types shall be as indicated on drawings.

Submittals

Prepare and submit complete layout, installation and hydraulic calculation shop drawings for automatic sprinkler work to provincial and local fire inspection authorities and to the owner's insurance underwriter.

Testing and inspection

Test automatic sprinkler in accordance with requirements of nfpa 25 and nfpa 13a. Arrange and pay for all reviews and inspections required by local inspection authority. Coordinate testing of automatic sprinkler systems with fire alarm system verification to ensure that all devices are fully tested.

Sprinkler heads upright sprinkler heads: ulc listed, plain bronze, standard pattern, ordinary rating, upright type sprinkler heads conforming to nfpa 13. Use upright sprinkler heads in exposed locations.

Sidewall sprinkler heads: ulc listed, ordinary rating, chrome plated with chrome plated escutcheons, conforming to nfpa 13. Acceptable extended coverage sidewall sprinkler heads: ulc listed, ordinary rating, extended coverage chrome plated with chrome plated escutcheons, conforming to nfpa 13.

Semi-recessed sprinkler heads: ulc listed, ordinary rating, off-white escutcheon cup, chrome plated sprinkler head, conforming to nfpa 13, complete with chrome plated 2 piece escutcheon plates to permit removing ceiling tiles without removing sprinklers. Use semi-recessed sprinkler heads in areas with finished ceilings. Sprinkler heads shall come complete with wire guard where appropriate.

Specifications - continued

Electrical Drawing Notes (E2)

Demolition notes (indicated as hexagons):

1. Remove existing lighting in this area to accommodate new study and washroom. Remove existing power and data outlets as required to accommodate new study and washroom. Refer to new layout for more information and requirements. Reuse existing lighting circuits for new lighting.
2. Reuse existing circuit for new motorized door and power connection.
3. Unless otherwise indicated remove all existing electrical and mechanical devices in existing vestibule including door operators, light fixtures and heaters. Refer to new layout. Pull back unused wiring/conduits to source panels.

General demolition notes:

1. All power and systems to be made safe and disconnected, and to the extent required, to facilitate with the demolition.
2. Ensure that all electrical, life safety services, and services for existing equipment, in areas outside the areas of this work, that are required to remain in service, shall do so.
3. Any electrical equipment on walls or ceilings that will be demolished and rebuilt to be removed and replaced.
4. Remove all electrical devices on/near ceiling in rooms where ceiling grid is to be replaced. Protect from new work and coordinate new location on site to avoid interferences. Refer to architectural drawings for more details.
5. All existing equipment, which is to be reused and/or relocated, to be thoroughly inspected and refurbished to ensure correct operation when put back into service and to meet oesc approval.
6. Work shall be carried out with a minimum of noise, dust and disturbance.
7. Daily clean-up and proper disposal of debris generated by daily operations shall be provided. On completion of the work, all tools, surplus materials and waste materials shall be removed and the premises left in a clean, perfect condition.
8. All wiring in existing runs that are to be demolished shall be removed or terminated in accordance with all applicable codes. Disconnect and remove wiring and conduit back to source for any equipment or device being demolished (typ.).
9. When any electrical item is to be reused, electrical contractor shall remove item carefully to avoid any damage during demolition.
10. Disconnect and remove any electrical equipment in areas that cause interferences during renovation work. All equipment shall be replaced and reconnected upon completion of renovation work.
11. All existing-to-be-removed electrical devices/equipment shown on this drawing to be disconnected and removed in their entireties. Remove all unused jb's /wiring /conduit back to source panel. Patch holes and make good where applicable.

Specifications - continued

12. Drawing do not show all existing electrical devices. Confirm on site for exact location and quantity of all existing electrical devices in renovated areas and make all provisions to remove and/or relocate and reconnected existing devices as required. Advise the consultant of any discrepancy from site conditions.
13. Location of existing device/equipment shown is approximate only. Confirm exact location of device/equipment on site.

Specifications - continued

Electrical Drawing Notes (E3)

General notes:

- Connect emergency call systems from panel a1 on ground floor.
- Connect emergency lighting, exit sign circuit from panel a1 on ground floor.
- Connect new lighting circuit from panel a1 (01 is full).
- Connect new heater from panel bb on ground floor
- Connect new receptacle circuits from panel bb on ground floor, including the rec for computer bar and new vestibule, and all other new receptacle.
- Circuiting for lighting, emergency lighting, overhead doors, mechanical equipment and general receptacles is provided by electrical contractor and shall be complied with the latest O.E.S.C and to meet owner's needs. Provide updated panel directories to reflect the work of this contract.
- The design and installation of electrical service and power distribution is not part of this contract. Coordinate with others for the available power and panel for wiring / connections of new equipment & devices of this contract.
- Coordinate with division 15 and provide relays/interlocking for mechanical equipment as required. Size protective devices and power feeders of motor/mechanical equipment in accordance to final electrical nameplate rating of equipment.
- Coordinate with mechanical drawing and division 15 on site for exact locations of all motor/mechanical equipment prior to installations.
- Provide emergency lighting and corresponding wiring/ connection such that they will be automatically activated and remain operational for at least 30 minutes upon loss of power to the normal lighting in the area covered by them. Typical.
- Provide for patching and repair of any finishes damaged by the work of electrical trade.

Drawing notes (indicated by hexagons):

1. Provide fire alarm signaling devices to match existing type and performance. Confirm on site and coordinate with existing fire alarm panel and manufacturers prior to installation. Refer to f/a specification on drawing e3 for additional requirement.
2. Provide power for new sliding doors. Contractor to coordinate with new door power requirements on site.
3. Relocate existing fa enunciator to new furred wall. Provide fire watch for any duration of fire alarm system down time. Return a fully functional f/a system.
4. Provide 15a, 1ph, 120v circuit to washroom hand dryer
5. Dedicated gfi 15a,1ph,120v circuit for adult change table.
6. Provide new conduit, wiring and covers for relocated floor boxes to new security gates. See architectural drawing for details.

Specifications - continued

7. Provide power and data conduits to security gates. See architectural.
8. Approximate location of temporary circulation desk during renovation. Provide surface mount temporary conduit and duplex receptacle pedestal on a dedicated 120v 15a circuit. Remove near end of construction.
9. Provide 5 new 15a,1ph,120v power circuits for a new computer bar and 5 data ports.
10. New anodized aluminum coiling security shutter track. Provide power connection for control panel.
11. Provide led strip light in book shelves, to be controlled by local switch. See architectural drawings a100 and a101 for additional information.
12. Use existing lighting circuits controls and tie into new led washroom lights.
13. Provide new dual relay occupancy sensor wall switch to control existing lighting and new exhaust fan ef-101. Provide 120v 15a power connection for new exhaust fan from existing panel b2 or bb.
14. Provide 2 new 15a,1ph,120v circuit for new study room receptacles.
15. Coordinate exact requirement with approved security gate and shutter shop drawings. Provide all necessary power wiring, conduits, outlet boxes and connection as required.
16. Provide power connection for new wireless push button bell to main desk.

Electrical Drawing Notes (E4)

Electrical general requirements

1. General conditions
   - 1.1. All work shall be in accordance with the latest edition of the ontario electrical safety code, the local electrical safety authority inspection office, the ontario building code, the ontario fire code and any other local regulations having jurisdiction over the work of this trade.
   - 1.2. Before tendering, examine the site and all drawings and specifications of all trades and be familiar with the work of this trade. No extras will be allowed for the failure to do so.
   - 1.3. All electrical work shall comply with csa electrical bulletin applicable at tender close. Where specific bulletins are not named they are still considered an integral part of this specification.
   - 1.4. Provide all grounding and bonding to ground required, regardless if not shown on the drawings. Grounding shall be in accordance with the requirements of the ontario electrical safety code.
   - 1.5. Provide all new materials having csa, cul, warnock hersey or other approval agency label and listing. All workmanship by this trade shall be first class, conforming to industry standard practices for safety, accessibility, durability and neatness for acceptance by the owners' representatives.

Specifications - continued

1.6. Arrange and pay for all permits and inspection fees required for the work of this trade. Submit to the local electrical inspection department and/or electrical supply authority any and all drawings required for permits, fees, approvals, examinations and services.
1.7. Provide all cutting and patching required for the work of this trade. All cutting and patching shall be performed by qualified trades persons. Include all costs for cutting and patching related to the work of this trade in the tender price.
1.8. Touch-up all shop painted equipment damaged in transit or during installation to match original shop finish.
1.9. Avoid accumulation of debris as the work progresses. On completion of the construction and prior to the final inspection and acceptance by the owner, clean up and remove from the site all scrap materials resulting from the work of this trade.
1.10. Co-ordinate the work of this trade with all other trades on the job so that the work may progress without any delay.
1.11.
1.12. Prior to the final inspection, clean all electrical equipment. Clean all construction dust and dirt from installed equipment at the end of the job.
1.13. Upon completion of the work, provide the final unconditional certificate of acceptance from the local electrical safety authority inspection office.
1.14. Provide a one year guarantee on all materials, and labour from the date of acceptance by the owner. Complete all warranty registration documentation on behalf of the building owner. Submit copies of completed documentation in operations and maintenance manuals.
1.15. On multi-phase feeders and panels, adjust the phase loading so as not to exceed a phase imbalance of 10%, line to line, under normal operating conditions of the feeder or panel.
1.16. Submit shop drawings in electronic pdf format for the following equipment: lighting, fire alarm devices, exit and emergency lighting units, etc. The shop drawings shall bear the name of the manufacturer, the manufacturer's catalogue number, and the consultant's designation, along with all pertinent information pertaining to that specific piece of equipment.
1.17. All electrical equipment shall be mounted plumbed true.
1.18. Obtain one set of prints for as-built purposes and record on these prints all changes to the design drawings to reflect the actual construction conditions, equipment locations and equipment specifications. At the end of construction, and prior to the final inspection by the consultant, transfer as-built mark-ups to autocad/revit and submit autocad and pdf files to the consultant submit for review. Submit final cad files of the as-built drawings on cd/usb key. No final inspection will be performed until these drawings are submitted.
1.19. Prepare three sets of operations and maintenance manuals and a pdf set on a cd for presentation to the owner. Provide copies of all reviewed shop

Specifications - continued

drawings for the project, manufacturer's installation instructions, manufacturer's maintenance instructions, and copies of all test data, verification certificates, manufacturer's warranties and guarantees, the guarantee of this trade indicating start date and end date as well as contract numbers.

1.20. Where the word provide is used in these specifications or on the drawings, it has the meaning "provide and install complete with all associated mounting hardware and connections".

1.21. Changes in the work

1.21.1. Changes to the contract requiring additions to or deletions from the work of this division shall be carried out upon written request of the consultant. Extras to the contract or credits shall be submitted with a complete cost breakdown as follows: materials, quantities and unit prices for all equipment required or deleted. Unit man hours total material cost. Total man hours. Hourly rate. (refer to supplementary conditions and general contract). Total overhead and profit. (refer to supplementary conditions and general contract).

1.22. Refer to architectural and mechanical for complete scope. The drawing set shall not be broken up. In case of conflict between disciplines, the most onerous requirement applies.

2. Conductors and raceways

2.1. Use tw75 or rw90 copper conductors csa approved for the application. Size the conductors so that the maximum branch circuit voltage drop does not exceed 3%. Minimum conductor size is #12 awg unless otherwise indicated.

2.2. All conductors are to be installed in raceways as described below:

2.3. Interior surface raceways, branch circuit wiring from panels, concealed in accessible ceilings and interior walls or in interior concrete block construction: emt raceways

2.4. In metal stud partition walls, branch circuit wiring from panels in suite or tenant occupancies, in interior concrete block walls, for final drops to fixtures in ceiling spaces. (length not to exceed 3m in this application): armoured cable (bx).

2.5. In wood stud construction: nmd-7 copper conductors are permitted for branch circuit wiring as directed by the engineer.

2.6. For existing construction where existing walls and finishes are to remain: surface metal raceways (smr)

2.7. Obtain permission from the consultant prior to installation. Colour and size of raceways to be confirmed with consultant for the specific application.

2.8. All conduit and wiring is to be concealed in all finished areas.

2.9. All feeders from an emergency power source to emergency devices such as emergency lighting, elevators, fire alarm control panels, pressurization fans and sprinkler or standpipe equipment shall conform to ulc-s139 ‘fire test for evaluation of integrity of electrical cables to provide a circuit

Specifications - continued

integrity of not less than 1 hour. This is not required where the cables are located in a service space that contains no combustible materials and is separated from the rest of the building by 1 hour fire rating.

3. Devices
   - 3.1. Receptacles:
     - a) Spec grade, duplex, rated 15 amp, 125 vac, eemac 5-15r configuration, u-ground.
     - b) Ground fault interrupting, class a duplex, rated 15 amp, 125 vac, eemac 5-15r fig.,trip rated for 4-6 ma leakage current. C/w push to test and reset buttons.
   - 3.2. Cover plates:
     - a) Brushed stainless steel, number 430.
     - b) Coverplates to be of the same manufacturer as the devices. Provide a typed label on each device plate indicating the panel board name and circuit number the device is fed from.
   - 3.3. Colour of devices: white or to match existing
   - 3.4. All devices of the same type, size and rating are to be of the same manufacturer throughout the project.
   - 3.5. Mounting heights
     - a) Barrier-free operation, switches shall be mounted 1100mm a.f.f or to match existing.
     - b) All other controls (including electrical switches, intercom switches, etc.) Shall be mounted not less than 900mm and not more than 1100mm above the finished floor.

4. Lighting
   - 4.1. Provide fixtures complete with all accessories mounting hardware, and lamps as specified in the fixture schedule or as approved by owners as an equal fixture.
   - 4.2. Products of equal quality by alternate manufacturers such as lithonia, cooper, lightolier, hubbell, etc. Shall be submitted to landlord and consultant for approval before purchasing.

5. Renovations on existing building
   - 5.1. Renovations shall be made on the existing building as indicated on the drawings and specified herein. Remove all existing luminaries, outlet boxes, switches, receptacles, etc. In renovated areas. All equipment removed and not reused shall remain the property of the owner unless specifically noted otherwise. All equipment installed in renovated areas shall be new. Electrical trade will be responsible for all cutting and patching required for electrical installation. All conduit shall be installed concealed in finished areas unless specifically noted otherwise.

Specifications - continued

5.2. New conductors shall be installed to the nearest outlet as required for equipment that is relocated. Installation of junction boxes for splicing purposes shall not be permitted unless specifically called for.
5.3. Provide all conductors required to reconnect existing circuits where required that may be disrupted due to renovations on the existing floor.
5.4. Provide new breakers where required in existing panels to pick-up additional circuits indicated on the drawings.
5.5. All existing luminaries that are relocated shall be removed, checked, serviced, cleaned, and re-lamped prior to re-installation. All units not reused shall be turned over to the owner, complete with lamps.
5.6. Coordinate with mechanical drawings and safely disconnect and remove all motor/mechanical equipment being demolished. Remove unused wiring/connection back to source panel. Extend wiring/connection of all motor/mechanical equipment being relocated. Provide proper junction box at each point of extension.

6. Exit signs
6.1. Provide exit signs and wire from the main service panel from a separate circuit breaker using a separate raceway system used for no other purpose. Provide lock-on device on circuit breaker.
6.2. Connect the emergency socket to the nearest emergency lighting battery unit.
6.3. Exit fixtures to consist of green pictogram and white graphic symbol meeting the visibility and dimension specifications as per ontario building code 2012, section 3.4.5.1. Dc operating voltage to match mergency battery voltage.
6.4. Acceptable manufacturers include: duallite, emergi-lite, lumacell, lithonia, beghelli, aimlite.

7. Lighting control
7.1. Occupancy sensor switches (line voltage) – washrooms.
7.1.1. Switch shall operate at 120v for a rated fluorescent load of 20a.
7.1.2. Shall use passive infrared to detect occupancy and turn lights on. Shall have a dip switch settings to adjust a time delay between 5 and 30 minutes. Also shall have the option of turning on by either a pushbutton switch as part of the system or from occupancy sensing.
7.1.3. The occupancy sensor shall have a vandal resistant hard lens and provide coverage up to 300 square feet.
7.1.4. Model shall be a watt stopper pw-200-w with a 5 year warranty.
7.2. Wall occupancy sensor dimmer switch.
7.2.1. Switch shall operate at 120v for a rated load of 20a.
7.2.2. Shall use passive infrared to detect occupancy and turn lights on. Shall have settings to adjust a time delay between 5 and 30 minutes. Also shall have the option of turning on by a pushbutton

Specifications - continued

switch as either part of the system or from occupancy sensing and provide coverage up to 525 square feet.

7.2.3. Shall have 0-10v dimming control. Model shall be watt stopper pw-311 with a 5 year warranty.

8. Emergency call system

8.1. Provide emergency call system kit in universal washroom to meet obc 3.8.3.12. System shall include horn/strobe device(s), transformer and push button station. Interconnect with low voltage wiring per manufacturer's requirements and to meet requirements of areas installed (plenum rated etc....) And be mechanically protected in steel stud walls. Refer to architectural drawings for building methods in area.

8.2. Refer to "emergency call wiring diagram - universal washroom" for additional information and requirements.

8.3. See architectural for additional requirements.

8.4. Install transformer in accessible ceiling space, or provide access hatch in rigid ceiling. Coordinate installation of hatch with general contractor.

9. Voice/data conduit system

9.1. Provide raceways to the voice/data outlets shown from the telephone supply backboard. Minimum raceway size is 3/4" c. Raceway to be continuous from supply point to outlet.

9.2. Provide nylon pull wires in all raceways.

10. Fire alarm system

10.1. Existing single stage, non-coded, non-addressable fire alarm system to remain.

10.2. Provide additional signals in existing fire alarm control panel circuits for new devices as required for a fully operational system. Fire alarm pull station to match existing.

10.3. Smoke detectors: to ulc s529 standard for smoke detectors for fire alarm systems to match existing. Wire and connect to existing local f/a zone.

10.4. Heat detectors: to ulc s530 standard for heat actuated fire detectors for fire alarm systems to match existing. Wire and connect to existing local f/a zone.

10.5. Signal appliances: to ulc standard s525 and to match existing.

10.5.1. Horn/strobe: to match existing.

10.6. Existing manufacturer: to match existing.

10.7. Fire alarm installation to ulc standard s524.

10.8. Fire alarm verification to ulc standard s537.

10.9. Provide fire alarm verification report for all relocated and new devices in renovated area to engineer on completion of work. Provide certification of installation to can/ulc - s524.

10.10. Sequence of operation:

10.10.1. Existing sequence to remain.

Specifications - continued

11. Wiring for other trades
    11.1. Provide power wiring for electrically operated equipment of other trades as noted on the drawings or defined in this specification. Provide all starters and disconnect switches for a complete and operating system.

12. Service and distribution
    12.1. Existing 600v 3 phase 4w service.
    12.2. Provide modifications to the existing secondary distribution system to accommodate new devices/equipment as detailed on the drawings.
    12.3. Acceptable manufacturers for distribution equipment include: to match existing.
    12.4. Fuses shall be buss or approved equal, of the class, type and ampere rating as shown on the drawings.
    12.5. Label all disconnect switches, starters, and panels to clearly indicate equipment controlled or area served. Indicate fuse size and type on all fused disconnects.
    12.6. Provide circuit breaker panels of the type, with ampere capacity, number of poles, branch breaker capacity, etc., as specified in panel schedule. Mounting to be as indicated.
    12.7. Provide a updated directory card on the inside of the panel door in a metal frame with clear plastic cover.
    12.8. All branch breakers shall be thermal-magnetic trip indicated, ambient temperature compensated and bolted to the bus bar. Kaic rating to match existing.

General note: see architectural for additional scope and phasing.

Specifications - continued

Electrical Drawing Notes (E4)

Emergency Call Wiring Diagram - Universal Washroom

REF SPEC # CXWC14WEC11X2

No.	Description	SPEC. REF
	CX-WC14FM EQUIPMENT PACKAGE	
1	CX-EMF-2 Multi-Function Relay	2.2B-2A.1
2	CM-45/8GRFSE1 - 4 1/2" illuminated push plate with enclosure and sign	2.2B-2A.2
3	CM-45/4GRFSE1 - 4 1/2" illuminated push plate with enclosure and sign	2.2B-2A.3
4	CM-450/12R - 'press for emergency assistance' switch	2.2B-2A.4
5	CX-MDC - magnetic door contact	2.2B-2A.5
	CX-WEC10 EQUIPMENT PACKAGE	
6	CM-AF501SO - 'assistance requested' led annunciator with sounder	2.3B-2A
7	CM-AF140SO - 'assistance required' single gang dome light with sounder	2.3B-2B
8	CM-SE21A - emergency assistance sign	2.3B-2C
	Additional parts required but not included with the CX-WC14FM/CX-WEC10	
9	Door operator - supplied by others	2.2B-2B.1
10	CX-ED2079 - GRADE2 universal electric strike	2.2B-2B.2
11	CM-45/4 - 4 1/2" square activation switch	2.2B-2B.3
12	CM-55CBL - flush mount box for CM-45/4	2.2B-2B.4
13	CX-PS13 - 12/24 VDC linear power supply	2.2B-2B.5
14	CX-TRX-4024 - 40VA, 24 VAC transformer	2.2B-2B.5
15	CX-PS30UL - 3A, 12/24 VDC linear power supply	2.2B-2B.5
16	CX-33 Multi-Function Relay in MODE 1	

Specifications - continued

NOTE: System based on components provided by Camden Door Controls for a complete operating system. Other systems must be submitted and approved at time of tender to be considered.

Emergency Call System Component List

CX-WC14FM OPERATION:

1. The door is normally closed and unlocked.
2. The exterior 'push to open' aura illuminated push plates switch outer ring, on all doors, is green indicating the restroom is vacant.
3. Pressing the ' push to open' switch will open the door.
4. Once the door is closed, pressing the ' push to lock' aura illuminated push plate switch will lock both doors in that restroom.
5. The ' push to lock' outer ring will glow red indicating the door is locked. Also, the exterior aura™ illuminated push plate rings will glow red indicating the restroom is occupied.
6. While the restroom is occupied, pressing the "press for emergency assistance" push button will send a signal to the assistance required appliance and unlock the door.
7. Pressing the interior all-active push plate switch will open the door and reset the system.
8. The exterior aura™ illuminated push plate switches will glow green indicating the restroom is now vacant.
9. If the door is opened manually to exit the restroom, the overhead magnetic contact switch resets the system.
10. If the time-out function of the cx-emf-2 is configured, the restroom door will automatically unlock after a period of time and the ' assistance required' signal appliance will activate, allowing attendant staff (primarily in health care facilities) to intercede.

CX-WEC10 OPERATION:

1. The 'press for emergency assistance' mushroom push button is activated by the occupant.
2. This energizes the led annunciator and sounder within the washroom, and the dome light with sounder outside the washroom.
3. Both annunciators will be energized until the latching mushroom push button switch is pulled out.