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Addendum / Addenda

No./No
1

Project Description / Description de projet		
M23A Plasma Torch Rms 62 & 64		
Solicitation No./N° de solicitation	Project No./N° de projet	W.O. No./N° d'ordre de travail
19-58014	5586	
Departmental Representative / représentant ministériel		Date
Kirk Williams		July 15, 2019

Notice:	**Nota**:
This addendum shall form part of the tender documents and all conditions shall apply and be read in conjunction with the original plans and specifications.	Cet addenda fait partie intégrale des dossiers d'appel; toutes les conditions énoncées doivent être lues et appliquées en conjonction avec les plans et les devis originaux.

1 Refer to attached mechanical addendum M1.
Veuillez-vous référer à l'addenda M1 ci-joint.

2 Attached are the job showing attendance sheets.
Ci-joint les fiches de présence du poste.

3 Drawing 5586-A02 Detail No.3/A02 Section Through Pit:

Delete: Void Insulation for depth of pit

Add: Install compacted granular fill to pit size of 762mm wide x 1828mm long x 1498mm deep. Ensure fill is clean and compacted in layers of no more than 150mm to properly support a slab-on-grade application.

Add: Drill edge of existing concrete slab to epoxy insert 10M corrosion resistant reinforcing bars at 300 mm o.c. Minimum of 2 bars for each end of pit and 5 bars for each side for the length of the pit.

Add: Install a galvanized filler plate for top perimeter of the existing pit. Filler plate shall be 70mm in width and by the length of perimeter of the pit. Fasten plate to existing plate with countersunk non-corrosive fasteners.

Dessin 5586-A02 Détail No 3/A02 Coupe transversale de la fosse

Supprimer: Isolant à poser dans les vides (grandeur de la fosse)

Ajouter: Remplir la fosse (762 mm de largeur sur 1 828 mm de longueur sur 1 498 mm de profondeur) de remblai granulaire propre que l'on compactera en couches de 150 mm (maximum), de manière à aménager un support assez robuste pour la dalle qui sera posée sur le sol.

Ajouter: Percer les bords de la dalle en béton existante afin d'y insérer des barres de renforcement en époxyde 10M résistantes à la corrosion à tous les 300 mm entraxes. Compter au moins deux barres à chaque extrémité de la fosse et cinq de chaque côté, sur toute la longueur.

Ajouter: Poser une plaque à boulonner en acier galvanisé sur le haut de la fosse existante. La plaque aura 70 mm d'épaisseur et couvrira le périmètre de la fosse. On la fixera à la plaque existante au moyen d'attaches fraisées résistantes à la corrosion.

4 The question deadline is July 18.
La date limite pour les questions est le 18 juillet.

5 The tender closing date is July 25th, 2019 at 14:00.
La date de fermeture est le 25 juillet, 2019 14 :00

6 Replace English specification sections 02 41 99, 06 08 99, 07 21 20, 07 27 10, 07 81 00, 07 84 00, 07 90 00, 08 10 00, 08 71 00, 09 11 10, 09 25 00, 09 91 99, 09 96 00 dated January 2019 with the attached sections 02 41 99, 06 08 99, 07 21 20, 07 27 10, 07 81 00, 07 84 00, 07 90 00, 08 10 00, 08 71 00, 09 11 10, 09 25 00, 09 91 99, 09 96 00 dated June 2019.
Remplacer les sections du devis anglais 02 41 99, 06 08 99, 07 21 20, 07 27 10, 07 81 00, 07 84 00, 07 90 00, 08 10 00, 08 71 00, 09 11 10, 09 25 00, 09 91 99, 09 96 00 daté "January 2019" avec les sections du devis ci-joint 02 41 99, 06 08 99, 07 21 20, 07 27 10, 07 81 00, 07 84 00, 07 90 00, 08 10 00, 08 71 00, 09 11 10, 09 25 00, 09 91 99, 09 96 00 daté "June 2019".

7 Specification section 09 96 00 - *Stonhard Stonclad LT* finish system is an acceptable alternate and is included in the revised english specifications included in this addendum. It is already in the french specification.
La section du devis 09 96 00 - Le système de finition Stonhard Stonclad LT est un produit acceptable come équivalent, et est inclus dans le devis anglais révisées dans cet addenda. La section du devis en question est actuellement dans le devis français.

8 Question: Are the two 30A Disconnect Switches to be supplied for the Fan Coil and Re-heat Coil Unit fused or non-fused?
Answer: Non-fused.
Question: Les deux interrupteurs généraux de 30 A connectés à l'unité de ventilation-convection et de réchauffement doivent-ils être dotés de fusibles ou pas?
Réponse: Pas de fusibles.

Les ajouts, suppressions et révisions suivants font partie des dessins et des spécifications du projet susmentionné **:**

DESSINS

1. Référence dessin 5586-M3:

.1 Devis, Section 23.2.4. Réviser comme suit :

.1 Qualité requise: IEC HPY, Krueger KHGP ou l'équivalent approuvé.

- FIN DE L'ADDENDA MECANIQUE NO. M1 -

Goodkey, Weedmark & Associates Limited
Délivré par: Kurtis Naneff, B.Eng. /jvo

Distribution :
Derek Foot (National Research Council)
Vincent F. Alcaide (Alcaide Webster Architects Inc.)
Ryan Leonard (GWA – Mechanical)
Dennis Ford (GWA – Mechanical)
Richard Boivin (GWA – Electrical)
Amy Girard (GWA – Electrical)
Yves Lavictoire (GWA – Electrical)

The following additions, deletions & revisions form part of the drawings and specifications for the above referenced project:

DRAWINGS

1. Reference Drawing 5586-M3:

.1 Specification Section 23.2.4. revise as follows

.1 Acceptable Material: IEC HPY, Krueger KHGP, or approved equal.

- END OF MECHANICAL ADDENDUM NO. M1 -

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Mandatory Site Visit Attendance / Visite de chantier obligatoire

Project Description / Description de projet				Closing Date	Closing time
M-23A Lab Fit-up, Rooms 62 & 64				July 25, 2019	2:00 PM
Solicitation No./N° de solicitation	Project No./No de projet			1st Showing	Showing Time
18-58014	5586			July 3, 2019	9:00 AM
Departmental Representative / représentant	Signature	Alternate/Questions deadline	Addendum Deadline	2nd Showing	
Kirk Williams		July 16, 2019	July 19, 2019	July 5, 2019	

COMPANY/COMPAGNIE	NAME/NOM	SIGNATURE	PHONE/TELEPHONE	FAX/TELECOPIEUR	EMAIL/COURRIEL
FIA Group	Allan Cullen	Allan Cullen	343-997-5709		allan@fiagroup.ca
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National Research Council Canada / Conseil national de recherches Canada

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COMPANY/COMPAGNIE	NAME/NOM	SIGNATURE	PHONE/TELEPHONE	FAX/TELECOPIEUR	EMAIL/COURRIEL
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SERVANTEL Electric	Carol Daunais		613-789-3535		DONALD@ELECTRIC.COM.
Inflectors	Pat Dobson		613-327-4382		pat.dobson@inflectors.ca
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Black and Mcdonald	Ben Bauer	Ben Bauer	613818 6154		BBauer@BlackandMcdonald.com
Sullivan	Brent Gould		613-897-6771		bgould@sullivan.ca
Gestion DMJ	Pascal David		819-360-7038		pdavid@gestiondmj.ca

Part 1 GENERAL

1.1 REFERENCES

.1 CSA International

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

1.2 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling.

1.3 SITE CONDITIONS

.1 Review "Designated Substance Report" and take precautions to protect environment.

.2 If material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Departmental Representative immediately.

.3 Proceed only after receipt of written instructions have been received from Departmental Representative.

.4 Notify Departmental Representative before disrupting building access or services.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not used.

Part 3 EXECUTION

3.1 EXAMINATION

.1 Inspect building with Departmental Representative and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.

.2 Cooperate with and coordinate all trades in marking out required locations of floor and wall penetrations necessary to accommodate installation of new services.

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

.4 Notify and obtain approval of utility companies before starting demolition.

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

.6 Immediately notify Departmental Representative and utility company concerned in case of damage to any utility or service, designated to remain in place.

.7 Immediately notify the Departmental Representative should uncharted utility or service be encountered, and await instruction in writing regarding remedial action.

3.2 PREPARATION

.1 Protection of In-Place Conditions:

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

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

.3 Protect building systems, services and equipment.

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

.2 Demolition/Removal:

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

3.3 CUTTING AND CORING

.1 Coordinate layout and marking of all required coring and cutting locations of existing slabs and walls with all sub-trades.

.2 Locate existing reinforcement and conduit before coring or cutting existing slabs and walls. Retain an independent testing company to locate existing reinforcement and conduit in the areas of proposed openings and to mark locations on the surfaces of slabs on which the cores and cuts are to be started. X-ray concrete unless other methods can be shown by Contractor to accurately locate reinforcement and conduit. Mark locations and sizes of cores and openings and locations of reinforcement and conduit using indelible markers with red for top bars, green for bottom bars and black for cores, openings and conduit.

.3 Coring: Do not cut existing reinforcement and conduit when coring existing concrete unless approved in advance by the Departmental Representative. Save the complete length of all cores. Label each core with location taken. Make all cores available for

review by Departmental Representative. Dispose of cores only with approval of Departmental Representative.

.4 Cutting: Do not cut existing reinforcement and conduit when cutting existing concrete unless approved in advance by the Departmental Representative. Core the corners of all openings prior to cutting sides. Saw cut sides. Do not over cut openings. Chip corners square if necessary.

.5 Wet coring is not acceptable in normally occupied areas of building.

.6 Carry out all cutting, coring, and drilling activities after normal business hours. Provide minimum 10 days notification to Departmental Representative for such work.

3.4 DISPOSAL

.1 Dispose of removed materials, to appropriate recycling facilities or reuse facilities except where specified otherwise, in accordance with authority having jurisdiction.

3.5 CLEANING

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 N/A

1.2 REFERENCES

.1 CSA International

- .1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
- .2 CSA O121-08, Douglas Fir Plywood.
- .3 CSA O141-05(R2009), Softwood Lumber.
- .4 CSA O151-09, Canadian Softwood Plywood.
- .5 CAN/CSA-O325.0-07, Construction Sheathing.
- .6 CAN/CSA-Z809-08, Sustainable Forest Management.

.2 Forest Stewardship Council (FSC)

- .1 FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.

.3 Green Seal Environmental Standards (GS)

- .1 GS-11-11, Paints and Coatings.

.4 National Lumber Grades Authority (NLGA)

- .1 Standard Grading Rules for Canadian Lumber 2010.

.5 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards

- .1 SCAQMD Rule 1113-A2011, Architectural Coatings.

.6 Sustainable Forestry Initiative (SFI)

- .1 SFI-2010-2014 Standard.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Product Data:

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

1.4 QUALITY ASSURANCE

.1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

.2 Plywood identification: by grade mark in accordance with applicable CSA standards.

.3 Plywood, OSB and wood based composite panel construction sheathing identification: by grademark in accordance with applicable CSA standards.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.2 Storage and Handling Requirements:

.3 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.4 Store and protect wood from nicks, scratches, and blemishes.

.5 Replace defective or damaged materials with new.

1.6 PRODUCTS

1.7 MATERIALS

.1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:

- .1 CAN/CSA-O141.
- .2 NLGA Standard Grading Rules for Canadian Lumber.
- .3 CAN/CSA-Z809 or FSC or SFI certified.

.2 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers:

- .1 S2S is acceptable for concealed locations.
- .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.

.3 Panel Materials:

- .1 Douglas fir plywood (DFP): to CSA O121, standard construction.
- .2 Urea-formaldehyde free.

.4 Wood Preservative:

.1 Surface-applied wood preservative: coloured, copper naphthenate or 5% pentachlorophenol solution, water repellent preservative.

1.8 ACCESSORIES

.1 Fasteners: to CAN/CSA-G164, for exterior work, pressure- preservative and treated lumber.

.2 Nails, spikes and staples: to CSA B111.

.3 Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.

.4 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs recommended for purpose by manufacturer.

.5 Explosive actuated fastening devices are not allowed.

1.9 EXECUTION

1.10 EXAMINATION

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

.1 Visually inspect substrate in presence of Departmental Representative.

.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

1.11 PREPARATION

.1 Treat surfaces of material with wood preservative, before installation.

.2 Apply preservative by dipping, or by brush to completely saturate and maintain wet film on surface for minimum 3 minute soak on lumber and 1 minute soak on plywood.

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

.4 Treat material as follows:

.1 Wood cants, fascia backing, curbs, nailers, sleepers on roof deck.

.2 Wood sleepers supporting wood subflooring over concrete slabs in contact with ground or fill.

1.12 INSTALLATION

.1 Comply with requirements of NBC, supplemented by the following paragraphs.

.2 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding and other work as required.

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

.4 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.

.5 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure using galvanized steel fasteners.

.6 Install wood backing, dressed, tapered and recessed slightly below top surface of roof insulation for roof hopper.

.7 Install sleepers as indicated.

.8 Use caution when working with particle board. Use dust collectors and high quality respirator masks.

.9 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

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

1.13 CLEANING

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

.3 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 GENERAL

1.1 RELATED DOCUMENTS

.1 Drawings and general provisions of the Contract, including Section 001000 General Instructions, apply to this Section.

1.2 WORK INCLUDED

.1 This section describes the supply and installation of mineral fibre and polystyrene board insulation, as shown on the Drawings and as specified herein.

1.3 RELATED WORK

.1 Section 06100: Rough Carpentry.

.2 Section 07191: Air Barrier Membranes.

.3 Section 09250: Gypsum Board.

.4 Division 15: Insulation for mechanical work.

1.4 STORAGE AND HANDLING

.1 Store materials off-ground; keep dry and protected from weather and direct exposure to sunlight.

Part 2 PRODUCTS

2.1 MINERAL FIBRE INSULATION

.1 Semi-rigid mineral fibre insulation board to ASTM C665, Type I and CAN/ULC-S702-97, type 1, Class A, minimum density of 32 kg/m3, thickness as shown, dimensions to suit installation.

2.2 EXTRUDED POLYSTYRENE BOARD INSULATION

.1 Extruded closed cell polystyrene insulation for interior applications under gypsum board finishes: to CAN/ULC-S701, Type 2, thickness as indicated, 610 x 2440 mm boards with square edges. Rsi of 0,87 per 25 mm thickness.

.1 Acceptable product: Styrofoam Channelmate manufactured by Dow or approved equivalent.

.2 Supply insulation boards double-slotted to receive Insulok type furring.

.2 Extruded closed cell polystyrene insulation used for the exterior of foundation walls and below grade applications and cast in place concrete: to CAN/ULC-S701, Type 4,

thickness as indicated, 600 x 2400 mm boards with square edges. Rsi of 0,88 per 25 mm thickness.

.1 Acceptable product: Styrofoam SM manufactured by Dow or approved equivalent.

.2 Acceptable product: Styrofoam High-Density HI30 for below concrete slab applications.

2.3 ACCESSORIES

.1 Furring system for interior applications under gypsum board finishes: “U” and “L” shaped, minimum 0.481 mm thick base metal galvanized steel furring system adapted to insulation board slots such as Insulok or approved equivalent. Use concrete screws with transparent chromate finish, size to suit, minimum 25 mm penetration, such as HILTI KWIK-CON or approved equivalent to fasten furring system to cast-in-place concrete or concrete masonry unit back-up.

.2 Insulation adhesive: synthetic rubber base, solvent type, fungi resistant, application temperature 12°C to 50°C, compatible with insulation, to CGSB 71-GP-24, type 2; Bakor Inc. 230-21 or approved equivalent.

.3 Fasteners and disks:

.4 .1 To fasten board insulation to concrete or concrete unit masonry substrates, use self-drilling concrete screws, with transparent chromate finish, size to suit, as suggested by insulation manufacturer; Hilti Kwik-Con or approved equivalent.

.5 Plastic disks or equivalent, for insulation fastening, as suggested by insulation manufacturer, size to suit application, minimum 50 mm diameter.

Part 3 EXECUTION

3.1 WORKMANSHIP

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

.2 Fit insulation tight around protrusions.

.3 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.

.4 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures, and minimum 50 mm from sidewalls of CAN4-S604 type A chimneys and CAN1-B149.1 and CAN1-B149.2 type B and L vents. Use mineral rock wool insulation for such applications.

.5 Do not enclose insulation until it has been reviewed by Architect.

.6 Install board insulation where shown and to indicated thickness.

3.2 INSTALLATION

.1 Ensure application surfaces are sufficiently flat and uniform. Report in writing to Architect any defect in base work that may affect installation of work of this Section. Do not proceed until corrections have been completed.

.2 Coordinate work with Section 07410 and ensure sheet steel supports for lightweight cement boards have been installed where required.

.3 For interior applications under gypsum board finishes, install polystyrene insulation boards with Insulok metal type furring and angles. Place furring at 300 mm oc and install continuous angles at insulation periphery and around protrusions. Fasten furring and angles at 300 mm oc with specified concrete screws. Furring and angles must be straight and in same plane, ready to receive gypsum board.

.4 For vehicular heavy load traffic areas install HI-100 insulation within fire lane areas as indicated on drawings. Ensure insulation is tight fitted and continuous.

3.3 CLEANING

.1 Protect all adjacent building components where work is to be performed. Leave worksite clean and free of any debris generated by Work of this Section, to Architect’s satisfaction.

END OF SECTION

Part 1 GENERAL

.1 Multi- Materials and installation methods providing primary air vapour barrier materials and assemblies.

.2 Air/vapour barrier materials to provide continuous seal between components of building envelope and building penetrations.

1.1 RELATED SECTIONS

.1 Section 07 92 00 – Joint Sealing

1.2 REFERENCES

.1 Canadian Construction Documents Committee

.1 CCDC 2 - Stipulated Price Contract.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-19.13M-M87, Sealing Compound, One Component, Elastomeric Chemical Curing.

.2 CAN/CGSB-19.18M-M87, Sealing Compound, One Component, Silicone Base Solvent Curing.

.3 CAN/CGSB-19.24M-M90, Multi-Component, Chemical Curing Sealing Compound.

.4 CGSB 19-GP-14M-76, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing.

.3 NBCC 1995; Part 5 - Environmental Separation

.4 Sealant and Waterproofer's Institute - Sealant and Caulking Guide Specification.

1.3 SUBMITTALS

.1 Submit shop drawings in accordance with Section 001000 General Instructions

.1 Provide drawings of special joint conditions.

.2 Submit manufacturer's product data sheets in accordance with Section 001000 General Instructions

.3 Submit manufacturer's installation instructions in accordance with Section 001000 General Instructions

1.4 QUALITY ASSURANCE

.1 Perform Work in accordance with Sealant and Waterproofer's Institute - Sealant and Caulking Guide Specification requirements for materials and installation.

.2 Perform Work in accordance with National Air Barrier Association - Professional Contractor Quality Assurance Program.

.3 Perform Work in accordance with Canadian Urethane Foam Contractor's Association - Professional Contractor Quality Assurance Program.

.4 Maintain one copy of documents on site.

1.5 QUALIFICATIONS

.1 Applicator: Company who is currently licensed by National Air Barrier Association, Canadian Urethane Foam Contractor's Association must maintain their license throughout the duration of the project.

1.6 MOCK-UP

.1 Construct mock-up.

.2 Construct typical exterior wall panel, 2m long by 2m wide, incorporating typical wall penetrations, and insulation, illustrating materials interface and seals.

.3 Locate where directed.

.4 Approved Mock-up may remain as part of the Work.

.5 Allow 48h for inspection of mock-up by Departmental Representative before proceeding with air/vapour barrier Work.

1.7 PRE-INSTALLATION MEETINGS

.1 Convene one week prior to commencing Work of this section.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 001000 General Instructions.

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

.3 Avoid spillage. Immediately notify Departmental Representative if spillage occurs and start clean up procedures.

.4 Clean spills and leave area as it was prior to spill.

1.9 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials.

.2 Place materials defined as hazardous or toxic waste in designated containers.

.3 Ensure emptied containers are sealed and stored safely for disposal away from children.

1.10 PROJECT ENVIRONMENTAL REQUIREMENTS

.1 Do not install solvent curing sealants or vapour release adhesive materials in enclosed spaces without ventilation.

.2 Ventilate enclosed spaces.

.3 Maintain temperature and humidity recommended by materials manufactures before, during and after installation.

1.11 SEQUENCING

.1 Sequence work to permit installation of materials in conjunction with related materials and seals.

1.12 WARRANTY

.1 For sealant and sheet materials provide 36 months warranty

.2 Warranty: Include coverage of installed sealant and sheet materials which fail to achieve air tight and watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

Part 2 PRODUCTS

2.1 SHEET MATERIALS

.1 Sheet Seal Type 1: Self-Adhesive bitumin laminated to high-density polyethylene film, nominal total thickness of +/- 3mm. Acceptable Materials Blueskin by Bakor or Air-Shield by W.K. Meadows of Canada or approved equivalent.

2.2 SEALANTS

.1 Sealants in accordance with Section 07 92 00 - Joint Sealing.

.2 Sealant: Recommended by Sheet Material manufacturer and compatible with adjacent materials.

.3 Primer: Recommended by sealant manufacturer.

.4 Substrate Cleaner: Non-corrosive type recommended by sealant manufacturer compatible with adjacent materials.

2.3 ADHESIVES

.1 Adhesive, Type 1 or Type 2: Compatible with sheet seal and substrate, permanently non-curing.

2.4 ACCESSORIES

.1 Thinner and cleaner for Sheet: As recommended by sheet material manufacturer.

Part 3 EXECUTION

3.1 EXAMINATION

.1 Verify that surfaces and conditions are ready to accept the Work of this section.

.2 Ensure all surfaces are clean, dry, sound, smooth, continuous and comply with air barrier manufacturer's requirements.

.3 Report any unsatisfactory conditions to the Departmental Representative in writing.

.4 Do not start work until deficiencies have been corrected. Commencement of Work implies acceptance of conditions.

3.2 PREPARATION

.1 Remove loose or foreign matter which might impair adhesion of materials.

.2 Ensure all substrates are clean of oil or excess dust; all masonry joints struck flush, and open joints filled; and all concrete surfaces free of large voids, spalled areas or sharp protrusions.

.3 Ensure all substrates are free of surface moisture prior to application of self-adhesive membrane and primer.

.4 Ensure metal closures are free of sharp edges and burrs.

.5 Prime substrate surfaces to receive adhesive and sealants in accordance with manufacturer's instructions.

3.3 INSTALLATION

.1 Install materials in accordance with manufacturer's instructions.

.2 Lap sheets to meet minimum overlap as identified in manufacturer's instructions.

.3 Apply sealant where required within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

3.4 PROTECTION OF WORK

.1 Protect finished Work. Do not permit adjacent work to damage work of this section.

.2 Ensure finished Work is protected from climatic conditions.

3.5 SCHEDULES

.1 Wall Air/Vapour Barrier Over Outer Surface of Inner Wythe of Masonry: Trowel seal Type F over masonry unit surface to a thickness of 6 mm, seal masonry anchor penetrations air tight.

.2 Wall Air/Vapour Barrier Over Exterior Surface of Gypsum Sheathing: Place sheet seal Type G over sheathing surfaces with Adhesive Type E. Seal with Type Y sealant.

.3 Window Frame Perimeter: Lap sheet seal Type H from wall air seal surface with 75 mm of full contact over firm bearing to window frame with 25 mm of full contact. Edge seal with Type Z sealant.

.4 Wall and Roof Junction: Lap sheet seal Type J from wall seal material with 150 mm of contact over firm bearing to roof air seal membrane with 100 mm of full contact. Seal with Type X sealant.

.5 Roof System Air/Vapour Barrier Over Steel Deck: Gypsum sheathing, taped joints, apply membrane air seal Type K over sheathing surfaces with Adhesive Type D; edge seal membrane with Type Y sealant.

END OF SECTION

General

1.1 RELATED REQUIREMENTS

.1 Section 07 84 00 Firestopping

.2 Section 09 11 10 Metal Stud System

1.2 REFERENCES

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

.1 Material Safety Data Sheets (MSDS).

.2 Underwriter's Laboratories of Canada (ULC)

.1 CAN-ULC-S101-04, Standard Methods of fire Endurance Tests of Building Construction and Materials.

.2 CAN-ULC-S102-03, Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Product Data:

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

.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets.

.2 Test Reports:

.1 Submit product data including certified copies of test reports verifying fireproofing applied to substrate as constructed on project will meet or exceed requirements of Specification.

.2 Submit test results in accordance with CAN-ULC-S101 for fire endurance and CAN-ULC-S102 for surface burning characteristics.

.3 For assemblies not tested and rated, submit proposals based on related designs using accepted fireproofing design criteria.

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

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

1.4 QUALITY ASSURANCE

.1 Qualifications:

.1 Installer: company specializing in sprayed-on fireproofing with 5 years documented experience, approved by manufacturer.

.2 Mock-ups:

.1 Apply fireproofing to approximately 10 m^2 area of surfaces of mock-up-matching surface to be treated.

.2 Mock-up will be used:

.1 To judge workmanship, substrate preparation, operation of equipment and material application.

.2 For testing to determine compliance with performance requirements.

.3 Allow 24 hours for inspection of mock-up by Departmental Representative before proceeding with fireproofing work.

.4 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.

.3 Site Meetings:

.1 Convene pre-installation meeting one week prior to beginning work of this Section and on-site installations, with contractor's representative and Departmental Representative to:

.1 Verify Project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordination with other building subtrades.

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

.5 Prior to start of Work arrange for site visit with Departmental Representative to examine existing site conditions adjacent to demolition work.

.6 Departmental Representative will provide written notification of change to meeting schedule established upon contract award 24 hours prior to scheduled meeting.

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

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

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

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

1.5 DELIVERY, STORAGE AND HANDLING

.1 Packing, shipping, handling and unloading:

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

.3 Deliver packaged materials in original unopened containers, marked to indicate brand name, manufacturer, and ULC markings.

.4 Storage and Protection:

.1 Store materials indoors in dry location.

.2 Store and protect materials from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer.

.3 Damaged or opened containers will be rejected.

.4 Packaging to indicate shelf-life and materials to be applied prior to expiration of shelf-life.

.5 Provide temporary enclosures to prevent spray from contaminating air beyond application area.

.6 Protect adjacent surfaces and equipment from damage by overspray, fall-out, and dusting of fireproofing materials.

.5 Waste Management and Disposal:

.1 Separate waste materials for reuse and recycling in accordance with NRC requirements for Construction/Demolition Waste Management and Disposal.

1.6 AMBIENT CONDITIONS

.1 At temperatures less than 5 degrees C, ensure that 5 degrees C air and substrate temperature is maintained during and for 24 hours after application. Ensure that natural ventilation to properly dry the fireproofing during and subsequent to its application is provided. In enclosed areas lacking openings for natural ventilation, ensure that interior air is circulated and exhausted to the outside.

.2 Maintain relative humidity within limits recommended fireproofing manufacturer.

.3 Ensure that natural ventilation to properly dry fireproofing during and subsequent to its application is provided.

.4 In enclosed areas lacking openings for natural ventilation, provide minimum of 4 air exchanges per hour by forced air circulation.

Part 2 PRODUCTS

2.1 MATERIALS

.1 Sprayed fireproofing: ULC certified cementitious fireproofing qualified for use in ULC Designs specified. Acceptable product: AD Fire Protection Systems-Type 5GP.

.2 Curing compound: type recommended by fireproofing manufacturer, qualified for use in ULC Designs specified.

.3 Sealer: type recommended by fireproofing manufacturer, qualified for use in ULC Design specified. Acceptable product: AD Fire Protection Systems Type-TC-55 Sealer.

.1 Colour: white.

Part 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 PREPARATION

.1 Substrate: free of material, which would impair bond.

.2 Verify that painted substrates are compatible and have suitable bonding characteristics to receive fireproofing.

.3 Remove incompatible materials.

.4 Ensure that items required to penetrate fireproofing are placed before installation of fireproofing.

.5 Ensure that ducts, piping, equipment, or other items which would interfere with application of fireproofing are not positioned until fireproofing work is completed.

3.3 APPLICATION

.1 Apply bonding adhesive or primer to substrate.

.2 Apply fireproofing to correspond with tested assemblies, or acceptable calculation procedures to provide following fire resistance ratings;

.1 Steel Columns; 2 hrs fire rating – ULC Design No. X813

.2 Steel floor decks and beams: 2 hrs fire rating – ULC Design No. 810

.3 The Contractor shall arrange for third party inspection conducted by a testing laboratory designated by the departmental representative for inspection of existing steel surface and compatibility with the application of the proposed fire resistive material prior to any patch and repair work. The departmental representative shall pay for costs associated with inspection. The contractor shall obtain an engineering letter stating the fireproofing has been installed in accordance with the ULC requirements and provides the necessary fire protection specified.

.3 Apply fireproofing over substrate, building up to required thickness to cover substrate with monolithic blanket of uniform density and texture.

.4 Apply curing compound to surface of cementitious fireproofing as required by manufacturer.

.5 Apply sealer to surface of fireproofing as required by manufacturer where fireproofing is to be painted and as indicated.

3.4 SCHEDULE

.1 Apply new fireproofing to existing columns, beams and underside of steel deck at ground floor of building (M-23a) in all areas shown on the drawings within the scope of contract under this project.

3.5 FIELD QUALITY CONTROL

.1 Manufacturer's Field Services:

.1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.

.2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

.3 Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE.

.2 Inspection and Site Tests:

.1 Inspection and testing of fireproofing will be carried out by Testing Laboratory designated by Departmental Representative.

.2 Departmental Representative will pay costs for testing.

3.6 PATCHING

.1 Patch damage to fireproofing caused by testing or by other trades before fireproofing is concealed, or if exposed, before final inspection.

3.7 CLEANING

.1 Clean surfaces not indicated to receive fireproofing of sprayed material within 24 hours period after application.

.2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

Part 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Division 22 – Plumbing.

.2 Division 23 – Heating, Ventilating and Air Conditioning.

.3 Division 26 – Electrical.

1.2 REFERENCES

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

.1 Material Safety Data Sheets (MSDS).

.2 Underwriter's Laboratories of Canada (ULC)

.1 ULC-S115-1995, Fire Tests of Fire stop Systems.

1.3 DEFINITIONS

.1 Fire Stop Material: device intended to close off opening or penetration during fire or materials that fill openings in wall or floor assembly where penetration is by cables, cable trays, conduits, ducts and pipes and poke-through termination devices, including electrical outlet boxes along with their means of support through wall or floor openings.

.2 Single Component Fire Stop System: fire stop material that has Listed Systems Design and is used individually without use of high temperature insulation or other materials to create fire stop system.

.3 Multiple Component Fire Stop System: exact group of fire stop materials that are identified within Listed Systems Design to create on site fire stop system.

.4 Tightly Fitted; (ref: NBC Part 3.1.9.1.1 and 9.10.9.6.1): penetrating items that are cast in place in buildings of noncombustible construction or have "0" annular space in buildings of combustible construction.

.5 Words "tightly fitted" should ensure that integrity of fire separation is such that it prevents passage of smoke and hot gases to unexposed side of fire separation.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Product Data:

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

.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets.

.2 Shop Drawings:

.1 Submit shop drawings to show location, proposed material, reinforcement, anchorage, fastenings and method of installation.

.2 Construction details should accurately reflect actual job conditions.

.3 Samples:

.1 Submit duplicate 300 x 300 mm samples showing actual fire stop material proposed for project.

.4 Quality assurance submittals:

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

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

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

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

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

1.5 QUALITY ASSURANCE

.1 Qualifications:

.1 Installer: company specializing in fire stopping installations, with 5 years experience, approved by manufacturer.

.2 Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning work of this Section, with contractor's representative and Departmental Representative.

.3 Verify project requirements.

.4 Review installation and substrate conditions.

.5 Co-ordination with other building subtrades.

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

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

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

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

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

1.6 DELIVERY, STORAGE AND HANDLING

.1 Packing, shipping, handling and unloading:

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

.2 Deliver materials to the site in undamaged condition and in original unopened containers, marked to indicate brand name, manufacturer, and ULC markings.

.2 Storage and Protection:

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

.2 Replace defective or damaged materials with new.

Part 2 PRODUCTS

2.1 MATERIALS

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

.2 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.

.3 Fire stop system rating: 2 hours..

.4 Service penetration assemblies: systems tested to CAN-ULC-S115.

.5 Service penetration fire stop components: certified by test laboratory to CAN-ULC-S115.

.6 Fire-resistance rating of installed fire stopping assembly in accordance with NBC.

.7 Fire stopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal.

.8 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal.

.9 Primers: to manufacturer's recommendation for specific material, substrate, and end use.

.10 Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.

.11 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.

.12 Sealants for vertical joints: non-sagging.

Part 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 PREPARATION

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

.2 Ensure that substrates and surfaces are clean, dry and frost free.

.3 Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer's instructions.

.4 Maintain insulation around pipes and ducts penetrating fire separation without interruption to vapour barrier.

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

3.3 INSTALLATION

.1 Install fire stopping and smoke seal material and components in accordance with manufacturer's certified tested system listing.

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

.3 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.

.4 Tool or trowel exposed surfaces to neat finish.

.5 Remove excess compound promptly as work progresses and upon completion.

3.4 SEQUENCES OF OPERATION

.1 Proceed with installation only when submittals have been reviewed by Departmental Representative.

.2 Install floor fire stopping before interior partition erections.

.3 Metal deck bonding: fire stopping to precede spray applied fireproofing to ensure required bonding.

.4 Mechanical pipe insulation: certified fire stop system component.

.1 Ensure pipe insulation installation precedes fire stopping.

3.5 FIELD QUALITY CONTROL

.1 Inspections: notify Departmental Representative when ready for inspection and prior to concealing or enclosing fire stopping materials and service penetration assemblies.

.2 Manufacturer's Field Services:

.1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.

.2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

.3 Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE.

3.6 CLEANING

.1 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

.2 Remove temporary dams after initial set of fire stopping and smoke seal materials.

3.7 SCHEDULE

.1 Fire stop and smoke seal at:

.1 Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.

.2 Edge of floor slabs at curtain wall and precast concrete panels.

.3 Top of fire-resistance rated masonry and gypsum board partitions.

.4 Intersection of fire-resistance rated masonry and gypsum board partitions.

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

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

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

.8 Around mechanical and electrical assemblies penetrating fire separations.

.9 Rigid ducts: greater than 129 cm^2: fire stopping to consist of bead of fire stopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

END OF SECTION

Part 1 GENERAL

.1 One manufacturer's product only to be used throughout.

.2 Sealant must be approved by Departmental Representative as acceptable product.

.3 Colours of all sealants to be selected by the Departmental Representative prior to proceeding.

Part 2 PRODUCTS

2.1 MATERIALS

.1 Type 1-Multi-purpose sealant (interior): Acrylic latex one part: to CAN/CGSB-19.17., approved by Departmental Representative.

.2 Type 2-Acoustic sealant: Synthetic Rubber Sealant, "Tremco Acoustical Sealant" or equivalent approved by Departmental Representative.

.3 Type 3-Single Component Silicone, high performance medium modulus, one part, neutral cure 100% silicone sealant: "Tremco Spectrum 1" or equivalent approved by Departmental Representative.

.4 Preformed compressible and non-compressible back-up materials:

- .1 Polyethylene, urethane, neoprene or vinyl foam:
  - .1 Extruded: closed cell foam backer rod.
  - .2 Size: oversize to 30%.
- .2 Bond breaker tape:
  - .1 Polyethylene bond breaker tape that does not bond to sealant.

.5 Primers: sealant manufacturer's type.

.6 Cleaners: as recommended by sealant manufacturers.

.7 Sealant Colour: to Departmental Representatives selection from standard colour range.

2.2 SEALANT SELECTION

.1 Type-1; Perimeters of interior door frames.

.2 Type-2; At base along bottom track of partitions.

.3 Type-3; Perimeter of windows on exterior and interior side

Part 3 EXECUTION

3.1 PREPARATION

.1 Ensure all materials which will bear sealant on their surfaces are clean and free from foreign material which would affect bonding.

.2 Permit concrete and mortar to cure fully before sealing.

.3 Prime joint sides in accordance with manufacturer's directions.

.4 Mask adjacent surfaces to prevent contamination by sealant. Remove mask immediately after joints completed.

.5 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.6 Ensure joint surfaces are dry and frost free.

3.2 BACKUP MATERIAL

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

.2 Install joint filler to achieve correct joint depth and shape, with approximately 30%

3.3 APPLICATION

.1 Sealant:

.1 Apply sealant in accordance with manufacturer's written instructions.
.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
.3 Apply sealant in continuous beads.
.4 Apply sealant using gun with proper size nozzle.
.5 Use sufficient pressure to fill voids and joints solid.
.6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
.7 Tool exposed surfaces before skinning begins to give slightly concave shape.
.8 Remove excess compound promptly as work progresses and upon completion.

.2 Curing:

.1 Cure sealants in accordance with sealant manufacturer's instructions.
.2 Do not cover up sealants until proper curing has taken place.

3.4 CLEANING

.1 Leave Work area clean at end of each day.

.1 Clean adjacent surfaces immediately.

.2 Remove excess and droppings, using recommended cleaners as work progresses.

.3 Remove masking tape after initial set of sealant.

END OF SECTION

Part 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 08 71 00 – Finish Hardware

1.2 REQUIREMENTS OF REGULATORY AGENCIES

.1 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4 S104M-80 revised 1985 and CAN4 S105M-1985 for ratings specified or indicated, for example ULC or Warnock-Hersey.

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

1.3 SHOP DRAWINGS

.1 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners openings, glazed.

Part 2 PRODUCTS

2.1 HOLLOW METAL DOORS

.1 Steel: zinc coated .25 oz zinc per square foot content to ASTM A527.

.2 Flat sheet: face and back skins to be 18 (1.0mm) gauge thickness.

.3 Door Core:

.1 Honeycomb: structural core consisting of kraft paper having [20mm] cell size to thickness indicated.

.4 Hardware reinforcement: hinges 7 (3.7mm) gauge, lock box, closer mounting, 14 (1.6mm) gauge.

.5 Top and bottom channels closures: 14 (1.6mm) gauge.

.6 Primer: for touch-up zinc chromate CAN/CGSB-1.132-M90.

2.2 MATERIALS - PRESSED STEEL FRAMES

.1 Steel; zinc coated .25 oz zinc per square foot content to ASTM A527.

.2 All components; headers, jambs, screen stiles to be 16 (1.3mm) gauge thickness.

.3 Hardware reinforcement; minimum 7 (3.7mm) gauge for hinge plates min. 16 (1.3mm) gauge for closer mounting, panic sets, cylindrical and mortised locksets.

.4 Glazing stops: min. 20 (0.8mm) gauge.

.5 Temporary channel spreaders; min. 1.6mm (1/16").

.6 Guard and dust boxes; 0.8mm (0.031") thick.

.7 All anchors; drywall and masonry 18 (1.0mm) gauge, tube and screw 3/16" (5mm) dia. screws and 3/8" (10mm) dia. for labelled frames.

.8 Door bumpers; pressure fit black neoprene.

.9 Angle clips; min. 20 (0.8mm) gauge.

.10 Primer: for touch-up zinc chromate CAN/CGSB-1.132-M90.

Part 3 EXECUTION

3.1 FABRICATION

.1 Prior to fabrication take critical measurements at site to facilitate installation and fitting of doors.

.2 Blank, drill, reinforce and tap frames to receive templated strikes, door closers and hinges.

.3 Cut frames, mitre accurately and form continuous invisible welds inside profile.

.4 Grind welded corners, fill exposed surface depressions and butted joints with metallic paste filler and sand to a smooth uniform finish.

.5 Protect strikes and hinges by guard boxes welded in place.

.6 Reinforce door transoms and heads for openings larger than 5'-0" (1500mm) with light structural section or as indicated.

.7 Fabricate doors as integral units, free from sag, distortion, wave or core ghosting, with slide interlocking edge seams.

.8 Bond steel sheets to approved core material. Fill voids in stiles with polyurethane.

.9 Exterior doors to have inverted top channel welded in place and filled with a metallic paste filler and sand to a smooth uniform finish.

.10 Glazing stops, zinc coat steel cut to suit glass opening sizes with butted corners for doors and frame screens. Secured in place with oval headed cadmium plated machine screws 8" o.c.

.11 Welding of door and frame components in accordance with CSA W59-M1989.

.12 Fabricate thermally broken frames for exterior doors using steel core, separating exterior portion of frame from interior portion with polyvinyl chloride thermal breaks.

3.2 INSTALLATION

.1 Provide each door frame with two rubber door silencers at head of each door, and three at the strike side.

.2 Provide two channel or angle spreaders per frame to ensure proper alignment. Where frames terminate at finished floor, provide angle clips for anchorage to slab.

.3 Provide six adjustable anchors for seven feet height of frames.

.4 Obtain hardware templates. Cut, blank-out, reinforce and drill all members accurately to receive hardware. Provide locating clips for mortise locks.

.5 Secure physical metal fire label, by means of pop rivets on labelled fire doors and frames. Label to carry qualifications of rating in accordance to Underwriters or Warnock-Hersey standards. Locate labels on hinge rebate of frames and hinge end of doors.

END OF SECTION

Part 1 GENERAL

1.1 REFERENCE STANDARDS

.1 Standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame manufacturer's Association.

1.2 HARDWARE LIST

.1 Submit hardware schedule for Departmental Representative’s approval.

.2 Indicate hardware proposed, including make, model, material, function, finish and other pertinent information.

1.3 MAINTENANCE

.1 Provide maintenance data, parts lists, and manufacturer's instruction for each type door closers, locksets, door holders and fire exit hardware for incorporation into maintenance manual.

1.4 MAINTENANCE MATERIALS

.1 Supply two sets of wrenches for door passage and privacy sets.

1.5 HARDWARE REQUIREMENTS

.1 Hardware standards listed in Paragraph 2.2 can be obtained through NRC standing offer program.

.2 NRC has a bonded locksmith for our keying system on standing contract. See NRC Departmental Representative for information.

.3 Contractor will be responsible to have all cylinders keyed by NRC bonded locksmith on standing offer contract.

.4 Contractor will be responsible to carry all associated costs for cylinders and keying of same with N.R.C. bonded standing offer locksmith.

Part 2 PRODUCTS

2.1 HARDWARE ITEMS

.1 Only door latch sets listed below.

.2 Use one manufacturer's products only for all similar items.

2.2 DOOR HARDWARE STANDARDS

.1 Hinges: Apply to all new doors.

.1 Interior doors: Dorex 114.3mm x 101.6mm x 179 454 NRP X C15.

.2 Latching devices: ANSI/BHMA Commercial Grade 1 hardware. Apply to all new doors

.1 Lockset “Yale”AU-5407-L ‘Augusta AU’ lever, 626 finish.

.3 Door Stops: Apply to all new doors.

.1 Half dome floor or wall mount door stop, solid brass dome, rubber bumper x 626.

.4 Door Closer: "Norton” 1600BC-Reg x AL. Parallel arm with hold open function, maximum force applied to operate door 22N for barrier free compliance.

.5 Electric Strike: Von Duprin, VD 6223.DS FSE 24VDC 630

.6 Electric door operator standard of acceptance: NABCO GT8710 series or approved equivalent. To have clear anodized aluminum finish, left or right hand operation as required.

.7 Panic bar standard of acceptance Von Duprin 98-NL series or approved equivalent, c/w standard rim cylinder.

2.3 FASTENINGS

.1 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.

.2 Exposed fastening devices to match finish of hardware.

.3 Use fasteners compatible with material through which they pass.

Part 3 EXECUTION

3.1 INSTALLATION

.1 Furnish door and frame manufacturer with complete instructions and templates for preparation of their work to receive hardware.

.2 Furnish manufacturer's instructions for proper installation of each hardware component.

.3 Where door stop contacts door pulls, mount stop to strike bottom of pull.

.4 Weather-stripping shall not be installed until final coat of paint has been applied to door and frame and is completely dry.

.5 Only tradesmen competent in the installation of Finish Hardware shall be used for this purpose. The installer shall adjust, clean, and make good all installations of Finish Hardware to the satisfaction of the Departmental Representative.

3.2 SCHEDULE

.1 Hardware Package #01 (Plasma Torch Room)

.1 (4) Hinge

.2 (1) Lock set

.3 (1) Floor stop

.4 (2) Kick plate, J102 250 mm x 876 mm, self-adhesive, 630

.5 (1) Self closing device

.6 (1) Smoke Seal

.7 (1) Mortise Door Bottom

END OF SECTION

Part 1 GENERAL

1.1 REFERENCES

.1 ASTM International

.1 ASTM C 645-14, Standard Specification for Nonstructural Steel Framing Members.

.2 ASTM C 754-15, Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.

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

.1 Material Safety Data Sheets (MSDS).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Product Data:

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

.2 Samples:

.1 Submit duplicate 300 mm long samples of non-structural metal framing.

Part 2 PRODUCTS

2.1 MATERIALS

.1 Non-loadbearing channel stud framing: to ASTM C645-83; 38mm (1-5/8"), 64mm (2-1/2"), 92mm (3-5/8"), 152mm (6") stud sizes as indicated on drawings; roll formed from 0.53 mm (26 gauge) and 1.0mm (20 gauge) electrogalvanized steel sheet; for screw attachment of gypsum board. Knock-out service holes at 460 mm (1'-6") centres.

.2 Floor and ceiling tracks: to ASTM C645-92b; in widths to suit stud sizes, 32 mm (1-1/4") flange height.

.3 Ceiling brackets for attachment of partitions to underside of existing deck/beams above: Custom fabrication, ‘L’ shaped, 90mm vertical flange height with 6mm wide vertical slots, horizontal flange width 90mm x 200mm wide, roll formed from 0.478 mm thick electro-galvanized steel sheet. Use heavier gauge metal at partitions with impact resistant gypsum board.

.4 Metal channel stiffener: 38 x 20mm (1-1/2" x 3/4") size, 1.52 mm (16 gauge) thick cold rolled steel, coated with rust inhibitive coating.

.5 Acoustical sealant: to CAN/CGSB-19.21-M87.

.6 Insulating strip: rubberized, moisture resistant 3 mm (1/8") thick cork strip, 12 mm (1/2") wide, with self sticking adhesive on one face, lengths as required.

.7 Deflection Track: in widths to suit stud top track, 64mm flange height with 6mm wide vertical slots, roll formed from 0.478 mm thick electro-galvanized steel sheet. Use heavier gauge track at partitions with impact resistant gypsum board. Acceptable Product: Bailey Multi-Slot Track – MST 250 or approved equal.

Part 3 EXECUTION

3.1 ERECTION

.1 Align partition tracks at floor and ceiling and secure at 600 mm (2'-0") oc maximum.

.2 Install ceiling brackets at 600mm spacing and secure to underside of deck/beams prior to installation of sprayed on fire proofing. Protect vertical legs of bracket from fire proofing overspray.

.3 Place studs vertically at 600mm (24") o.c. and not more than 50 mm (2") from abutting walls and at each side of openings and corners. Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.

.4 Erect metal studding to tolerance of 1:1000.

.5 Attach studs to bottom tracks using screws.

.6 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.

.7 Co-ordinate erection of studs with installation of door frames and special supports or anchorage for work specified in other Sections.

.8 Provide wood blocking secured between studs for attachment of fixtures behind lavatory basins, toilet and bathroom accessories, and other fixtures including grab bars and towel rails, and base and upper cabinets, attached to steel stud partitions.

.9 Provide two studs extending from floor to ceiling at each side of openings wider than stud centres specified. Secure studs together, using column clips or other approved means of fastening placed alongside frame anchor clips.

.10 Erect track at head of door openings and sills of sidelight/window openings to accommodate intermediate studs. Secure track to studs at each end, in accordance with manufacturer's instructions. Install intermediate studs above and below openings in same manner and spacing as wall studs.

.11 Install steel studs or furring channel between studs for attaching electrical and other boxes.

.12 Extend partitions to ceiling height except where noted otherwise on drawings.

.13 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs. Use slotted deflection track.

.14 Install continuous insulating strips to isolate studs from uninsulated surfaces.

.15 Install two continuous beads of acoustical sealant behind studs and tracks around perimeter of sound control partitions.

END OF SECTION

Part 1 GENERAL

1.1 REFERENCE STANDARDS

.1 Do work in accordance with CAN/CSA-A82.31-M91 except where specified otherwise.

Part 2 PRODUCTS

2.1 GYPSUM BOARD

.1 Regular board: to CAN/CSA A82.27-M91 12.5mm (1/2") x 1200 mm (4'-0") wide x maximum practical length, edges tapered with round edge.

.2 Fire Rated board: Type X, 16mm (5/8") x 1200 mm (4'-0") wide x maximum practical length, edges tapered with round edge.

.3 Impact-Resistant Gypsum Board: 16mm (5/8”) x 1200 mm (4'-0") wide x maximum practical length, edges tapered with round edge. Acceptable product: “Dens Armor Plus” by Georgia-Pacific or CGC Sheetrock Glass Mat Mold Tough or equal.

.4 Moisture-Resistant Gypsum Board: 12.5mm (1/2”) x 1200 mm (4'-0") wide x maximum practical length, edges tapered with round edge. Acceptable product: “M2Tech” by Certainteed or CGC Sheetrock Mold Tough or equal.

2.2 METAL FURRING

.1 Metal furring, runners, hangers, tie wires & suspension to CSA A82.30-M1980, galvanized systems.

.2 Hangers: self-drilling type anchors similar to Phillips "Red Head" T-32.

.3 Drywall furring channels: 0.5 mm (0.02") core thickness galvanized steel channels for screw attachment of gypsum board.

2.3 FASTENINGS AND ADHESIVES

.1 Nails, screws and staples: CAN/CSA- A82.31-M91.

.2 Laminating compound: to CAN/CSA-A82.31-M91, asbestos-free.

.3 Stud adhesive: to CAN/CGSB-71.25.

2.4 ACCESSORIES

.1 Casing beads, corner beads: 0.5 mm (0.02") base thickness commercial grade sheet steel with Z275 zinc finish to ASTM A525-91b, perforated flanges; one piece length per location.

.2 Acoustic sealant: to CAN/CGSB-19.21-M87.

.3 Sealants acceptable for use on this project must be listed on CGSB Qualified Products List issued by CGSB Qualification Panel for joint sealants.

.4 Insulating strip: rubberized, moisture resistant, 3 mm (1/8") thick closed cell neoprene strip, 12 mm (1/2") wide, with self sticking permanent adhesive on one face; lengths as required.

.5 Joint compound: to CAN/CSA-A82.31-M91, asbestos-free.

Part 3 EXECUTION

3.1 WALL FURRING

.1 Install wall furring for gypsum board wall finishes in accordance with CAN/CSA-A82.31-M91, except where specified otherwise.

.2 Frame openings and around built-in equipment, cabinets, access panels, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.

.3 Furr duct shafts, beams, columns, pipes and exposed services where indicated.

3.2 GYPSUM BOARD APPLICATION

.1 Do not apply gypsum board until bucks, anchors, blocking, electrical and mechanical work are approved.

.2 Apply single layer gypsum board as indicated to metal furring or framing using screw fasteners. Maximum spacing of screws 300 mm (1'-0") oc.

3.3 ACCESS DOORS

.1 Install access doors to electrical and mechanical fixtures specified in respective Sections.

.2 Rigidly secure frames to furring or framing systems.

3.4 TAPING AND FILLING

.1 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.

.2 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.

.3 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after painting is completed.

.4 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

.5 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for painting.

END OF SECTION

Part 1 GENERAL

1.1 REFERENCES

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

.1 Material Safety Data Sheets (MSDS).

.2 Master Painters Institute (MPI)

.1 MPI Architectural Painting Specifications Manual, 2004.

.2 MPI - Maintenance Repainting Manual, 1998.

.3 Do painting and finishing to CGSB 85-GP series standards and to material manufacturer's instructions, except where specified otherwise.

.4 Stucco and Brick: Comply with CGSB 85-GP-31M.

.5 Concrete Floors: Comply with CGSB 85-GP-32M.

.6 Ferrous Metal: Comply with CGSB 81-GP-10M, 11a, 12, 13 or 15 as applicable.

.7 Galvanized Steel: 85-GP-16M.

.8 Copper & Copper Alloys: 85-GP-20M.

.9 Interior Plaster and Wallboard: 85-GP-33M.

1.2 SUBMITTALS

.1 Submittals in accordance with Section 00 10 00 General Instructions.

.2 Deliver on the Departmental Representative's request for approval, samples of materials proposed for use in the work. Make up samples 100mm wide by 300mm long (4" x 1'-0"). Finished work shall be equal to approved samples.

.3 Product Data:

.1 Submit product data and instructions for each paint and coating product to be used.

.2 Submit product data for the use and application of paint thinner.

.3 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 00 10 - General Instructions. Indicate VOCs during application and curing.

.4 Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.5 Submit manufacturer's installation and application instructions.

1.3 QUALIFICATIONS

.1 Work shall be carried out by skilled labour under the supervision of a responsible and experienced foreman.

.2 Equipment shall be clean and in optimum working condition.

1.4 PROTECTION

.1 Provide protective barriers and signs to protect the work and the public from contact with paint not yet dry.

.2 Protect surfaces likely to attract dust and insects thus liable to mar the finished surface.

.3 Have hardware, electrical and mechanical fittings removed and replaced by appropriate trades, else protect the above and other adjacent work.

1.5 STORAGE AND HANDLING

.1 Storage and Protection:

.1 Provide and maintain dry, temperature controlled, secure storage.

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

.3 Store materials and equipment in well ventilated area within temperature as recommended by manufacturer.

.2 Fire Safety Requirements:

.1 Provide one, 9 kg, Type ABC dry chemical fire extinguisher adjacent to storage area.

.2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

.3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada requirements.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Place materials defined as hazardous or toxic waste, including tubes and containers, in containers or areas designated for hazardous waste.

.4 Paint, stain and wood preservative finishes and related materials (thinners, and solvents) are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.

1.7 SITE CONDITIONS

.1 Heating, Ventilation and Lighting:

.1 Ventilate enclosed spaces in accordance with Section 00 10 00 General Instructions..

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

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

.2 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Apply paint finishes when ambient air and substrate temperatures at location of installation can be satisfactorily maintained during application and drying process, within MPI and paint manufacturer's prescribed limits.

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

.3 Apply paint to adequately prepared surfaces, when moisture content is below paint manufacturer's prescribed limits.

.3 Additional application requirements:

.1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.

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

1.8 WARNING

.1 DO NOT USE SPRAY EQUIPMENT: Only paint brush and roller will be accepted on this project.

Part 2 PRODUCTS

2.1 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.

.3 Acceptable Paint: Sherwin Williams or approved equal.

2.2 COLOURS

.1 Submit proposed Colour Schedule to Departmental Representative for review.

.2 Colour schedule:

.1 P1: Sherwin Williams, Elder White, SW 7014.

.2 P2: Sherwin Williams, Dynamic Blue, SW 6958.

.3 P3: Sherwin Williams, Gauntlet Grey, SW 7019.

.4 P4: Sherwin Williams, Overt Green, SW 6718.

.5 P1: Sherwin Williams, Bee, SW 6683.

.6 P1: Sherwin Williams, Verve Violet, SW 6975.

2.3 MIXING AND TINTING

.1 Perform colour tinting operations prior to delivery of paint to site, in accordance with manufacturer's written instructions. Obtain written approval from Departmental Representative for tinting of painting materials.

.2 Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.

.3 Thin paint for spraying in accordance with paint manufacturer's instructions.

.4 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.4 GLOSS/SHEEN RATINGS

.1 Paint gloss is defined as sheen rating of applied paint, in accordance with following values:

	Gloss @ 60 degrees	Sheen @ 85 degrees
Gloss Level 1 - Matte Finish (flat)	Max. 5	Max. 10
Gloss Level 2 - Velvet-Like Finish	Max.10	10 to 35
Gloss Level 3 - Eggshell Finish	10 to 25	10 to 35
Gloss Level 4 - Satin-Like Finish	20 to 35	min. 35
Gloss Level 5 - Traditional Semi-Gloss Finish	35 to 70	
Gloss Level 6 - Traditional Gloss	70 to 85	
Gloss Level 7 - High Gloss Finish	More than 85	

2.5 INTERIOR PAINTING

.1 Gypsum board walls & existing perimeter metal heater covers, apply:

.1 One coat primer-sealer CAN/CGSB-1.119-M89.

.2 Two finish coats latex, Gloss Level 3, Sherwin Williams Paints:

.2 Doors and Frames surfaces apply:

.1 One coat primer-sealer.

.2 Two finish coats latex, Gloss Level 5, Sherwin Williams Paints (Door Frames are dissimilar in colour to Door).

.3 Concrete Floors:

.1 One coat primer-sealer.

.2 Two finish coats latex floor enamel Gloss Level 5, Sherwin Williams Paints.

.4 Exposed Mechanical and Electrical Equipment (except electrical conduit, refer to electrical spec):

.1 One coat primer-sealer.

.2 Two finish coats latex Gloss Level 2, Sherwin Williams Paints:

.5 Exposed Cementitious Fireproofing:

.1 One coat primer-sealer.

.2 Two finish coats latex Gloss Level 2, Sherwin Williams Paints:

Part 3 EXECUTION

3.1 GENERAL

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

.2 Perform preparation and operations for interior painting in accordance with MPI - Architectural Painting Specifications Manual and MPI - Maintenance Repainting Manual except where specified otherwise.

3.2 EXAMINATION

.1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Departmental Representative damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.

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

3.3 PREPARATION

.1 Protection:

.1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by Departmental Representative.

.2 Protect items that are permanently attached such as Fire Labels on doors and frames.

.3 Protect factory finished products and equipment.

.2 Surface Preparation:

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

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

.3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Departmental Representative.

.3 Clean and prepare surfaces in accordance with specific requirements and coating manufacturer's recommendations.

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

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

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

.2 Apply wood filler to nail holes and cracks.

.3 Tint filler to match stains for stained woodwork.

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

.7 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements.

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

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

3.4 APPLICATION

.1 Method of application to be as approved by Departmental Representative. Conform to manufacturer's application instructions unless specified otherwise.

.2 Apply two finish coats to all previously finished or primed work.

.3 Give the Departmental Representative due notice and ample opportunity to inspect each coat and do not proceed with any coat until the last preceding coat is approved. Each coat shall be a different tint, under white a light blue.

.4 Apply no finish nor paint to wet, frozen or rusty surfaces.

.5 Clean castings with wire brushes.

.6 Do not paint at temperatures under 10°C (50°F) or over 35°C (95°F) (lacquer not lower than 15°C (59°F)) nor on surfaces where condensation is likely to form.

.7 Give additional coats to work which is unsatisfactory to the Departmental Representative after the application of the specified number of coats without extra compensation. Touch up dead or dull spots.

.8 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

.9 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.10 Sand and dust between coats to remove visible defects.

.11 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.

.12 Finish inside of cupboards and cabinets as specified for outside surfaces.

.13 Finish closets and alcoves as specified for adjoining rooms.

.14 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

.15 Doors, windows: and other shop made items, shop prime. Seal and paint the bottoms and edges of all doors before hanging.

.16 Allow a minimum of 24 hours between coats for oil based paints and 8 hours between coats of water based paints

3.5 MECHANICAL/ELECTRICAL EQUIPMENT

.1 Paint conduits, piping, hangers, ductwork and other mechanical and electrical equipment exposed in finished areas, to match adjacent surfaces, except as indicated.

.2 Do not paint over nameplates.

.3 Keep sprinkler heads free of paint.

.4 Paint fire protection piping to match colour on existing piping.

.5 Paint disconnect switches for fire alarm system and exit light systems in red enamel.

.6 Paint natural gas piping to match colour on existing piping.

.7 Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

END OF SECTION

Part 1 GENERAL

1.1 SUMMARY

.1 This section specifies materials and workmanship for epoxy-based industrial floor finish.

1.2 RELATED SECTIONS

.1 Section 07 90 00 – Joint Protection

1.3 REFERENCES

.1 ACI 504 R-90, “Guide to Sealing Joints in Concrete Structures”

.2 ACI RAP-1, “Structural Crack Repair by Epoxy Injection”

.3 ACI RAP-2, “Crack Repair by Gravity Feed with Resin”

.4 ASTM F2170, “Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes”

.5 ASTM F1869, “Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride”

.6 CSA S448.1-10, “Repair of reinforced concrete in buildings and parking structures”

.7 ICRI Technical Guideline No. 310.2R, “Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays and Concrete Repair”

.8 ICRI Technical Guideline No. 320.2R, “Guide for Selecting and Specifying Materials for Repair of Concrete Surfaces”

.9 ICRI Technical Guideline No. 210.1R, “Guide for Verifying Field Performance of Epoxy Injection of Concrete Cracks”

.10 LEED® – Leadership in Energy and Environmental Design”

1.4 SUBMITTALS

.1 Product Data: Submit manufacturer’s product data and application instructions for each product specified.

1. Include Technical Data Sheets and Material Safety Data Sheets.

.2 Samples: Cured samples of materials as required by architect/engineer.

.3 Qualification Data: For products required to be installed by workers approved by product manufacturer, include letters of acceptance by product manufacturer certifying installers are authorized to apply their products.

1.5 QUALITY ASSURANCE

.1 Contractor shall have experience and proficiency specific to the application type and shall be approved by the architect/engineer.

.2 Manufacturer shall be an ISO 9001:2000 certified supplier of specialty products and support services.

.3 Pre-installation Conference:

1. Arrange a meeting not less than 30 days ahead of work start-up, convene a job-site meeting of all the people concerned by contract documents or invited by the consultant or project manager to purposely review the work documents relative to this Section to ensure complete understanding of the requirements and establish the proper sharing of responsibilities concerning work execution, materials handling and storage, installation schedule and procedures, access limitations and security control within the work area, quality control and all other matters that may affect the building's quality, compliance with permits, health, safety and environmental regulations.

.4 Source Limitations: Provide all traffic coating system materials from a single manufacturer.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Deliver and store products in a manner to prevent breakage and damage to containers.

.2 Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use.

.3 Prevent damage or contamination to materials by water, moisture, freezing, excessive heat, foreign matter or other causes. Do not stir any frozen material until it has completely thawed.

.4 Provide dry storage with heated material facilities at 21 to 27 degrees C (70 to 80 degrees F) and at a maximum of 55 percent ambient relative humidity on site.

.5 Deliver and store all materials on site at least 24 hours before work begins.

1.7 PROJECT / ENVIRONMENTAL CONDITIONS

.1 Do not apply when air and substrate temperatures are outside limits permitted by manufacturer.

1.8 WARRANTY

.1 Deliver to architect signed copies of the following written warranties against defective materials and workmanship.
1. Manufacturer's standard warranty covering materials.
2. Applicator's standard warranty covering workmanship.

Part 2 PRODUCTS

2.1 MANUFACTURER

.1 Acceptable Manufacturer: MAPEI, Inc. Canada, 2900 Francis-Hughes, Laval, QC, Canada, H7L 3J5. Toll Free Tel: 800-668-1212; Tel: 905-799-6884; Fax: 905-799-9870; Email: TServicesCA@mapei.com; Web: www.mapei.ca.

.2 Acceptable Manufacturer: Stonhard

.3 No submittals for substitutions will be accepted after the bid date. All submittals for substitutions must be made in writing to the architect/engineer with supporting technical data sheets and test data showing complete equivalent performance. Include list of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

2.2 MATERIALS

.1 Primer:
1. MAPEI's Primer SN, two-component, pre-filled epoxy primer specifically designed to enhance adhesion of multi-layer flooring systems.
2. Stonhard's Stonclad concrete primer suitable for the application of Stonclad LT and Stonclad GS4 epoxy finish.

.2 Epoxy-Based Floor Finish:
1. MAPEI's Mapefloor I 302 SL, two-component multi-purpose epoxy formulate for industrial floors in compliance with standards applied to the drinks and foodstuffs industry and clean rooms.
2. Stonhard – Stonclad LT 3mm application and Stonkote GS4 Epoxy Finish Coat – Textured. Colour from full range of colours available for this product.

Part 3 EXECUTION

3.1 PREPARATION

.1 Do not apply products from the Mapefloor line on substrates with a film of surface water.

.2 The ambient temperature should be between 8 to 30 degrees C (46 to 86 degrees F). For optimal installation, the ambient temperature should be between 21 to 27 degrees C (70 to 80 degrees F).

.3 The substrate temperature should not fall below 8 degrees C (46 degrees F) when applying polyurethane/cement-based screeds or below 10 degrees C (50 degrees F) when applying 100-percent solids epoxies.

.4 The substrate temperature should be at least 2.8 degrees C (about 5 degrees F) above the dew point when applying products from the Mapefloor line.

.5 The relative humidity of substrates should not exceed 85 percent (per ASTM F2170).

.6 The moisture vapour emission rate (MVER) of substrates should not exceed 2.27 kg per 92.9 square metres (5 lbs per 1000 square feet) per 24 hours (per ASTM F1869)

.7 Ensure surfaces are free of bond-inhibiting and bond-breaking materials such as, but not limited to, curing compounds, oil, grease and dust.

.8 Concrete surfaces must be dry or slightly damp, clean and sound.

.9 Concrete surfaces must have been poured at least 10 days before the application of the finish and have compressive strength of at least 25 MPa (3625 pounds per square inch) and pull-off strength of at least 1.5 MPa (217 pounds per square inch).

.10 The strength of the substrate must be suitable for its final use and the type of load to which it will be subjected.

.11 The surface must be prepared to achieve an International Concrete Repair Institute (ICRI) concrete surface profile (CSP) of 2 to 4.

.12 Before applying the product, remove all traces of dust from the surface with a vacuum cleaner.

.13 An architect/engineer shall determine if a crack is dormant or active and determine a suitable material for filling.

.14 Repair all voids, honeycombs, bug holes and delaminated areas with a cementitious repair mortar.

3.2 INSTALLATION

.1 First Coat (Primer SN):

- .1 Primer SN must be applied before the application of Mapefloor I 302 SL.
- .2 Premix the Part A resin to a homogeneous consistency (for 3 minutes) using a low-speed drill (at 300 to 450 rpm) and a Jiffy (paint mixer) mixing paddle to minimize trapped air. Pour the Part B hardener into the Part A container and mix thoroughly to a smooth, homogeneous consistency. Do not mix at high speeds, which can trap air within the mixed material. During the mixing process, scrape down the sides and bottom of the container to completely mix all of the components.
- .3 Apply the mixture within the pot life indicated in the table below. Higher temperatures will reduce the mixture's pot life, while lower temperatures will increase its pot life.

POT LIFE		
At 8 degrees C (46 degrees F)	At 23 degrees C (73 degrees F)	At 35 degrees C (95 degrees F)

3.5 hours	1.5 hours	0.75 hour

.4 After Part A and Part B have been mixed together to a homogeneous consistency, apply a priming coat of Primer SN at 0.18 mm to 0.38 mm (7 to 15 mils) with a serrated trowel or squeegee.

.5 Back-roll with a short pile roller (in a criss-cross pattern) and broadcast with #32 mesh quartz sand at 0.29 kg per 0.09 square metre (0.614 lbs per square foot), which will create a slip-resistant surface.

.6 Ensure that the inside edges of construction, expansion and isolation joints are brush-applied to receive a consistent fill. Complete the joint treatment by placing a backer rod and appropriate joint sealant before installing finishes

.2 Intermediate Coat (Mapefloor I 302 SL):

.1 Mix pre-pigmented Part A mechanically for approximately 1 minute prior to mixing parts A and B together to ensure that all solids are evenly dispersed.

.2 The two components, which make up Mapefloor I 302 SL, must then be blended together. Pour Part B (hardener) into the pre-pigmented Part A and mix thoroughly for at least 2 minutes using a low speed (300 to 400 rpm) drill, until a uniform, lump-free mix has been achieved. Avoid overmixing to minimize air entrainment.

.3 Apply the mixture within the pot life indicated in the table below. Higher temperatures will reduce the mixture's pot life, while lower temperatures will increase its pot life.

POT LIFE		
At 10 degrees C (50 degrees F)	At 23 degrees C (73 degrees F)	At 35 degrees C (95 degrees F)
60 minutes	30 minutes	13 minutes

.4 Immediately after mixing, pour the entire contents on the properly primed surface.

.5 Spread Mapefloor I 302 SL at 0.30 mm to 0.38 mm (12 to 15 mils) with a serrated trowel or squeegee.

.6 Back-roll with a short pile roller (in a criss-cross pattern) and broadcast with #32 mesh quartz sand at 0.29 kg per 0.09 square metre (0.614 lbs per square foot), which will create a slip-resistant surface.

.7 Immediately broadcast clean, dry silica sand 32 in mesh size into the Mapefloor I 302 SL evenly distributed, at a rate of 3.0 kilogram per square metre (61.4 pounds per 100 square feet) and back-roll.

.8 Let the intermediate coat of Mapefloor I 302 SL cure per the table below before applying the finishing coat.

CURE TIME		
At 10 degrees C (50 degrees F)	At 23 degrees C (73 degrees F)	At 35 degrees C (95 degrees F)
35 to 75 hours	18 to 48 hours	10 to 24 hours

.3 Finishing Coat (Mapefloor I 302 SL):

.1 Apply a coat of Mapefloor I 302 SL at 0.30 mm to 0.38 mm (12 to 15 mils) with a serrated trowel or squeegee and back-roll with a short-pile roller (in a criss-cross pattern).

3.3 CLEANUP

.1 Immediately after mixing and applying Primer SN and Mapefloor I 302 SL, clean tools with solvents for epoxy-based products. Once hardened, material can only be removed mechanically.

3.4 PROTECTION AND MAINTENANCE

.1 Maintain substrate and ambient temperatures over 8 degrees C (46 degrees F) for at least 24 hours after the installation and below 35 degrees C (95 degrees F) for at least 24 hours after the installation.

.2 Protect product from water for at least 24 hours after setting.

.3 Floors coated with Mapefloor I 302 SL can be opened to foot traffic after 24 hours at based 23 degrees C (73 degrees F).

.4 The product develops its full strength after 7 days based at 23 degrees C (73 degrees F), although it depends on the actual surrounding conditions.

.5 Regular cleaning of the application surface is recommended in order to maintain slip resistance and aesthetics.

END OF SECTION