Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 06 10 11 – Rough Carpentry.

.3 Section 07 46 13 – Preformed Metal Siding.

.4 Section 07 51 12 – Built-Up Bituminous (BUR) Roofing.

.5 Section 07 21 13 – Board Insulation.

.6 Section 07 41 43 – Aluminium Composite Panels.

1.2 REFERENCES

.1 The Aluminium Association Inc. (AA)

- .1 Aluminium Sheet Metal Work in Building Construction-[2000].
- .2 AA DAF45-[97], Designation System for Aluminium Finishes.

.2 American Society for Testing and Materials (ASTM International)

- .1 ASTM A167-[99], Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
- .2 ASTM A240/A240M-[02], Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
- .3 ASTM A591/A591M-[98], Standard Specification for Steel Sheet, Electrolytic Zinc-Coated, for Light Coating [Mass] Applications.
- .4 ASTM A606-[01], Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance.
- .5 ASTM A653/A653M-[01a], Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .6 ASTM A792/A792M-[02], Standard Specification for Steel Sheet, 55% Aluminium-Zinc Alloy-Coated by the Hot-Dip Process.
- .7 ASTM B32-[00], Standard Specification for Solder Metal.
- .8 ASTM B370-[98], Standard Specification for Copper Sheet and Strip for Building Construction.
- .9 ASTM D523-[89(1999)], Standard Test Method for Specular Gloss.
- .10 ASTM D822-[01], Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.

.3 Canadian Roofing Contractors Association (CRCA)

- .1 Roofing Specifications Manual [1997].

.4 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB-37.5-[M89], Cutback Asphalt Plastic Cement.

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.2 CAN/CGSB-51.32-[M77], Sheathing, Membrane, Breather Type.

.3 CAN/CGSB-93.1-[M85], Sheet Aluminium Alloy, Prefinished, Residential.

.5 Canadian Standards Association (CSA International)

.1 CSA A123.3-[98], Asphalt Saturated Organic Roofing Felt.

.2 CSA-A440-[00]/A440.1-[00] - A440-[00], Windows / Special Publication A440.1-[00], User Selection Guide to CSA Standard A440-[00], Windows.

.3 CSA B111-[1974(R1998)], Wire Nails, Spikes and Staples.

1.3 QUALIFICATIONS

.1 Applicator to be of local recognized standing with proven record of satisfactory installations and to be approved by the Architect. Applicator must have, at least, five (5) years of proven experience in this work.

.2 Supply and install sheet metal flashings in accordance with, and to the standards of the CRCA FL Series details.

1.4 SAMPLES

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

.2 Submit 50 x 50 mm samples of each type of sheet metal material colour and finish.

1.5 SHOP DRAWINGS

.1 Submit Shop Drawings in accordance with Section 013330 – Submittal Procedures.

1.6 WASTE MANAGEMENT AND DISPOSAL

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

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

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

.4 Divert unused metal materials from landfill to metal recycling facility as approved by Consultant.

.5 Fold up metal banding, flatten and place in designated area for recycling.

1.7 EXTENDED WARRANTY

.1 Submit a warranty for metal flashing and trim, covering materials and labour and the repair or replacement of defective work in accordance with Section 01006 Stipulated Sum Contract, PBE -1994, but for five (5) years total.

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Part 2 Products

2.1 PREFINISHED STEEL SHEET

.1 Galvanized steel sheet with factory applied Stelco or Dofasco 8,000 Series coating. Two colours to be used for this project:

.1 Colour "Type-1" for Metal Flashing: colour for exact match to the existing building. Allow for selection from manufacturer's complete range. Location: new addition.

.2 Colour "Type-2" for Metal Flashing: colour for exact match of Curtain Wall. Allow for metallic series colour for exact match or if dictated limited quantity of material required

.2 Metal thickness to be 24 gauge. Where exposed face of flat faced flashing and trim exceeds 250 mm, provide details to lap two layers providing on intermediate lock joint to achieve total depth required for exposed surface.

.3 Isolation coating to CGSB 1-GP-108C.

.4 Plastic cement to CGSB 37-GP-5M.

.5 Sealant compound of one (1) part polysulphide polymer base.

.6 Cleats of same material, and temper as sheet metal, minimum 50 mm wide, 45 mm thick.

.7 Fasteners: of same material as sheet metal to CSA B111-1974. Flat head roofing nails of length and thickness suitable for metal flashing application.

.8 Washers: of same material as sheet metal, 1 mm thick with rubber packings.

Part 3 Execution

3.1 INSTALLATION

.1 Install sheet metal work to CRCA Specifications and complete as soon as possible following application of roof membrane.

.2 Use concealed fastenings except where approved before installation.

.3 Counterflash bituminous flashings at intersections of roof with vertical surfaces and curbs. Flash joints using S-lock forming tight fit over hook strips, except where otherwise shown.

.4 Lock end joints and caulk with sealant.

.5 Flashings to be anchored into reglets or folded over continuous strips at maximum 300 mm centers.

.6 Supply and assist in the installation of reglets where required for metal flashings.

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.7 Use isolation coating where galvanized metal is in contact with concrete, masonry or mortar.

.8 Form flashing over control and expansion joints to Architect's approval.

.9 Install plastic pans, where shown around items projecting through roof membrane to CRCA Specification FL-119. Fill pans with plastic cement.

.10 Install fasteners and cleats in sufficient numbers and proper size to prevent metal from lifting or tearing under 125 km/h winds.

.11 Contractor must inform roofing inspector 48 hours prior to start of any work. Roofing inspector has authority to reject incorrect procedure, inferior work and materials.

END OF SECTION

□

Part 1 General

1.1 REFERENCES

.1 Underwriters Laboratories of Canada (ULC)

.1 CAN/ULC-S101, 1989.

.2 CAN/ULC-S102, 1988.

1.2 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.

1.3 SAMPLES

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

.2 Submit duplicate 300 x 300 mm size sample of exposed fireproofing for approval of texture and colour.

1.4 PROTECTION

.1 At outdoor temperatures less than 5EC, ensure that a 5EC 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 Provide temporary enclosures to prevent spray from contaminating air beyond application area.

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

Part 2 Products

2.1 MATERIALS

.1 **Sprayed fireproofing**: ULC certified cementitious or fireproofing qualified for use in ULC Designs to provide 1 hour fire resistance rating to **all floor supporting structural steel members**. Contractor to state ULC Design compliance in data submissions in accordance with Section 01 33 00 – Submittals.

.1 Acceptable Material: “W.R. GRACE”, Type MK-6.

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.2 Acceptable Material: "CAFCO/ISOLATEK INTERNATIONAL" Type LD-C/F or Type 300,5B OR 400.

.3 Acceptable Material: AD Fire Protection systems, AD Type 5.

.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.

Part 3 Execution

3.1 PREPARATION

.1 Discuss fireproofing methods and final product with principal building inspector prior to application to ensure that finished installation will be acceptable. Record in writing all materials and methods to be employed to achieve final approval of installation.

.2 Substrate shall be free of material, which would impair bond.

.3 Verify that painted substrate [s] are compatible and have suitable bonding characteristics to receive fireproofing.

.4 Remove incompatible materials.

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

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

3.2 APPLICATION

.1 Apply bonding adhesive or primer to substrate if recommended by manufacturer.

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

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

3.3 INSPECTION AND SITE TESTS

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

.2 Cost of testing will be paid from Cash Allowance specified in Section 011100 – Summary of Work, section 1.29.

.3 Arrange for final inspection of the work of this section by municipal building inspector.

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3.4 PATCHING

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

3.5 LOCATIONS- SPRAYED FIREPROOFING

.1 Fireproofing is required on all structural steel supporting floor loads. Refer to structural drawings.

END OF SECTION

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Part 1 General

1.1 RELATED WORK

.1 Fire stopping and smoke seals within mechanical assemblies (i.e. inside ducts, dampers) and electrical assemblies (i.e. inside cable trays) are specified in Division 26 and 33 respectively.

1.2 REFERENCES

.1 Underwriters Laboratories of Canada (ULC)

.1 ULC-S115-[1995], Fire Tests of Firestop Systems.

1.3 SAMPLES

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

.2 Submit duplicate 300 x 300 mm samples showing actual firestop material proposed for project.

1.4 PRODUCT DATA

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

.2 Submit manufacturer's product data for materials and prefabricated devices, providing descriptions are sufficient for identification at job site. Include manufacturer's printed instructions for installation.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

1.6 SYSTEM DESCRIPTION

.1 Firestopping Materials: CAN4-S115M ASTM E814 to achieve a fire protection rating as noted on Drawings.

.2 It is the intent of this Section that in conjunction with Divisions 26 and 33 a competent, single source be responsible for the firestopping and smoke seals of the entire project.

1.7 QUALITY ASSURANCE

.1 Manufacturer: Company specializing in manufacturing products of this Section with minimum five years documented experience.

.2 Applicator: Approved, licensed and supervised by the manufacturer of firestopping materials. Company with minimum five years documented experience.

.3 Product: Manufactured under ULC Follow-up Program. Each container or package shall bear ULC label.

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1.8 REGULATORY REQUIREMENTS

.1 Conform to applicable code for fire protection ratings.

.2 Provide certificate of compliance for authority having jurisdiction indicating approval.

1.9 DELIVERY, STORAGE AND HANDLING

.1 Deliver and store materials in a dry, protected area, off ground in original, undamaged, sealed containers with manufacturer's labels and seas intact.

1.10 PROJECT AND SITE CONDITIONS

.1 Application temperature and ventilation as per Manufacturer's instructions.

1.11 SEQUENCING AND SCHEDULING

.1 Sequence work to permit installation of firestopping and smoke seal materials to be installed after adjacent work is complete and before closure of spaces.

Part 2 Products

2.1 MATERIALS

.1 A/D Firebarrier Firestop Systems, by A/D Fire Protection Systems Inc., capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of CAN4-S115 and not to exceed opening sizes for which they are intended.

.2 Mineral Wood Backing Insulation: ULC labeled, preformed non-combustible material (A/D Firebarrier Mineral Wool) by A/D Fire Protection Systems Inc.

.3 Retainers: Clips to support mineral wool.

.4 Firestopping Sealant: ULC labeled, single component silicone bases, A/D Silicone Firebarrier Sealant by A/D Fire Protection Systems Inc.

.5 Firestopping Seal: ULC labeled, single component water-base seal, A/D Firebarrier Seal by A/D Fire Protection Systems Inc.

.6 Firestopping Foam: ULC labeled, two components silicone foam, A/D Firebarrier RTV Foam by A/D Fire Protection Systems Inc.

.7 Firestopping Mortar: ULC labeled, non-combustible fibre reinforced, foamed cement mortar, A/D Firebarrier Mortar by A/D Fire Protection Systems Inc.

.8 Damming Material: In accordance with tested assembly being installed as applicable and as acceptable to authorities having jurisdiction.

Part 3 Execution

3.1 PREPARATION

.1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials. Ensure that substrates and surfaces are clean, dry and frost free.

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

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

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

.5 Verify that openings are ready to receive the Work of this Section.

.6 Confirm compatibility of surfaces to receive firestopping and smoke seal materials.

.7 Beginning of installation means acceptance of existing surfaces and substrate.

3.2 INSTALLATION

.1 Install firestopping in wall cavities in accordance with the OBC 3.1.11., in cavities 25mm and greater, spaced 3.0m max. vertically and 20m max. horizontally.

.2 Install fire stopping and smoke seal material and components in accordance with ULC certification and manufacturer's instructions.

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

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

.5 Tool or trowel exposed surfaces to a neat finish.

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

.7 Apply in sufficient thickness to achieve rating to uniform density and texture.

.8 Protect installed material until cured or set.

3.3 INSPECTION

.1 Notify Consultant when ready for inspection and prior to concealing or enclosing firestopping materials and service penetration assemblies.

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3.4 SCHEDULE

.1 Firestop and smoke seal at:

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

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

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

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

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

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

.7 Around Mechanical and Electrical assemblies penetrating fire separations.

.8 Refer to Drawings for horizontal and vertical fire stop locations and for typical firestopping detail at cavity wall, for top of wall fire separation assembly and for fire separation locations.

3.5 CLEAN UP

.1 Remove excess materials and debris and clean adjacent surfaces immediately after application.

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

END OF SECTION

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Part 1 General

1.1 SECTION INCLUDES

.1 Materials, preparation and application for caulking and sealants.

1.2 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 07 62 00 – Sheet Metal Flashing and Trim.

.3 Section 08 11 14 – Steel Doors and Frames.

.4 Section 04 21 13 - Masonry.

.5 Section 07 46 13 – Preformed Metal Siding.

1.3 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)

.1 ASTM C919-[02], Standard Practice for Use of Sealants in Acoustical Applications.

.2 Canadian General Standards Board (CGSB)

.1 CGSB 19-GP-5M-[1984], Sealing Compound, One Component, Acrylic Base, Solvent Curing (Issue of 1976 reaffirmed, incorporating Amendment No. 1).

.2 CAN/CGSB-19.13-[M87], Sealing Compound, One-component, Elastomeric, Chemical Curing.

.3 CGSB 19-GP-14M-[1984], Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing (Reaffirmation of April 1976).

.4 CAN/CGSB-19.17-[M90], One-Component Acrylic Emulsion Base Sealing Compound.

.5 CAN/CGSB-19.24-[M90], Multi-component, Chemical Curing Sealing Compound.

.3 Department of Justice Canada (Jus)

.1 Canadian Environmental Protection Act, 1999 (CEPA).

.4 General Services Administration (GSA) - Federal Specifications (FS)

.1 FS-SS-S-200-[E(2)1993], Sealants, Joint, Two-Component, Jet-Blast-Resistant, Cold Applied, for Portland Cement Concrete Pavement.

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

.1 Material Safety Data Sheets (MSDS).

.6 Transport Canada (TC)

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

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1.4 SUBMITTALS

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

.2 Manufacturer's product to describe.

.1 Caulking compound.

.2 Primers.

.3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.

.3 Submit manufacturer's instructions in accordance with Section 01 33 00 - Submittal Procedures.

.1 Instructions to include installation instructions for each product used.

1.5 DELIVERY, STORAGE, AND HANDLING

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

.2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

1.6 WASTE MANAGEMENT AND DISPOSAL

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

.2 Collect and separate for disposal of paper, plastic, polystyrene, corrugated cardboard, or packaging material [in appropriate on-site bins] for recycling.

.3 Place materials defined as hazardous or toxic in designated containers.

.4 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.

.5 Unused [sealant] material must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.

.6 Divert unused joint sealing material from landfill to official hazardous material collections site approved by Consultant.

.7 Empty plastic joint sealer containers are not recyclable. Do not dispose of empty containers with plastic materials destined for recycling.

.8 Fold up metal banding, flatten, and place in designated area for recycling.

1.7 PROJECT CONDITIONS

.1 Environmental Limitations:

.1 Do not proceed with installation of joint sealants under following conditions:

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.1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C.

.2 When joint substrates are wet.

.2 Joint-Width Conditions:

.1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

.3 Joint-Substrate Conditions:

.1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.8 ENVIRONMENTAL REQUIREMENTS

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

.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

1.9 WARRANTY

.1 Submit a warranty that caulking work will not leak, crack, crumble, melt, shrink, run, lose adhesion or stain adjacent surfaces, in accordance the General Conditions of the Contract, but for two (2) years total. Contractor shall supply all labour, materials, tools and equipment to repair and/or replace any work judged to be defective by the Consultant and sealant manufacturer at no additional cost to the owner for a period of 2 years from the date of Substantial Completion.

.2 Submit a manufacturer’s warranty against defects in materials and workmanship covering the components of the sealant for a period of ten (10) years. The manufacturer shall supply a non-pro-rated warranty covering labour, materials, tools and equipment to repair and/or replace any materials defects at no additional cost, for a period of 10 years

Part 2 Products

2.1 SEALANT MATERIALS

.1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.

.2 When low toxicity caulks are not possible, confine usage to areas which off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off gas time.

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

2.2 SEALANT MATERIAL DESIGNATIONS

.1 Primers: type recommended by sealant manufacturer.

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.2 Joint Fillers:

.1 General: compatible with primers and sealants, outsized 30 to 50%.

.2 Polyethylene, urethane, neoprene or vinyl: extruded closed cell foam, Shore A hardness 20, tensile strength 140 to 200 kPa.

.3 Neoprene or butyl rubber: round solid rod, Shore A hardness 70.

.4 Polyvinyl chloride or neoprene: extruded tubing with 6 mm minimum thick walls.

.5 Bond breaker: pressure sensitive plastic tape which will not bond to sealants.

.6 Sealant Type A: One component, chemical curing, conforming to CAN2-19.13-M82, Class C-2-25-B-N; multi-component, chemical curing, conforming to CAN2-19.24-M80, Type 2, Class B.

.7 Sealant Type B: Multi-component, chemical curing mildew resistant conforming to CGSB 19-GP-22M.

.8 Sealant type C: Multi-component, acrylic emulsion base, conforming to CGSB 19-GP-17M.

.9 Sealant type D: One component, polyurethane base, chemical curing, conforming to CAN2-19.13-M82, Class C-1-25-B-N; or multi-component, chemical curing, conforming to CAN2-19.24-M80, type 1.

.10 For exterior aluminum to masonry, aluminum to wood and aluminum to metal joints: high performance, single component modified elastomeric joint sealant conforming to CAN2-19.24-M80. Acceptable Materials: Sonolastic Ultra by Degussa.

.11 For interior aluminum to masonry, aluminum to wood and aluminum to metal joints: high performance, single component low odour sealant conforming to CAN/CGSB-19.13-M87. Acceptable materials: Spectrem 2 by Tremco.

.3 Color of Sealants: to be selected by Consultant. Allow for a total of two (2) colours for Type A, two colours for Type B, two colours for Type C and one colour for Type D. Locations as directed on site by Consultant.

.4 Joint cleaner: xylol, methylethyl-ketone or non-corrosive type recommended by sealant manufacturer and compatible with joint forming materials.

.5 Vent tubing: 6 mm inside diameter extruded polyvinyl chloride tubing.

2.3 JOINT CLEANER

.1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.

.2 Primer: as recommended by manufacturer.

Part 3 Execution

3.1 PROTECTION

.1 Protect installed Work of other trades from staining or contamination.

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3.2 SURFACE PREPARATION

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

.2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure joint surfaces are dry and frost free.

.5 Prepare surfaces in accordance with manufacturer's directions.

3.3 PRIMING

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 BACKUP MATERIAL

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

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

3.5 MIXING

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

3.6 APPLICATION

.1 New Work:

.1 Remove dust, paint, loose mortar and other foreign matter. Dry joint surfaces.

.2 Remove rust, mill scale and coatings from ferrous metals by wire brush, grinding or sandblasting.

.3 Remove oil, grease and other coatings from non-ferrous metals with joint cleaner.

.4 Prepare concrete, masonry, glazed and vitreous surfaces to sealant manufacturer's instructions.

.5 Examine joint sizes and correct to achieve depth ratio 1/2 of joint width with minimum width and depth of 6 mm, maximum width 25 mm.

.6 Install joint filler to achieve correct joint depth.

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.7 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

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

.9 Prime sides of joints to sealant manufacturer's instructions immediately prior to caulking.

.2 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.

.9 Apply sealant to joints between window or door frames to adjacent building components around perimeter of every external window or door opening, to control joints in masonry walls and where indicated. In masonry cavity construction, vent caulked joints from cavity to 3 mm beyond external face of wall by inserting vent tubing at bottom of each joint and maximum to 1500 mm o.c. vertically. Position tube to drain to exterior.

.10 Apply sealant to close gaps at all junctures of all interior walls meeting exposed ceilings. Provide required foam backer rods to ensure integrity of sealant bead when applied to juncture. Tool finish smooth to receive paint finish.

.11 Use sealants specified in the following locations:

.1 Type A: Joints between windows or door frames and adjacent building components; control and expansion joints and all other locations where sealing is required, except in locations designated for Type B, C and D. Ensure that sealant chosen (from the several specified under "MATERIALS") for each location is recommended by manufacturer for use on surfaces encountered.

.2 Type B: Joints between splash backs and walls.

.3 Type C: Joints between interior metal door frames and partitions.

.4 Type D: Joints in horizontal surfaces between concrete slabs.

.3 Curing.

.1 Cure sealants in accordance with sealant manufacturer's instructions.

.2 Do not cover up sealants until proper curing has taken place.

.4 Cleanup.

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.1 Clean adjacent surfaces immediately and leave Work neat and clean.

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

.3 Remove masking tape after initial set of sealant.

3.7 WORK INCLUDED

.1 Work shall include but not limited to the following areas:

.1 exterior and interior hollow metal frames and screens; both sides;

.2 exposed control and expansion joints in masonry walls, masonry corners, joints in front of steel lintels bearing on exterior brick jambs;

.3 joints at all washroom vanities, hair dryers, hand dryers, electrical panels, access doors and adjacent surfaces. (Use sanitary caulking.)

.4 joints between masonry and concrete surfaces.

.5 joints between gypsum board and masonry, or other materials.

.6 joints between louvres and other surfaces.

.7 exterior siding, prefinished metal fascia, flashing and trim.

.8 penetrations through roofs, floors and walls other than firestopping

.9 at all other locations on drawings, except as noted below.

.2 Sealing of joints to the underside of exposed precast slab to be by precast installer.

.3 Sealing of all joints at top of walls meeting exposed flat or sloped precast ceilings to be included in this section.

3.8 REQUIRED INSPECTION

.1 Contractor to engage exterior sealant manufacturer's representative to review in order to provide manufacturer's warranty. Manufacturer's representative shall review substrate conditions as prepared on site and prior to the application of the sealant. If requested, manufacturer to supply a written copy of this warranty.

END OF SECTION

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Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 07 92 10 - Joint Sealing: Caulking of joints between frames and other building components.

.3 Section 08 71 10 - Door Hardware - General: Supply of finish hardware, including weatherstripping and mounting heights.

.4 Section 09 91 23 - Interior Painting.

.5 Section 09 91 13 - Exterior Painting.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM International)

.1 ASTM A653/A653M-[01a], Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM B29-[92(1997)], Specification for Refined Lead.

.3 ASTM B749-[97], Specification for Lead and Lead Alloy Strip, Sheet and Plate Products.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.181-[99], Ready-Mixed Organic Zinc-Rich Coating.

.2 CGSB 41-GP-19Ma-[84], Rigid Vinyl Extrusions for Windows and Doors.

.3 Canadian Standards Association (CSA International)

.1 G40.20/G40.21-[98], General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.2 CSA W59-[M1989(R2001)], Welded Steel Construction (Metal Arc Welding) (Metric Version).

.4 Canadian Steel Door Manufacturers' Association, (CSDMA).

.1 CSDMA, Specifications for Commercial Steel Doors and Frames, [1990].

.2 CSDMA, Recommended Selection and Usage Guide for Commercial Steel Doors, [1990].

.5 National Fire Protection Association (NFPA)

.1 NFPA 80-[99], Standard for Fire Doors and Fire Windows.

.2 NFPA 252-[99], Standard Methods of Fire Tests of Door Assemblies.

.6 Underwriters' Laboratories of Canada (ULC)

.1 CAN4-S104-[80(R1985)], Fire Tests of Door Assemblies.

.2 CAN4-S105-[85(R1992)], Fire Door Frames Meeting the Performance Required by CAN4-S104.

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.7 CAN/ULC-S701-[01], Thermal Insulation, Polystyrene, Boards and Pipe Covering.

.8 CAN/ULC-S702-[97], Thermal Insulation, Mineral Fibre, for Buildings.

.9 CAN/ULC-S704-[01], Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.

1.3 DESIGN REQUIREMENTS

.1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35°C to 35°C.

.2 Maximum deflection for exterior steel entrance screens under wind load of 1.2 kPa not to exceed 1/175th of span.

1.4 WORK INCLUDED

.1 A single manufacturer shall fabricate products included within the scope of this Section.

.2 Manufacturer shall be a member in good standing of the Canadian Steel Door Manufacturers Association (CSDMA).

.3 Supply only of steel frame products including frames, transom frames, sidelight and window assemblies with provision for glazed, paneled or louvered openings, fire labeled and non-labeled, as scheduled or detailed by the Consultant.

.4 Supply only of flush steel doors with provision for glazed, paneled or louvered openings, insulated and un-insulated, fire labeled, with or without temperature rise ratings and non-labeled, as scheduled or detailed by the Consultant.

.5 Supply only of steel panels, similar in construction to steel doors, with flush or abetted bottoms for steel frames, transom frames, sidelight and window assemblies, fire labeled and non-labeled, as scheduled or detailed by the Consultant.

1.5 RELATED WORK

.1 Building-in of frame product into unit masonry, previously placed concrete, structural or steel or wood stud walls.

.2 Supply and installation of wood, plastic or composite core doors.

.3 Supply and installation of builders' hardware except as specified for acoustic assemblies.

.4 Drilling and tapping for surface mounted or non-templated builders' hardware.

.5 Caulking of joints between frame product and other building components.

.6 Supply and installation of gaskets or weather-strip.

.7 Supply and installation of louvers or vents.

.8 Supply and installation of glazing materials.

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.9 Site touch-up and painting.

.10 Wiring for electronic or electric hardware.

.11 Field measurements.

.12 Fasteners for frame product in previously placed concrete, masonry or structural steel.

.13 Steel lintels, posts, columns or other load-bearing elements.

.14 Field welding.

1.6 SHOP DRAWINGS

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

.2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, or louvred, arrangement of hardware and fire rating and finishes.

.3 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and reinforcing and fire rating finishes.

.4 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

.5 Submit test and engineering data, and installation instructions.

1.7 REQUIREMENTS

.1 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104M [NFPA 252] for ratings specified or indicated.

1.8 WASTE MANAGEMENT AND DISPOSAL

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

.2 Divert unused paint and sealant materials from landfill to official hazardous material collections site approved by Consultant.

.3 Do not dispose of unused paint and sealant materials into sewer systems, into lakes, streams, onto ground or in other locations where it will pose health or environmental hazard.

.4 Divert unused metal materials from landfill to metal recycling facility approved by Consultant.

.5 Damaged or broken glazing materials are not recyclable. These materials must not de disposed of with materials destined for recycling.

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1.9 TESTING AND PERFORMANCE

.1 Door constructions covered by this specification shall be certified as meeting Level "A" (1,000,000 cycles) and Twist Test Acceptance Criteria (deflection not to exceed 6.4 mm /13.6kg force, total deflection at 136.1kg force not to exceed 63.5 mm and permanent deflection not to exceed 3.2 mm) when tested in strict conformance with ANSI-A250.4-1994. Test shall be conducted by an independent nationally recognized accredited laboratory.

.2 Fire labeled product shall be provided for those openings requiring fire protection and temperature rise ratings, as determined and scheduled by the Architect. Doors, frames, transom frames and sidelight assemblies shall be tested in strict accordance with CAN4-S106. Product shall be listed by Underwriters Laboratories of Canada under an active Factory Inspection Program and shall be constructed as detailed in Follow-Up Service procedures issued to the manufacturer.

.3 Should any door or frame specified by the Architect to be fire rated, not qualify for labeling due to design, hardware, glazing or any other reason, the Consultant shall be so advised before manufacturing commences.

.4 Core materials for exterior doors shall attain a thermal resistance rating of RSI 1.06 (R6.0) when tested in accordance with ASTM C177 or ASTM C518.

.5 Product shall be manufactured by a firm experienced in the design and production of standard and custom commercial steel door and frame assemblies, the integration of builders' or electronic hardware and glazing materials and their impact on the scope of work.

.6 Manufacturer shall be assessed and registered as meeting the requirements of Quality Systems under ISO 9001.

.7 Product quality shall meet standards set by the Canadian Steel Door Manufacturers Association.

1.10 TEST REPORTS

.1 All alternates to this specification shall be submitted to the Architect for acceptance ten (10) days prior to bid date, complete with test reports from independent, nationally recognized testing authorities, certifying that:

.1 Steel door and frame assemblies furnished under this section meet the acceptance criteria of ANSI-A250.4-1994, Level "A".

.2 Insulated door cores furnished in exterior doors under this Section meet the specified thermal resistance rating.

.2 All reports shall include name of testing authority, date of test, location of test facility, descriptions of test specimens, procedures used in testing and indicate compliance with acceptance criteria of the test.

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1.11 WARRANTY

.1 All steel door and frame product shall be warranted from defects in workmanship for a period of one (1) year from date of shipment.

.2 All steel door and frame product shall be warranted against rust perforation for a period of ten (10) years when the installed and finish painted with a commercial quality paint to the manufacturers recommendations.

.3 Finish paint adhesion on all door and frame product shall be warranted for a period of ten (10) years when the product has been properly cleaned and finish painted with a commercial quality paint applied as recommended by the paint manufacturer. This warranty shall not exceed that provided by the paint manufacturer.

Part 2 Products

2.1 MATERIALS

.1 Doors shall be fabricated from tension leveled steel to ASTM A924-M97, galvanized to ASTM A653-M97, Commercial Steel (CS), Type B, coating designation ZF75, known commercially as paintable Galvanneal.

.1 Acceptable Manufacturer: Flemming

.2 Acceptable Alternate Manufacturer: Trillium Steel Doors Limited, or others meeting these exact specifications outlined in this section and accepted in writing during the tender period.

.2 Door Cores:

.1 Honeycomb:

.1 Structural small cell (25.4 mm maximum) kraft paper “honeycomb”. Weight: 36.3 kg per ream (minimum), density: 16.5 kg/m^3 (minimum), sanded to the required thickness.

.2 Polystyrene:

.1 Rigid extruded, fire retardant, closed cell board, density 16kg/m^2, thermal values: RSI 1.06 minimum, conforming to ASTM C578.

.3 Temperature Rise Rated (TRR):

.1 Solid slab core of non-combustible, inorganic composite to limit temperature rise on the “unexposed” side of door to 250°C at 30 or 60 minutes, as required by governing building code requirements and determined and scheduled by the Architect.

.4 Adhesives:

.1 Honeycomb Cores and Steel Components: Heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement or ULC approved equivalent.

.5 Interlocking Edge Seams:

.1 Resin reinforced polychloroprene (RRPC), fire resistant, high viscosity, sealant/adhesive or UL approved equivalent.

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.6 Polystyrene Cores:

.1 Heat resistant, epoxy based, low viscosity, contact cement.

.7 Primer:

.1 Rust inhibitive touch-up only.

.8 Exterior Top Caps:

.1 Rigid polyvinylchloride (PVC) extrusion.

2.2 DOOR FABRICATION

.1 This section is based on doors and frames as manufactured by Fleming. Doors and frames by other manufacturers are acceptable subject to be similar to the one specified and meeting the terms of this section.

.2 Doors shall be swinging, 44.4 mm thick of the types and sizes indicated on the Architect's schedules or drawings.

.3 Exterior doors shall be lock seam, flush.

.4 Face sheets for exterior doors shall be fabricated from (16) gauge steel.

.5 Longitudinal edges of exterior doors shall be fully welded, ground smooth with no visible seams.

.6 Face sheets of interior doors shall be fabricated from 18 gauge steel, except for heavy traffic doors (noted **HT** in Door Schedule) face sheet to be 16 gauge.

.7 Longitudinal edge of heavy traffic doors (noted **HT** in Door Schedule) shall be mechanically interlocked, fully welded, ground smooth with no visible seams. Do not fill seams.

.8 Interior doors shall be stiffened, insulated and sound deadened with honeycomb core laminated under pressure to each face sheet.

.9 Stiffened, insulated and sound deadened with Fleming's propriety core where Temperature Rise Rated (TRR) fire labeled doors are specified on the Architect's schedules.

.10 Longitudinal edges of interior doors shall be mechanically interlocked, adhesive assisted with edge seams and tack-welded every 150 mm and filled flush.

.11 Door faces of all steel doors shall be fabricated without visible seams, free of scale, pitting, coil brakes, buckles and waves.

.12 Formed edges shall be true and straight with a minimum radius for the thickness of steel used.

.13 Lock and hinge edges shall be beveled 3 mm in 50 mm unless builders' hardware or door swing dictates otherwise.

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.14 Top and bottom of doors shall be provided with inverted, recessed, 16 gauge steel end channels, welded to each face sheet at 150 mm on center maximum.

.15 Exterior doors shall be provided with factory installed flush PVC top caps. Fire labeled exterior doors shall be provided with factory installed flush steel top caps.

.16 Unless ineligible due to design, size, hardware or glazing specified on the Architects' or hardware Suppliers' schedules or details, fire labeled doors shall be provided for those openings requiring fire protection ratings and temperature rise ratings, as determined and scheduled by the Architect.

.17 Exterior doors and high traffic doors shall be internally reinforced with 20 gauge continuous; interlocking steel stiffeners at 150mm O.C. max, with voids between stiffeners filled and insulated with 24kg/m3 density loose batt type fiberglass material to suit fully welded design.

.18 Doors shall be factory blanked, reinforced, drilled and tapped for fully templated mortised hardware only, in accordance with the final approved schedule and templates provided by the hardware supplier.

.19 Doors shall be factory blanked and reinforced only for mortised hardware that is not fully templated.

.20 Doors shall be factory reinforced only for surface mounted hardware.

.21 Templated holes 12.7mm diameter and larger shall be factory prepared, except mounting and through bolt holes, which shall be by the contractor responsible for installation on site, at the time of application. Templated holes less than 12.7mm diameter shall be factory prepared only when required for the function of the device (for knobs, levers, cylinders, thumb or turn pieces) or when these holes over-lap function holes.

.22 Drilling and tapping for surface mounted hardware or mortised hardware that is not fully templated shall be by the contractor responsible for installation on site, at the time of application.

.23 Hinge and pivot reinforcements shall be 10 gauge steel minimum high frequency type reinforcing.

.24 Hinge reinforcements for acoustic doors and doors in excess of 2450mm rabbet height shall be 10 gauge minimum with each cutout provided with 114.3mm heavy weight (4.6mm) high frequency type.

.25 Lock, strike and flush bolt reinforcements shall be 12 gauge steel minimum.

.26 Reinforcements for concealed closers and holders shall be 12 gauge steel minimum.

.27 For surface mounted hardware, reinforcements shall be 16 gauge steel minimum.

.28 All pairs of fire labeled doors shall be provided with 12 gauge steel surface mounted flat bar astragal, shipped loose for application on site, by the contractor responsible for installation.

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.29 Pairs of doors up to 2450mm x 2450mm, to 1½ hour fire rating maximum shall be provided without astragals. Lock edge seam of such doors shall be tacked-welded and ground smooth. All other fire labeled pairs shall be provided with 12 gauge steel surface mounted flat bar astragal, shipped loose for application on site, by the contractor responsible for installation.

.30 Where electrically or electronically operated hardware is specified on the Architects' schedules or details of the final approved schedule and templates provided by the hardware supplier, hardware enclosures and/or junction boxes, where indicated on the templates, shall be provided and interconnected with CSA Approved 12.7mm diameter conduit and connectors.

.31 Prepare doors to receive security door contacts – refer to electrical drawings for locations. Door contacts to be installed at 100 mm from the latch side door edge.

2.3 GLAZING

.1 Where 6mm thick glazing materials are specified on the Architects schedules or details, doors shall be provided with 20 gauge steel glazing trim and snap-in glazing stops.

.2 Where other that 6mm glazing is specified on the Architect's schedules or details, doors shall receive 20 gauge steel trim and screw fixed glazing stops. Screws shall be #6 x 32mm oval head scrulox (self-drilling) type at 300mm on center maximum.

.3 Glazing trim and stops shall be accurately fitted, butted at corners, with removable glazing stops located on the 'push' side of the door.

.4 Provide 27 mm "Pyrostop Glazing" for window screen type W-12, as distributed by Technical Glass Products 1-800-426-0279 to conform to 60 min. ULC rating.

2.4 LOUVER

.1 Where specified on the Architect's schedules or details, non-labeled doors shall be prepared on accordance with the louver manufacturer's details.

.2 Where specified on the Architect's schedules or details, fire labeled doors shall be prepared for UL listed sight-proof fusible link louvers in accordance with the louver manufacturer's details.

.3 Louvers shall be supplied and installed by others.

2.5 FINISHING

.1 Remove weld slag and splatter from exposed surfaces.

.2 All tool marks, abrasions and surface blemishes shall be filled and sanded to present smooth uniform surfaces.

.3 On exposed surfaces where zinc coating has been removed during fabrication, doors shall receive a factory applied touch-up primer.

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.4 Primer shall be fully cured prior to shipment.

2.6 PANELS

.1 Panels shall be fabricated form the same materials, construction and finished in the same manner as doors as specified in Section 2.1.

2.7 PRIMER

.1 Touch-up prime CAN/CGSB-1.181.

2.8 PAINT

.1 Field paint steel doors and frames in accordance with Section[s] 09 91 22 – Painting. Protect weatherstrips from paint. Provide final finish shall be free of scratches or other blemishes.

2.9 FRAMES FABRICATION GENERAL

.1 Steel:

.1 Frame product shall be fabricated from tension leveled steel to ASTM A924-M97, galvanized to ASTM A653-M97, Commercial Steel (CS), Type B, coating designated ZF75, known commercially as paintable Galvanneal.

.2 Primer:

.1 Rust inhibitive touch up only.

.3 Miscellaneous:

.1 Door Silencers: GJ-64, Single Stud rubber/neoprene type

.2 Thermal Breaks: Rigid polyvinylchloride (PVC) extrusion

.3 Fiberglass: Loose batt type, density: 24kg/m^3 (minimum), conforming to ASTM C665.

.4 General:

.1 All steel frame product shall be as manufactured by Fleming of the types, sizes and profiles indicated on the Architects' schedules or details.

.2 Exterior frames shall be thermally broken, Fleming *Therma-Frame* Series, fabricated from 16 gauge steel.

.3 Exterior frame product shall be supplied profile welded (PW)

.4 Interior and exterior sections of thermally broken frames shall be separated by a continuous PVC thermal break.

.1 Thermally broken sections shall not be assembled by means of screws, grommets or other fasteners and welds shall not cause thermal transfers between interior and exterior surfaces of the frame sections.

.2 Closed sections (mullions and center rails) of thermally broken frames shall be factory insulated with 24kg/m^3 loose batt type fiberglass material.

.5 Insulation of open sections (jambs, heads and sills) on exterior frame product shall be provided and installed by the contractor responsible for installation.

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.6 Interior frames shall be Fleming F-Series, fabricated from 16 gauge steel.

.7 Interior frame product shall be supplied profile welded (PW)

.8 Knocked-down and knocked-down drywall frames shall not be acceptable.

.9 Jambs, heads, mullions, sills and center rails shall be straight and uniform throughout their lengths.

.10 Frame product shall be square, free of defects, wraps or buckles.

.11 Corner joints shall be profile welded (PW) (continuously welded on the inside of the profiles' faces, rabbets, returns and soffit intersections with exposed faces filled and ground to a smooth, uniform, seamless surface)"

.12 Joints at mullions, transom bars, sills or center rails shall be coped accurately, butted and tightly fitted, with faces securely welded, matching corner joint faces.

.13 All steel mullions will be fabricated from the same materials as specified for the steel frames. Steel mullions will be fabricated as a fully assembled three piece unit consisting of a front, back and full height one piece attachment clip as per Fleming F Series. The attachment clip will completely fill the stop area of the mullion on both sides and span the void between each side forming a grid channel like structure. Mullions used as hinge mullions or strike mullions between doors will be filled with grout by the general contractor either prior to or following installation of the frame. The head of the frame shall have an opening sufficient for the grout to be poured in to the mullion.

.14 Mullions shall be fabricated with continuous 20 gauge galvanneal steel internal reinforcing clips.

.15 Frame product shall be fabricated with integral door stops having a minimum height of 16mm.

.16 Glazing stops shall be formed 20 gauge steel, 16mm height channel, accurately fitted, butted at corners and fastened to frame sections with #6 x 32mm oval head scrulox (self-drilling) type screws at 300mm on center maximum.

.17 Where required due to site access, as indicated on the Architects' schedules or details, when advised by the contractor responsible for co-ordination or installation, or when shipping limitations so dictate, frame product shall be fabricated in sections for splicing in the field.

.1 Field spliced jambs, heads and sills shall be provided with 16 gauge steel splice plates securely welded into one section, extending 100mm minimum each side of splice joint.

.2 Field splices at closed sections (mullions or center rails) shall be 16 gauge steel splice angles securely welded to the abutting member. Face of splice angle shall extend 100mm minimum into closed sections when assembled.

.3 Field splice joints shall be welded, filled and ground to present a smooth uniform surface by the contractor responsible for installation after assembly.

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.18 Each door opening shall be provided with two (2) temporary steel jamb spreaders welded to the base of the jambs or mullions to maintain proper alignment during shipping and handling. Spreaders shall be removed by the contractor responsible for installation prior to anchoring of frame to floor.

.19 Each door opening shall be prepared for GJ-64 or equivalent, single stud door silencers, three (3) for single door openings, two (2) for double door openings. Silencers shall be shipped loose for installation by the contractor after finish painting.

.20 Unless ineligible due to design, size, hardware or glazing specified on the Architects' or Hardware Suppliers' schedules or details, fire labeled frame product shall be provided for those openings required fire protection ratings as determined and scheduled by the Architect.

.21 Hardware Preparations:

.1 Frame product shall be blanked, reinforced, drilled and tapped for fully templated mortised hardware only, in accordance with the final approved schedule and templated provided by the hardware supplier.

.2 Frame product shall be factory blanked and reinforced only for mortised hardware that is not fully templated.

.3 Frame product shall be reinforced only for surface mounted hardware.

.4 Drilling and tapping for surface mounted hardware or mortised hardware that is not fully templated shall be by the contractor responsible for installation on site, at the time of application.

.5 Frames shall be prepared for 114.3mm standard weight hinges (minimum).

.6 Hinge and pivot reinforcements shall be 10 gauge steel minimum reinforcing, high frequency type shall be provided.

.7 Hinge reinforcements for acoustic frames and frames in excess of 2450mm rabbet height shall be 10 gauge minimum with each cutout provided with 114.3mm heavy weight (4.6mm) high frequency type.

.8 Strike reinforcements shall be 16 gauge steel minimum.

.9 Reinforcements for surface mounted hardware, concealed closers and holders and flush bolts shall be 12 gauge steel minimum.

.10 Mortised cutouts shall be protected with 22 gauge steel minimum guard boxes.

.11 Where electrically or electronically operated hardware is specified on the Architects schedules or details or the final approved schedule and templates provided by the hardware supplier, hardware enclosures and/or junction boxes, where indicated on templates, shall be provided and inter-connected with CSA Approved 12.7mm diameter conduit and connectors.

.12 Prepare frames to receive security door contacts – refer to electrical drawings for locations. Door contacts to be installed at 100 mm from the latch side door edge.

.22 Anchorage:

.1 Frame product shall be provided with anchorage appropriate to floor, wall and frame construction.

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.2 Each wall anchor shall be located immediately above or below each hinge reinforcement on the hinge jamb and directly opposite on the strike jamb, except as indicated below.

.3 Frame product installed in unit masonry partitions shall be provided with 4.0mm diameter steel wire anchors, 18 gauge steel adjustable stirrup and strap or "T" type anchors as conditions dictate.

.4 Where frame product is installed prior to construction of the adjacent wall, each jamb shall be provided with 16 gauge steel floor anchors. Each anchor shall be provided with two (2) holes for mounting to the floor and shall be securely welded to the inside of the jamb.

.5 Floor anchors for thermally broken exterior frames shall be designed so as not to permit thermal transfers from exterior to interior surfaces of the frame sections.

.6 Frame product installed in drywall partitions shall be provided with 20 gauge steel snap-in or "Z" type stud type anchor.

.7 Jambs of frames in previously placed concrete, masonry or structural steel shall be punched and dimpled to accept machine bolt anchors, 6.4mm diameter, located not more than 150mm from the top and bottom of each jamb. Anchor preparations and guides shall also be located immediately above or below the intermediate hinge reinforcings and directly opposite on the strike jamb. Each preparation shall be provided with 16 gauge anchor bolt guides.

.8 Anchor bolts and expansion shell anchors for the above preparations shall be provided by the contractor responsible for installation.

.9 After sufficient tightening of the anchor bolts, the heads shall be welded do as to provide a non-removable application. Welded bolt head and dimple shall be filled and ground to present a smooth uniform surface by the contractor responsible for installation, prior to finish painting.

.10 Where indicated on the Architects' schedules or details, channel extensions shall be provided from the top of the frame assembly to the underside of the structure above. Extensions shall be fabricated from 12 gauge steel formed channel, mounting angles welded to inside of frame head and adjusting brackets. Formed channels, adjusting brackets and fasteners shall be shipped loose. Channels shall be mechanically connected to mounting angles and adjusting brackets with supplied fasteners, on site, by contractor responsible for installation.

.23 Finishing:

.1 Remove weld slag and spatter from exposed surfaces.

.2 All tool marks, abrasions and surface blemishes shall be filled and sanded to present smooth and uniform surfaces.

.3 On exposed surfaces where zinc has been removed during fabrication, frame product shall receive a factory applied touch-up primer.

.4 Primer shall be fully cured prior to shipment.

2.10 SIZES AND TOLERANCES

.1 All sizes and tolerances shall be in accordance with the Canadian Steel Door Manufacturers Association "Recommended Dimensional Standards for Commercial Steel Doors and Frames" as follows:

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.1 Widths of door openings shall be measured from inside of frame jamb rabbet with a tolerance of +1.6mm, -0.8mm.

.2 Heights of door openings shall be measured from the finished floor (exclusive of floor coverings) to the head rabbet of the frame with a tolerance of ± 1.2mm.

.3 Unless builders' hardware dictates otherwise, doors shall be sized so as to fit the above openings and allow a 3mm clearance at jambs and head. A clearance of 19mm between the bottom of the door and the finished floor (exclusive of floor coverings) shall be provided. Tolerances on door sizes shall be ± 1.2mm.

.4 Manufacturing tolerances on formed frame profiles shall be ± 0.8mm for faces, door stop heights and jamb depths. Tolerances for throat openings and door rabbet shall be ± 1.6mm and ± 0.4mm respectively. Hardware cutout dimensions shall be as per template dimensions, +0.4mm, -0.

2.11 HARDWARE LOCATIONS

.1 Hardware preparations in frame product shall be as noted below and locations on doors shall be adjusted for clearances specified in 2.4.

.2 Top of upper hinge preparation for 114.3mm hinges shall be located 180mm down from head, transom mullion or panel as appropriate. The top of the bottom hinge preparation for 114.3mm hinges shall be located 310mm from finished floor as defined in 2.4.3. Intermediate hinge preparations shall be spaced equally between top and bottom cutouts. For dutch door frames, top and bottom hinge locations shall be as above, with the tops of intermediate hinges located at 930mm and 1403mm from finished floor.

.3 Strike preparations for unit, integral, cylindrical and mortise locks and roller latches shall be centered 950mm from finished floor. Strikes for deadlocks shall be centered at 1200mm from finished floor. Strikes for panic or fire exit hardware shall be located as per device manufacturer's templates.

.4 Push and/or pulls on doors shall be centered 950mm from finished floor.

.5 Preparations not noted above shall be as per hardware manufacturer's templates.

.6 Hardware preparation tolerances shall comply with the ANSI A115 series standards.

Part 3 Execution

3.1 SITE AND PROTECTION OF MATERIALS

.1 The contractor responsible for installation shall remove wraps or covers from door and frame product upon delivery at building site.

.2 All materials shall be thoroughly inspected upon receipt and all discrepancies, deficiencies and/or damages shall be immediately reported in writing to the supplier, All damage shall be noted on the carriers' Bill of Landing.

.3 Contractor responsible for installation shall ensure all materials are properly stored on planks or dunnage in a dry location. Product shall be stored in a vertical position, spaced with blocking to permit air circulation between them. Materials shall be covered to protect them from damage from any cause.

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.4 Contractor shall notify the supplier in writing of any errors or deficiencies in the product itself before initiating any corrective work.

3.2 INSTALLATION GENERAL

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

.2 Install doors and frames to CSDMA Installation Guide.

.3 Install doors and frames in accordance with the Door and Hardware Institute "Installation guide for doors and hardware".

.4 Set frame product plumb, square, aligned, without twist at correct elevation.

.5 Frame Product Installation Tolerances:

.1 Plumbness tolerance, measured through a line from the intersecting corner of vertical members and the head to the floor, shall be $\pm$ 1.6mm.

.2 Squareness tolerance, measured through a line 90^0 from one jamb at the upper corner of the product, to the opposite jamb, shall be $\pm$ 1.6mm.

.3 Alignment tolerance, measured on jambs, through a horizontal line parallel to the plane of the wall, shall be $\pm$ 1.6mm.

.4 Twist tolerance, measured at face corners of jambs, on parallel lines perpendicular to the plane of the wall, shall be $\pm$ 1.6mm.

.6 Fire labeled product shall be installed in accordance with NFPA-80.

.7 Secure anchorages and connections to adjacent construction.

.8 Brace frame product rigidly in position while building-in. Remove temporary steel shipping jamb spreaders. Install wood spreaders at mid points of frame rabbet height and at floor level to maintain frame widths. Provide vertical support at center of head for openings exceeding 1250mm in width. Remove wood spreaders after product has been built-in.

.9 Frame product in unit masonry shall be fully grouted in place.

.10 Install doors maintaining clearances outlined in Section 2.4.

.11 Install louvers and vents.

.12 Adjust operable parts for correct clearances and function.

.13 Steel surfaces shall be kept free of grout, tar or other bonding materials or sealers.

.14 Any grout or other bonding material shall be cleaned from products immediately following installation.

.15 Exposed field welds shall be finished to present a smooth uniform surface and shall be touched-up with a rust inhibitive primer.

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.16 Exposed surfaces that have been scratched or otherwise marred during shipment, installation or handling shall be touched-up with a rust inhibitive primer.

.17 Finish paint in accordance with Section 099116 and 099123.

.18 Install glazing materials and door silencers.

3.3 INSPECTION

.1 In accordance with Section 011100- Summary of Work, upon assignment of an inspection agency the following inspections shall be performed for hollow metal frames, screens and doors:

.1 review of shop drawings for compliance with specification

.2 shop inspection during production. Should inspection notification not be given suitable to review fabrication, destructive testing of one or more doors will be undertaken either in the shop or on site at no additional cost to the owner. Doors destroyed for invasive inspection shall be replaced as part of the contract price.

.2 Upon notification of initial door installation, contractor shall notify inspector to witness installation practice and at periodic points for duration of installation period.

.3 Scope of inspections shall include shop inspection during fabrication & installation and operation of hardware at site.

3.4 FINISH REPAIRS

.1 Touch up with primer finishes damaged during installation.

.2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

3.5 GLAZING

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

END OF SECTION

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Part 1 General

1.1 GENERAL NOTES

.1 Find the Door Schedule on the following pages.

.2 This schedule MUST be read in conjunction with a complete set of drawings and a complete Hardware Schedule.

.3 Refer to the 800 series of AD Drawings for door and frame types and details.

1.2 ABBREVIATIONS CODE

.1 1. The following abbreviations are used in the Door Schedule.

.2	Code	Reference
.3	DC	Door Contact (security)
.4	P	Paint
.5	HM	Hollow Metal
.6	FRG	Fire Rated Glazing
.7	TG	Tempered Glass
.8	45 MIN	45 minute fire rating
.9	HT	Heavy Traffic – see spec for welded seams, special reinforcing.
.10	B/F	Barrier-Free
.11	WD	Laminate Faced Wood Door
.12	P.LAM	Plastic Laminate Finish on Wood Door
.13	ALUM.	Aluminum
.14	ANNO.	Anodized Finish

1.3 DOOR SCHEDULE

.1 Door Schedule designation “DC” refers to “Door Contacts” used in the security system. Refer to Electrical Drawings and Division 16 Specifications for locations, zoning and description of system.

END OF SECTION

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Burnhamthorpe P.S. Door Schedule

DOOR #	DOOR								FRAME					REMARKS
	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
A102 A	1000	2150	45	-	A	HM	PAINT	-	1	HM	PAINT	-	-	
A103 A	1000	EX	-	-	A	HM	PAINT	-	1	HM	PAINT	-	-	INSTALL NEW EXTERIOR DOOR AND FRAME. DOOR HEIGHT SHALL FIT UNDER THE EXISTING LINTEL. EXISTING LINTEL TO REMAIN.
A104 A	950	2150	-	-	A	HM	PAINT	-	1	HM	PAINT	-	-	
A105 A	950	2150	-	-	B	HM	PAINT	TP	2	HM	PAINT	-	TP	
A106 A	950	2150	45	Y	B	HM	PAINT	FRG	3	HM	PAINT	-	FRG	PROVIDE OVERHEAD DOOR STOP, ELECTRIC STRIKE, DOOR CLOSER, AND BARRIER-FREE PUSH BUTTONS. ELECTRICAL CONTRACTOR TO PROVIDE LOW VOLTAGE WIRING TO FRAMING AS PER HARDWARE SCHEDULE. CONTRACTOR TO COORDINATE ALL REQUIREMENTS. INSTALL BARRIER-FREE PUSH BUTTON ON DOOR FRAME. REFER TO FRAME ELEVATION.
A107 A	950	2150	-	-	C	HM	PAINT	-	1	HM	PAINT	-	-	
A109 A	950	2150	-	-	A	HM	PAINT	-	1	HM	PAINT	-	-	
A110 A	1050	2150	-	-	A	HM	PAINT		1	HM	PAINT	-	-	POCKET DOOR

Burnhamthorpe P.S. Door Schedule

DOOR #	DOOR								FRAME					REMARKS
	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	
A110 B	950	2150	45	-	C	HM	PAINT	FRG	1	HM	PAINT	-	-	
A111 A	950	2150	45	-	A	HM	PAINT	-	1	HM	PAINT	-	-	OH DOOR STOP, ELECTRIC STRIKE, CLOSER, PUSH LOCK, BARRIER FREE PUSH BUTTONS AND COMBINATION B.F. PUSH BUTTON w/ LUMINATED OCCUPIED SIGN INSTALLED AT 1675mm (5'-6") A.F.F.. ELECTRICAL CONTRACTOR TO PROVIDE LOW VOLTAGE WIRING PER HARDWARE SCHEDULE, CONTRACTOR TO COORDINATE. B.F. OPERATOR KEY SWITCH INSTALL ON CORRIDOR SIDE WALL, REFER TO HARDWARE SCHEDULE AND ELEC. DWGS.
X104 A	950	2150	45	-	C	HM	PAINT	FRG	1	HM	PAINT	-	-	
A202 A	950	2150	-	-	A	HM	PAINT	-	1	HM	PAINT	-	-	
A203 A	950	2150	45	-	A	HM	PAINT	-	1	HM	PAINT	-	-	OH DOOR STOP, ELECTRIC STRIKE, CLOSER, PUSH LOCK, BARRIER FREE PUSH BUTTONS AND COMBINATION B.F. PUSH BUTTON w/ LUMINATED OCCUPIED SIGN INSTALLED AT 1675mm (5'-6") A.F.F.. ELECTRICAL CONTRACTOR TO PROVIDE LOW VOLTAGE WIRING PER HARDWARE SCHEDULE, CONTRACTOR TO COORDINATE. B.F. OPERATOR KEY SWITCH INSTALL ON CORRIDOR SIDE WALL, REFER TO HARDWARE SCHEDULE AND ELEC. DWGS.
A204 A	EXISTING DOOR TO REMAIN													PAINT EXISTING DOOR AND FRAME.

NOTES:

1. NEW HOLLOW METAL FRAMES (HM) ARE TO BE FILLED SOLID WITH GROUT, TYPICAL.

Burnhamthorpe P.S. Door Schedule

DOOR	DOOR								FRAME					REMARKS
#	WIDTH	HEIGHT	FIRE	H.T.	TYPE	MAT'L	FIN	GLASS	TYPE	MAT'L	FIN	DC	GLASS	

2. ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT AND PULL STRINGS AT ALL DOORS REQUIRING ELECTRICAL DEVICES. HARDWARE SHALL SUPPLY AND INSTALL LOW VOLTAGE WIRING AND SUPPLY AND INSTALL DEVICES (IN WORKING CONDIDITON) SEE HARDWARE SCHEDULE AND ELECT. DWGS.

3.ALL NEW EXTERIOR HM DOORS AND FRAMES TO BE INSULATED.

4. ALL DOORS/ FRAMES (NEW OR EXISTING) TO BE PAINTED ON BOTH SIDES.

Part 1 General

1.1 RELATED SECTIONS

.1 Division 1

.2 Section 06 40 00 – Architectural Woodwork.

.3 Section 08 11 14 – Metal Steel Doors and Frames.

.4 Section 10 22 27 – Folding Partitions.

.5 Section 26: Electrical wiring for magnetic strikes, electric releases and electric locks.

1.2 SECTION INCLUDES

.1 For continuity and ready reference, this section includes hardware Supply, Installation and Inspection which in total will involve more than one contractor, as described following. The General Contractor will ensure in submitting his tender that specific roles and scope delineations are clear.

.2 Hardware Supply: It is the intention of this Section that Installation is by a specialist hardware supplier as prequalified herein for the following scope:

.1 Supply only of door hardware for exterior steel doors.
.2 Supply only of door hardware for interior steel doors.
.3 Supply of locksets for millwork units.
.4 Supervision of door hardware installation (Hardware Consultant).
.5 Supply and installation of automatic operators.

.3 Hardware Installation: It is the intention of this section that Installation is by the General Contractor if so qualified or qualified personnel appointed by the General Contractor for all systems and methods described herein.

.1 Scope: Installation of door hardware for all interior and exterior steel doors, locksets to teachers closets and coordination of installation of automatic operators with Division 26.

.4 Hardware Inspection: It is the intention of this section that Installation is by the General Contractor for all systems and methods described herein.

.1 Scope: inspection of installation of door hardware.

1.3 REFERENCES

.1 CAN/CGSB-69.17-M86 – Bored and Pre-assembled Locks and Latches

.2 CAN/CGSB-69.18-M90/ANSI/BHMA-A156.1-1981 – Butts & Hinges

.3 CAN/CGSB-69.19-M93/ANSI/BHMA-A156-3-1989 – Exit Devices

.4 CAN/CGSB-69.20-M90/ANSI/BHMA-A156-4-1986 – Door Controls (Closers)

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.5 CAN/CGSB-69.29-93/ANSI/BHMA-A156-13-1930 – Mortise Locks & Latches

.6 CAN/CGSB-69.34-93/ANSI/BHMA-A156.18-1987 – Materials & Finishes

.7 Canadian Steel Door & Frame Manufacturers Association (CSDFMA),

.8 Canadian Metric Guide for Steel Doors & Frames (Modular Construction)

.9 NFPA 80-1995 – Fire Doors and Fire Windows

1.4 REQUIREMENTS FOR REQULATORY AGENCIES

.1 Hardware for doors in fire separations and exit doors shall be certified by a Canadian Certification Organization accredited by the Standards Council of Canada.

1.5 SUBMITTALS

.1 Samples:

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

.1 Butt hinges
.2 Continuous hinges
.3 Door closers
.4 Exit devices
.5 Overhead stops
.6 Storeroom set with lever trim

.2 Identify each sample by a label indicating location for installation, applicable specification paragraph number, brand name and number, finish, and hardware package number.

.3 Samples will be retained by the Consultant during the initial review period, but not exceeding one month. Samples will be returned at that time and, if acceptable, they may be incorporated into the Work.

.4 Substitute new samples for those rejected by the Consultant.

.5 Do not supply door hardware to the site until all samples are approved by the Consultant.

.2 Hardware List:

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

.2 Submit six copies of a detailed final door hardware list prepared by a qualified Architectural Hardware Consultant.

.3 List all items to be furnished and delivered under this section.

.4 Indicate door hardware proposed, identifying each item by manufacturer name, manufacturer's catalogue model number, material, function, finish, location, and other pertinent information.

.5 The list shall be in the same format as the door hardware list bound in this project manual.

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.6 Approval of the Final Door Hardware List by the Consultant and the Owner shall not relieve the Contractor from responsibility for providing all required door hardware.

.3 Template:

.1 Within ten working days of being requested by the Consultant or the Contractor, submit templates for door and frame preparations and mounting of door hardware items.

.2 Identify each template by label indicating applicable specification paragraph number, brand name and number, door number, and hardware package number.

.3 Submit manufacturer's specifications, catalogue cuts, and other data required to identify individual components listed and to demonstrate compliance with specified requirements for items contained in the final door hardware list. Submission of manufacturer's full line brochures is not acceptable.

.4 Best Factory Order:

.1 Within 2 days of submitting the order for Best cylinders or locks, send one (1) copy of the order c/w the Approved hardware list to the Peel District School Board, Attention: Bob Thorpe, Maintenance Services – 933 Central Parkway West, Mississauga, ON L5C 2T9 (Fax:905-279-0859.)

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Packing, Shipping, Handling and Unloading:

.1 Package each item of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.

.2 Storage and Protection:

.1 Store finishing hardware in locked, clean and dry area.

1.7 WASTE DISPOSAL AND MANAGEMENT

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

.2 Dispose of [corrugated cardboard] [polystyrene] [plastic] packaging material in appropriate on-site bin for recycling.

1.8 MAINTENANCE DATA

.1 Provide parts list, manufacturers' instructions, and operation and maintenance data for each type of door hardware for incorporation into maintenance manual specified in Section 017800 – Closeout Submittals.

.2 Brief the Owner's maintenance staff regarding proper care, cleaning, and general maintenance of door hardware.

1.9 MAINTENANCE MATERIALS

.1 Supply four sets of wrenches for door closers, locksets, latchsets, and exit devices.

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.2 Supply four sets of other special parts or tools required for proper maintenance and adjustment of door hardware (excluding tools required for keying.)

1.10 WARRANTY

.1 Submit a warranty for door hardware on a form approved by the Owner and in accordance with the General Conditions, but for a period of three (3) years unless specified otherwise. Where a manufacturer's standard warranty period exceeds three years it shall prevail.

.2 The warranty for both fire exit devices and power door operators shall be for a period of five (5) years.

.3 The warranty for door closers shall be for a period of ten (10) years.

.4 Provide a lifetime warranty for all mortise hinges.

.5 Door hardware warranties shall cover all defects in material and workmanship that become apparent during the warranty period and such defects shall be made good or the defective product shall be replaced, to the satisfaction of the Owner and at no cost to the Owner.

Part 2 Products

2.1 HARDWARE ITEMS

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

2.2 DOOR HARDWARE

.1 The hardware supplier shall thoroughly review the door hardware list included with this project manual, the architectural door and hardware schedules, and the drawings prior to preparing the final door hardware list.

.2 The base bid shall be based on the manufacturers and products specified and listed in the attached Door Hardware List and Article 2.02 below.

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

.4 Ensure that the hardware specified is suitable in both dimension and function for the intended purpose and complies with building code requirements. Advise the Consultant of discrepancies or omissions.

.5 APPROVED HARDWARE SUPPLIERS – Door hardware shall be supplied ONLY by a Best approved dealer and is not limited to the list below:

.1 Commercial Doors & Hardware, Toronto 416 749-7231

.2 Upper Canada Hardware, East York, 416 696-8358

.3 Great Lakes Architectural Hardware, Hamilton 905 383-3334

.4 Regional Doors & Hardware, St. Catharines, 905 684-8161

.6 KEY CONTROL CABINET:

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.1 Enamel finish steel cabinet

.2 Three-way cross reference index card system

.3 Provide all accessories to accommodate all keys

.4 Size cabinet to allow for 25% expansion

.7 KEYING:

.1 All locks shall be 7-Pin removable core by Best Locks.

.2 As part of the cost of this Section, the door hardware Subcontractor shall obtain brass construction cores for all locks from Best Locks.

.3 As part of the cost of this Section, all locks and cylinders are to include Best permanent cores great-grand master keyed to the Owner's requirements.

.8 STRIKES: ANSI with lip, except deadlock strikes which shall be ANSI without lip.

2.3 ACCEPTABLE MANUFACTURERS AND PRODUCTS

.1 The following tables list acceptable door hardware manufacturers and products.

.2 The tables may list acceptable equivalent products.

.1 Equivalent products are considered equal and may be substituted for the products listed in the attached Door Hardware List without further approval from the Owner.

.2 Where equivalent products are not listed, provide the named base bid products only.

.3 No other door hardware items other than those listed below will be accepted unless formal approval of an alternative is granted in writing by the Owner prior to the close of the Bid period.

.4 FINISH: Take special care to co-ordinate all of the various manufactured items furnished under this Section to ensure an acceptably uniform finish.

.5 HARDWARE FINISH CODES AND DESCRIPTIONS: Note: Not all of the codes listed in this table are necessarily used in the Work. Refer to the attached Door Hardware List for final finishes.

BHMA CODE	CANADIAN CODE	U.S. CODE	DESCRIPTION
600	CP	USP	Primed for paint (steel)
619	C15	US15	Satin nickel plated (brass bronze)
626	C26D	US28	Satin chromium plated (brass bronze)
628	C28	US32D	Satin aluminum, clear anodized
630	C23D, AL	-	Satin stainless steel
689	SB, AL	-	Aluminum plated
B	-	-	Brush

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NEO	-	-	Neoprene
P	-	-	Pile
V	-	-	Vinyl

.3 MANUFACTURERS NAMES ABBREVIATIONS:

ABBREVIATION	MANUFACTURER NAME
BEST	Best Locks
CBH	Canadian Builders Hardware Mfg.Inc.
CORBIN	Corbin-Russwin Architectural Hardware (Yale-Corbin Canada)
DB	Dominion Brass
DORMA	Dorma Door Controls
GSH	Gallery Specialty Hardware
GJ	Glynn-Johnson (Ingersoll-Rand Architectural Hardware)
HAGER	Hager Hinge (Canada) Ltd.
KNC	K.N. Crowder Mfg. Inc.
LCN	LCN Closers (Ingersoll-Rand Architectural Hardware)
MARKAR	Markar Products Inc.
NORTON	Yale/Rixson Firemark Canada Ltd.
PEMKO	Pemko Mfg. Co.
RIXSON	Yale/Rixson Firemark Canada Ltd.
SARGENT	Sargent of Canada Ltd.
SCHLAGE	Schlage Lock Company (Ingersoll-Rand Architectural Hardware)
STANLEY	Stanley Hardware Canada
THOMAS	K.M. Thomas
VON-DUPRIN	Von-Duprin Inc. (Ingersoll-Rand Architectural Hardware)
YALE	Yale/Rixson Firemark Canada Ltd.
ZERO	Zero International Inc.

.4 HARDWARE LIST ABBREVIATIONS

ABBREVIATIONS	TERM
B/S	Back Set
CIF	Channel Iron frame
CTB	Counter-sunk Through Bolts
D/A	Double Acting
D/E	Double Egress

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HMD	Hollow Metal Door
HMF	Hollow Metal Frame
H/O	Hold Open
LH	Left Hand
LHR	Left Hand Reverse
LS	Lead Shields
MFR	Minutes of Fire-Rating
MS	Machine Screws
NRP	Non Removable Pin
O/H	Over Head
O/S	Opposite Swing
PR.DRS	Pair of Doors
PSF	Pressed Steel frames
RH	Right Hand
RHR	Right Hand Reverse
SGL.DR.	Single Door
STS	Self-tapping Screws
TB	Through Bolts
TMS	Template Machine Screws
U/C	Undercut
WD	Wood Door
WDF	Wood Frame
WS	Wood Screws

.5 BUTT HINGES – FULL MORTISE:

ACCEPTABLE MANUFACTURERS	**ITEM**	**ITEM**	**ITEM**
HAGER	BB1168	BB1199	BB1279
STANLEY	FB 168	FBB199	FBB179

.1 Interior: 626 finish

.2 Exterior: 630 finish

.3 Non-removable pins at out-swinging exterior doors and all vestibule doors.

.4 Where doors are required to swing 180 degrees, furnish hinges of sufficient throw to clear trim.

.5 All full mortise hinges shall be ball bearing, standard duty or heavy duty as required.

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.6 CONTINUOUS HINGES:

ACCEPTABLE MAUFACTURER	ITEM	ITEM
MARKAR	FM300	FM200
GSH	CH-951	CH0941

.1 Interior: 600 finish

.2 Exterior: 630 finish

.7 LOCKSETS: 630 FINISH

ACCEPTABLE MANUFACTURERS	ITEM	ITEM	ITEM	KNOB STYLE
BEST	35H7J	35H7EW	L-15-H	4A
SARGENT	8237	8204	LNL	LB
SCHLAGE	L9070	L9080	06B	42B

.1 Where lever handles are listed, they shall be solid, not hollow.

.2 All lever handles listed must be 630 finish. 626 finish will not be accepted.

.8 LATCHSETS: 630 FINISH

ACCEPTABLE MANUFACTURERS	ITEM	ITEM	ITEM
BEST	35H-N	35H-LF	L-15-H
SARGENT	8215	8265	LNL
SCHLAGE	L9010	L9040	06B

.1 Where lever handles are listed, they shall be solid, not hollow.

.2 All lever handles listed must be 630 finish. 626 finish will not be accepted.

.9 CYLINDERS AND 7-PIN REMOVABLE CORES & TEACHER'S CLOSET LOCKS: 626 FINISH

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ACCEPTABLE MANUFACTURERS		**ITEM**	**ITEM**
BASE BID	**BEST**	1E74	1E72
NO EQUIVALENTS	NO ALTERNATES	---	---
	BEST	63K 7R 4C S3 X 626	---

.1 Removable and interchangeable 7-pin core design.

.2 Within 2 days of submitting the order for Best cylinders and locks, send one (1) copy of the order c/w the approved hardware list to Peel District School Board, Attention: Bob Thorpe, Maintenance Services- 933 Central Parkway West, Mississauga, ON L5C 2T9 (Fax 905-279-0859).

.10 DOOR PULLS: 630 FINISH

ACCEPTABLE MANUFACTURERS	**ITEM**
CBH	7009-1
GSH	1181-2
HAGAR	HA 12L

.1 All exterior doors requiring door pulls shall be supplied with 32 mm diameter solid stainless steel door pulls.

.2 All interior doors requiring door pulls shall be supplied with 25 mm diameter solid stainless steel door pulls.

.3 Offset door pulls shall be supplied on exterior doors equipped with night latch function exit devices to accommodate rim cylinders. Ensure that interior push pull doors are equipped with identical offset pulls to match.

.11 EXIT DEVICES- RIM TYPE: 626/630 FINISH

ACCEPTABLE MANUFACTURES	**ITEM**	**ITEM**
SARGENT	8810-F OR G	8804-F OR G
VON-DUPRIN	98EO	98NL-OP

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YALE	7100-width	7100-width-521

.1 Use hex key and cylinder dogging at power operated doors only.

.2 Use hex bolts or through-bolts complete with sleeves for exit devices on mineral core doors.

.3 All exit device trim must be free-wheeling design.

.12 DOOR CLOSURE: 689 FINISH

ACCEPTABLE MANUFACTURERS	ITEM	ITEM
DORMA	4600	6600
LCN	1460	4110
NORTON	8501BF	7500
SARGENT	1430	350

.1 Where required, out swinging doors and interior doors shall have closures with parallel arms.

.2 Back checking feature shall be of a proper size to operate the door efficiently.

.3 All closures shall be complete with full cover of same design and manufacturer.

.4 All interior closers shall be reduced-force type.

.5 All interior doors for barrier-free use shall be delayed action and reduced-force type, meeting OBC requirements.

.6 Mount closures on interior room side of doors.

.7 All door closures shall be mounted with through-bolts.

.13 KICKPLATES: 630 FINISH

ACCEPTABLE MANUFACTURERS	SIZE (MM)	SIZE (MM)
CBH	200 X Length Listed	400 x Length Listed

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DB	200 X Length Listed	400 x Length Listed
GSH	200 X Length Listed	400 x Length Listed

.1 Confirm kick plate sizes prior to ordering.
.2 Minimum thickness: 1.3 mm.
.3 Stainless steel: Type 304, No. 4 Finish-free from rough or sharp edges.
.4 Corners and edges shall be slightly rounded.
.5 Drill plates for countersunk fixing with stainless steel flathead screws flush with finished surface.

.14 PUSH PLATES: 630 FINISH

ACCEPTABLE MANUFACTURERS	ITEM
CBH	127 X Length Listed
DB	127 X Length Listed
GSH	127 X Length Listed

.1 Confirm kick plate sizes prior to ordering.
.2 Minimum thickness: 1.3 mm.
.3 Stainless steel: Type 304, No. 4 Finish-free from rough or sharp edges.
.4 Corners and edges shall be slightly rounded.
.5 Drill plates for countersunk fixing with stainless steel flathead screws flush with finished surface.

.15 OVERHEAD STOPS/HOLDERS: 626 FINISH

ACCEPTABLE MANUFACTURERS	ITEM	ITEM
GJ	104S	454S
RIXSON	1-336/436	10-336/446
SARGENT	693	1543

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.1 Use appropriate overhead door stop & holder where wall stops cannot be used.

.2 Do not use floor stops.

.16 WALL STOPS: 626 FINISH

ACCEPTABLE MANUFACTURERS	ITEM
GSH	GSH 240
CBH	CBH 145

.1 Do not use floor stops.

.2 Do not use wall stops on non-masonry walls.

.17 WEATHERSTRIPPING: 628P FINISH

ACCEPTABLE MANUFACTURERS	ITEM	ITEM
KNC	W16P	W20P
PEMKO	309AP x Height	2891AP x Width
ZERO	98A x Height	---

.1 Install head weather-stripping uncut in one continuous length prior to installation of door closures or other hardware to the head of the door frame.

.2 Install jamb weather-stripping uncut in one continuous length, except that it may be cut at the strike location of surface mounted fire exit hardware.

.18 DOOR SWEEPS: 628NEO FINISH

ACCEPTABLE MANUFACTURERS	ITEM
KNC	W13S x Length
PEMKO	315CN x Length
ZERO	39A x Length

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.19 THRESHOLDS: 628 FINISH

ACCEPTABLE MANUFACTURERS	ITEM	ITEM
HAGER	412SA	---
KNC	CT10	CT32
PEMKO	171A	---

.1 Confirm threshold sizes prior to ordering.

.20 POWER DOOR OPERATORS:

ACCEPTABLE MANUFACTURERS		ITEM	ITEM
BASE BID	HORTON	4100	4100
NO EQUIVALENTS &	NO ALTERNATES	---	---

.21 HOLD OPEN DEVICES:

ACCEPTABLE MANUFACTURERS		ITEM	ITEM
BASE BID	YALE-CORBIN	FM998 x Tri-volt	FM998 x Tri-volt
NO EQUILALANTS &	NO ALTERNATES	---	---

2.4 FASTENINGS

.1 Supply screws, bolts, expansion shields and other fastening devices required for the satisfactory installation and operation of hardware, and as recommended by the hardware manufacturers for long life under hard use.

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.2 Exposed screws for installing hardware shall have Phillips or Robertson heads.

.3 Exposed fastening devices shall match the finish and material of hardware.

.4 Where a pull is scheduled on one side of a door and a push plate on the other side, supply fastening devices, and install so the pull can be secured through the door from the reverse side. Install the push plate to cover fasteners.

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

.6 All door closers shall be through-bolt mounted.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Furnish door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware. Advise door and frame manufacturers to be aware that strike heights as listed in the table below are required for this project.

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

3.2 INSTALLATION

.1 ALL DOORS, FRAMES, AND FINISHING HARDWARE SHALL BE INSTALLED BASED ON DHI INSTALLATION GUIDE FOR DOORS AND HARDWARE (ANSI/DHI A115.1G-1994 – Approved 8/19/94)

.2 Door hardware shall be installed by an approved Hardware Installer selected by the Hardware Supplier.

.3 Power door operators, complete with hook-up to power rough-in, low voltage control wiring, and exit device release, shall be installed by the manufacturers' recommended installer.

.4 Power door operators and **emergency assist devices** to be installed by hardware supplier. Low voltage control wiring to push button locations, exit device release, and 4" x 4" back boxes to be completed by Division 26 (Electrical Contractor.). **The low voltage wiring to be supplied by the Hardware Supplier to the Electrical Contractor for installation**.

.5 ARCHITECTURAL HARDWARE CONSULTANT:

.1 The hardware supplier shall have in its employ an Architectural Hardware Consultant who is a current member of the American Society of Hardware Consultants, and who shall be made available for consultation during the course of construction at no additional cost to the Owner.

.2 The Architectural Hardware Consultant must supervise hardware installation, provide assistance to the Hardware Installer, and carry out inspection and provide written certification of the finished door hardware installation.

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.3 Allow for a minimum of three inspections during the course of hardware installation and one final inspection.

.4 Ten percent (10%) of this subtrade's contact will be considered as fair value for supervision and inspection with regard to progress certificates.

.5 Locate and mount hardware at standard location dimensions in accordance with CSDFMA, Canadian Metric Guide for Steel Doors and Frames (Modular Construction), and as indicated in the following table:

HARDWARE MOUNTING HEIGHTS	
HARDWARE ITEM	**DIMENSION ABOVE FINISHED FLOOR**
LOCKSET or LATCHSET	950 mm to Centreline of Strike
DEADLOCK	1200 mm to Centreline of Strike
EXIT DEVICE	950 mm to Centreline of Strike
PUSH PLATE/DOOR PULLS	900 mm to Centreline of Strike

.6 HARDWARE MOUNTING HEIGHTS

.1 The Hardware Installer shall carefully check manufacturer's installation instructions supplied with hardware products for conflicts with the above noted dimensions.

.2 The Hardware Installer shall use manual or "Yankee" screw drivers to turn screws into pre-drilled pilot holes for installation of hinges on mineral core fire protection rated doors. Please note that other methods of installation may void the door manufacturer's warranty.

.3 The recommended mounting heights shall be considered a general guide unless conditions such as intermediate rails and lines of glass dictate otherwise.

.4 Locate door stops to contact doors 75mm from latch edge.

.5 Install hardware and trim square and plumb to doors.

.6 Install mullion stabilizers at centre mullions at double doors and intermediate mullions on multiple door arrangements.

.7 Supply locksets to Section 064000 – Architectural Woodwork for 35mm and 45mm thick doors where such doors are a part of millwork units. Keying shall be in accordance with the building keying system for

3.3 ADJUSTING

.1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.

.2 Ensure doors with closers close firmly and against wind and building air pressure, and can be opened readily as suitable for installation.

.3 Inspection:

.1 The Hardware Supplier shall have in his employ an Architectural Hardware Consultant who is a current member of the American Society of Hardware Consultants, and who shall be made available for consultation during the course of construction at no additional cost to the Board.

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.2 In addition to this available consultant, a Hardware Inspector shall be engaged upon recommendation to the Board by the Consultants and costs for inspection paid for from Cash Allowances.

.3 The Consultant shall advise the Contractor that Hardware Inspector shall be assigned to supervise the hardware installation, provide assistance to the Hardware Installer, and carry out inspection and provide written certification of the finished door hardware installation. Costs for this inspection shall be paid from the Cash Allowance. The Contractor shall notify the Hardware Inspector at least 72 hours prior to commencing the installation and cooperate with the advice of the inspector.

.4 Upon completion of door hardware installation, the Architectural Hardware Inspector shall conduct an inspection of all door hardware as installed, accompanied by the Consultant, the Owner's representative, and the Contractor.

.5 If requested by the Consultant, the manufacturer's technical representative for each make of the hardware used in the Work shall be in attendance during the hardware inspection.

.6 During the inspection, the Architectural Hardware Inspector shall note all unsatisfactory installations and products and re-inspect these items after re-adjustment or replacement to ensure all hardware is in optimum working condition and specified function.

.4 Upon completion of door hardware installation, the Hardware Supplier shall submit a written certificate that all hardware has been correctly supplied and installed in accordance with the drawings, specifications, schedules, and approved final door hardware list, for type, function, and location, and that door hardware has been checked and adjusted.

.5 Clean hardware after installation following the hardware supplier's recommendations.

.6 At project completion all items of door hardware shall be clean and free from disfigurement. The Contractor shall repair or replace hardware found to be defective.

3.4 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacture's instructions.

.3 Remove protective material from hardware items where present.

.4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

□

PART 1 - GENERAL

1.1 This hardware schedule has been prepared by:

Commercial Doors & Hardware.

2150 Winston Park Drive, Unit 16
Oakville, Ontario L6H 5V1

CONSULTANT
Ross Ruprecht, B.A., A.H.C.

PART 2 - FINISHING HARDWARE SCHEDULE

Refer to the Finishing Hardware List on the following pages.

Finishing Hardware Schedule

BURNHAMTHORPE PS ELEV & ACCESSIBLE WR RENO

MISSISSAUGA

Architect
HOSSACK ARCHITECTURE
105 - 1939 IRONOAK WAY
OAKVILLE, ON.
L6H 3V8

Detailer: **Austin Baril**
Consultant: **Ross Ruprecht B.A., A.H.C.**

Submittal Date: **May 15/26, JUNE 1/26**

Manufacturers & Finishes

Manufacturers

Adams Rite
BEST
Camden
Camden Door Controls (Pgs 29-36)
Crowder
Gallery
GYRO-TECH
HES
K.N. Crowder
MISC
Norton Rixson
Stanley

Finishes

600 - Primed for painting
626 - Satin chromium plated over nickel
628 - Satin aluminum, clear anodized
630 - Satin stainless steel
689 - Aluminum painted
US26D - Satin chromium plated over nickel
US32D - Satin stainless steel

Openings Schedule

Opening Number(s)	Qty	Location 1	To/ From	Location 2	Nominal Width	Nominal Height	Door Thickness	Type	Hand	Label	Degree of Opening	Hardware Group	Remarks
A102A	1	EXTERIOR STORAGE	FROM	ELEV MACHINE CLOSET	1000	2150	44	Single	RHR	45 MIN	90°	STORAGE WS	
A103A	1	EXTERIOR	FROM	EXTERIOR STORAGE	1000		44	Single	RHR		90°	EXT STORAGE SGL	EXTERIOR DOOR AND FRAME.
A104A	1	GENERAL OFFICE	TO	PRINCIPAL OFFICE	950	2150	44	Single	RH		90°	CLASS RM	
A105A	1	GENERAL OFFICE	TO	HEALTH ROOM	950	2150	44	Single	LH		90°	CLASS RM	
A106A	1	CORRIDOR	TO	GNERAL OFFICE	950	2150	44	Single	RH	45 MIN	90°	CLASS ROOM -OP	OH DOOR STOP, ELECTRIC STRIKE, CLOSER, BARRIER FREE PUSH BUTTONS . ELECTRICAL CONTRACTOR TO PROVIDE LOW VOLTAGE WIRING TO FRAMING PER HARDWARE SCHEDULE, CONTRACTOR TO COORDINATE.
A107A	1	HALLWAY	TO	MAILROOM	950	2150	44	Single	LH		90°	CLASS RM	
A109A	1	HALLWAY	TO	VP OFFICE	950	2150	44	Single	RH		90°	CLASS RM	
A110A	1	HALLWAY	TO	SEMINAR ROOM	1050	2150	44	Single	LH-POCKET			SLIDING DOOR	POCKET DOOR
A110B	1	CORRIDOR	TO	SEMINAR ROOM	950	2150	44	Single	RH	45 MIN	90°	CLASS RM CL OHS	
A111A	1	CORRIDOR	TO	ORTHO WASHROOM	950	2150	44	Single	RH	45 MIN	90°	WR PDSB	OH DOOR STOP, ELECTRIC STRIKE, CLOSER, PUSH LOCK, BARRIER FREE PUSH BUTTONS AND COMBINATION B.F. PUSH BUTTON w/ LUMINATED OCCUPIED SIGN INSTALLED AT 1675mm (5'-6") A.F.F.. ELECTRICAL CONTRACTOR TO PROVIDE LOW VOLTAGE WIRING PER HARDWARE SCHEDULE, CONTRACTOR TO COORDINATE. B.F. OPERATOR KEY SWITCH INSTALL ON CORRIDOR SIDE WALL, REFER TO HARDWARE SCHEDULE AND ELEC. DWGS.
X104A	1	CORRIDOR	TO	CLASSROOM	950	2150	44	Single	LH	45 MIN	90°	CLASS RM ,CL,WS	
A202A	1	CLASSROOM	FROM	STORAGE	950	2150	44	Single	LHR		90°	STORAGE PA	
A203A	1	CORRIDOR	TO	WASHROOM	950	2150	44	Single	LH	45 MIN	90°	WR PDSB	OH DOOR STOP, ELECTRIC STRIKE, CLOSER, PUSH LOCK, BARRIER FREE PUSH BUTTONS AND COMBINATION B.F. PUSH BUTTON w/ LUMINATED OCCUPIED SIGN INSTALLED AT 1675mm (5'-6") A.F.F.. ELECTRICAL CONTRACTOR TO PROVIDE LOW VOLTAGE WIRING PER HARDWARE SCHEDULE, CONTRACTOR TO COORDINATE. B.F. OPERATOR KEY SWITCH INSTALL ON CORRIDOR SIDE WALL, REFER TO HARDWARE SCHEDULE AND ELEC. DWGS.
X204A	1	CORRIDOR	TO	SEMINAR ROOM								EXISTING	PAINT EXISTING DOOR AND FRAME
MAIN-OFFICE	1											OFFICE ADO ANNUN MISC	

GENERAL NOTES:

-ALL ADO TO BE SUPPLIED AND INSTALLED BY HARDWARE SUPPLIER 08710.

-ALL ADO MFTG BY GYRO-TECH NO ALTERNATE WILL BE ACCEPTED.

Hardware Schedule

Heading #1 (Group: STORAGE WS)

Item #1 — 1 Single door A102A, EXTERIOR STORAGE FROM ELEV MACHINE CLOSET — 90° RHR

1000 x 2150 x 44 - HM DR x HM FR - 45 MIN

4	Standard Hinge	Stanley FBB179 4 1/2" x 4" US26D	US26D
1	Lockset	BEST 45H7D (Std.) 15 H 630 RHR	630
1	Cylinder	BEST 1E74(Std.) 626	626
1	Cylinder	Best Construction Core 1CA Brass	
1	Cylinder	Best Permanent Core 1C7N1 GMK 3 Keys	626
1	Surface Closer	BEST HD8016 SPA 689	689
1	Kick Plate	Gallery GSH 80A C32D 200 X 50MM LDW	US32D
1	Wall Door Stop	Gallery GSH 240B C32D	US32D

Heading #2 (Group: EXT STORAGE SGL)

Item #2 — 1 Single door A103A, EXTERIOR FROM EXTERIOR STORAGE — 90° RHR

1000 x __ x 44 - HM DR x HM FR

1		DOOR CONTACT BY DIV 16	
4	Standard Hinge	Stanley NRP-FBB191 4 1/2" x 4" US32D	US32D
1	Lockset	BEST 45H7T (Std.) 4 H 630 RHR	630
1	Cylinder	BEST 1E74(Std.) 626	626
1	Cylinder	Best Construction Core 1CA Brass	
1	Cylinder	Best Permanent Core 1C7N1 GMK 3 Keys	626
1	Surface Closer	BEST HD8016 DS 600	600
1	Kick Plate	Gallery GSH 80A C32D 200 X 50MM LDW	US32D
1	Threshold	Crowder CT-45 M.F. X 1200MM	M.F.
1	Weatherstripping	K.N. Crowder W-20S- 1219 CA	CA
1	Weatherstripping	K.N. Crowder W-24S- 1219 CA	CA
2	Weatherstripping	K.N. Crowder W-50S- 2150- CA	CA

Heading #3 (Group: CLASS RM)

Item #3	1 Single door A104A, GENERAL OFFICE TO PRINCIPAL OFFICE	90° RH
Item #4	1 Single door A105A, GENERAL OFFICE TO HEALTH ROOM	90° LH
Item #5	1 Single door A107A, HALLWAY TO MAILROOM	90° LH
Item #6	1 Single door A109A, HALLWAY TO VP OFFICE	90° RH

950 x 2150 x 44 - HM DR x HM FR

12	Standard Hinge	Stanley FBB179 4 1/2" x 4" US26D	US26D
2	Lockset	BEST 45H7R (Std.) 15 H 630 LH	630
2	Lockset	BEST 45H7R (Std.) 15 H 630 RH	630
4	Cylinder	BEST 1E74(Std.) 626	626
4	Cylinder	Best Construction Core 1CA Brass	
4	Cylinder	Best Permanent Core 1C7N1 GMK 3 Keys	626
4	Kick Plate	Gallery GSH 80A C32D 200 X 50MM LDW	US32D
4	Wall Door Stop	Gallery GSH 240B C32D	US32D

Heading #4 (Group: CLASS ROOM -OP)

Item #7 — 1 Single door A106A, CORRIDOR TO GNERAL OFFICE — 90° RH

950 x 2150 x 44 - HM DR x HM FR - 45 MIN

INSTALL ADO AS PULL SIDE MOUNTED

3	Standard Hinge	BEST FBB168 (4 1/2" x 4 1/2") US26D	US26D
1	Lockset	BEST 45H7R (Std.) 15 H 630 RH	630
1	Cylinder	BEST 1E74(Std.) 626	626
1	Cylinder	Best Construction Core 1CA Brass	
1	Cylinder	Best Permanent Core 1C7N1 GMK 3 Keys	626
1	Electric Strike	HES 1006CLB -630	630
1	Electronic Closer	GYRO-TECH ADO 8710 X PULL SIDE FWH 628 (NO ALTERNATE ACCEPTED)	628
1	Kick Plate	Gallery GSH 80A C32D 200 X 50MM LDW	US32D
1	Overhead Door Stop	Norton Rixson 1-336 630	630
1	Miscellaneous Hardware	Camden CM-160/3 POS (MTD IN OP HEADER)	
1	Miscellaneous Hardware	Camden DEDICATED PS CX-PS13V3 INSTALL IN OP HEADER	
1	Miscellaneous Hardware	Camden RELAY CX-33	
2	Miscellaneous Hardware	Camden SURWAVE CM-331-SGLR/42R -ROUND FLUSH MTD.	
1	Miscellaneous Hardware	MISC WIRING /RISER DIAGRAM BY HARDWARE SUPPLIER	

HARDWARE SUPPLIER SECTION O8710 TO SUPPLY AND INSTALL AUTO OPERATORS.

ELECTRICAL CONTRACTOR TO PROVIDE 120 VAC TO HEAD OF FRAME AND LOW VOLTAGE WIRE TO PUSH BUTTON & ELECTRIC STRIKE LOCATIONS.
PB REQUIRE 2 X 4 BACK BOX BY ELECTRICAL CONTRACTOR.

MODE OF OPERATION: ACTUATOR EITHER SIDE OF DOOR OPENS DOOR AUTOMATICALLY. TO SECURE DOOR BY LOCKING CLASS RM LOCK WITH KEY AND USE HAEDER MTD KEYSWITCH TO TURN OPERATOR TO OFF POSITION.

Heading #5 (Group: SLIDING DOOR)

Item #8 — 1 Single door A110A, HALLWAY TO SEMINAR ROOM — LH-POCKET

1050 x 2150 x 44 - HM DR x HM FR

2		Cylinder Rings to pack out B to B Mtd Cylinders	
1	Track / Hanger	K.N. Crowder CCS-3-998-CA X 84" X 1DR KIT	CA
1	Dead Lock	Adams Rite MS1850SN-450 1 1/8" BS -628	628
2	Cylinder	BEST 1E74(Std.) X AR CAM 626	626
2	Cylinder	Best Construction Core 1CA Brass	
2	Cylinder	Best Permanent Core 1C7N1 GMK 3 Keys	626
1	Door Pull	Gallery GSH 4012-2 X 4012-2 MTD B TO B C32D # 5 44	US32D
1	Miscellaneous Hardware	Adams Rite 4000-031-628	628

Heading #6 (Group: CLASS RM CL OHS)

Item #9 1 Single door A110B, CORRIDOR TO SEMINAR ROOM 90° RH

950 x 2150 x 44 - HM DR x HM FR - 45 MIN

3	Standard Hinge	BEST FBB168 (4 1/2" x 4 1/2") US26D	US26D
1	Lockset	BEST 45H7R (Std.) 15 H 630 RH	630
1	Cylinder	BEST 1E74(Std.) 626	626
1	Cylinder	Best Construction Core 1CA Brass	
1	Cylinder	Best Permanent Core 1C7N1 GMK 3 Keys	626
1	Surface Closer	BEST HD7016 A08P 689	689
1	Kick Plate	Gallery GSH 80A C32D 200 X 50MM LDW	US32D
1	Overhead Door Stop	Norton Rixson 9-336 630	630

Heading #7 (Group: WR PDSB)

Item #10	1 Single door A111A, CORRIDOR TO ORTHO WASHROOM	90° RH
Item #11	1 Single door A203A, CORRIDOR TO WASHROOM	90° LH

950 x 2150 x 44 - HM DR x HM FR - 45 MIN

INSTALL ELECTRIC STRIKE AS FAIL SECURE , OPENING IS 45 MIN RATED .

8	Standard Hinge	BEST FBB168 (4 1/2" x 4 1/2") US26D	US26D
1	Lockset	BEST 45H7D (Std.) 15 H 630 LH	630
1	Lockset	BEST 45H7D (Std.) 15 H 630 RH	630
4	Cylinder	BEST 1E74(Std.) 626	626
4	Cylinder	Best Construction Core 1CA Brass	
4	Cylinder	Best Permanent Core 1C7N1 GMK 3 Keys	626
2	Electric Strike	HES 1006CLB -630	630
		FAIL SECURE	
2	Electronic Closer	GYRO-TECH ADO 8710 X PULL SIDE FWH 628 (NO ALTERNATE ACCEPTED)	628
4	Kick Plate	Gallery GSH 80A C32D 400 x 50MM LDW	US32D
		MTD BOTH SIDES	
2	Wall Door Stop	Gallery GSH 240B C32D	US32D
2	Accessory	HES 2005M3 MUST BE INSTALLED WITH ES	
2	Accessory	Camden (CAD) CIRCUIT CM-4000-60N install in parallel with office annunciator & emerg button in WR	
2	Accessory	Camden CM-45/4 PUSH TO EXIT -FLUSH MTD.	
2	Accessory	MISC ESCUTCHEON SS PDSB STD X 1 ACTUATOR CUT OUTS C32D	630
		INSTALL WITH CORR MTD ACTUATOR	
2	Miscellaneous Hardware	Camden ACTUATOR CM-45/455/SE1 FLUSH MTD IN CORR -INSTALL WITH CUST SS	
2	Miscellaneous Hardware	Camden CM-1290-7224 MTD IN CORRIDOR (SHUNTS POWER TO CORR ACTUATOR)	
2	Miscellaneous Hardware	Camden CM-160/3 POS (MTD IN OP HEADER)	
		MOUNT IN OP HEADER	
2	Miscellaneous Hardware	Camden CM-331/43S-SGLR-WAVE TO LOCK FLUSH MTD (STD 2 X 4 BB))	
2	Miscellaneous Hardware	Camden (CAD) CX-IRB (FOR CUST WR KIT)	
2	Miscellaneous Hardware	Camden CX-TRX-4024 INSTALL IN OP HEADER	
2	Miscellaneous Hardware	Camden DEDICATED PS CX-PS13V3 INSTALL IN OP HEADER	
2	Miscellaneous Hardware	Camden EMERGENCY WR KIT CX-WEC10K2 (corr sgl gang, wr dbl gang)	
2	Miscellaneous Hardware	Camden RELAY CX-33	
2	Miscellaneous Hardware	MISC REMOTE EMERG CALL SYSTEM / ANNUNCIATOR / PS IN OFFICE BY ELECTRICAL	
2	Miscellaneous Hardware	MISC WIRING /RISER DIAGRAM BY HARDWARE SUPPLIER	

HARDWARE SUPPLIER TO SUPPLY AND INSTALL AUTO OPERATOR.

PDSB STD IS FOR ACTUATORS TO BE FLUSH MTD. ELECTRICAL CONTRACTOR TO HAVE STD ELECTRICAL BB INSTALLED IN WALLS.

ELECTRICAL CONTRACTOR TO PROVIDE 120 VAC TO HEAD OF FRAME AND RUN ALL LOW VOLTAGE WIRE IN CONDUIT TO PUSH BUTTON LOCATIONS AND ALL ELECTRICAL COMPONENTS LISTED. REFER TO WIRING DIAGRAM SUPPLIED BY HARDWARE SUPPLIER.

Heading #8 (Group: CLASS RM ,CL,WS)

Item #12 — 1 Single door X104A, CORRIDOR TO CLASSROOM — 90° LH

950 x 2150 x 44 - HM DR x HM FR - 45 MIN

3	Standard Hinge	BEST FBB168 (4 1/2" x 4 1/2") US26D	US26D
1	Lockset	BEST 45H7R (Std.) 15 H 630 LH	630
1	Cylinder	BEST 1E74(Std.) 626	626
1	Cylinder	Best Construction Core 1CA Brass	
1	Cylinder	Best Permanent Core 1C7N1 GMK 3 Keys	626
1	Surface Closer	BEST HD8016 SPA 689	689
1	Kick Plate	Gallery GSH 80A C32D 200 X 50MM LDW	US32D
1	Wall Door Stop	Gallery GSH 240B C32D	US32D

Heading #9 (Group: STORAGE PA)

Item #13 — 1 Single door A202A, CLASSROOM FROM STORAGE — 90° LHR

950 x 2150 x 44 - HM DR x HM FR

3	Standard Hinge	Stanley FBB179 4 1/2" x 4" US26D	US26D
1	Lockset	BEST 45H7D (Std.) 15 H 630 LHR	630
1	Cylinder	BEST 1E74(Std.) 626	626
1	Cylinder	Best Construction Core 1CA Brass	
1	Cylinder	Best Permanent Core 1C7N1 GMK 3 Keys	626
1	Surface Closer	BEST HD8016 SPA 689	689
1	Kick Plate	Gallery GSH 80A C32D 200 X 50MM LDW	US32D
1	Overhead Door Stop	Norton Rixson 1-336 630	630

Heading #10 (Group: EXISTING)

Item #14 — 1 Elevation X204A, CORRIDOR TO SEMINAR ROOM

__ x __ x __ - HM DR x HM FR

EXISTING DOOR AND FRAME TO REMAIN.
RE USE EXISTING HARDWARE

Heading #11 (Group: OFFICE ADO ANNUN MISC)

Item #15 1 Elevation MAIN-OFFICE

__ x __ x __ - HM DR x HM FR

1	Accessory	Camden (CAD) ANNUNCIATOR CC-CUST-FP-ENTDOO-04 (install in office)
1	Miscellaneous Hardware	Camden CM-53 back box for office annunciator.
1	Miscellaneous Hardware	Camden CX-PS10UL INSTALL IM GEN OFFICE

ELECTRICAL CONTRACTOR TO RUN MIN 16GA LVW FROM BF WR A-05 TO GENERAL OFFICE.
ELECTRICAL CONTRACTOR TO PROVIDE 120 VAC TO POWER SUPPLY INSTALLED IN OFFICE AND LVW FROM PS TO OFFICE MTD ANNUNCIATOR.
ANNUNCIATOR IN OFFICE IS TO SIGNAL WHEN EMERGENCY BUTTON IN WR IS DEPRESSED.

MS1850SN, MS1850SN-45X

Series MS® Deadlocks

The ANSI size **MS1850SN Series MS® Deadlock** utilizes a laminated stainless steel bolt and the ANSI size **MS1850SN-45X Series MS Deadlock** utilizes a stainless steel hookbolt, both activated by a pivot mechanism to provide maximum security for hollow metal or wood doors.

MS1850SN

Function

For hollow metal or wood doors prepared for hardware according to the specifications of the American National Standards Institute (ANSI), the **MS1850SN Series MS® Deadlock** provides maximum security and ease of installation. Its standard 1-1/2" [38.1 mm] backset dimension provides adequate clearance for the deep stop on the door jamb of hollow metal entrances.

The ANSI size **MS1850SN-45X Series MS® Deadlock** provides maximum security and ease of installation for hollow metal or wood sliding doors. Its standard 1-1/2" [38.1 mm] backset dimension provides adequate clearance for the deep jamb "pocket" of many commercial and industrial entrances. The locking mechanism is identical to the widely used MS1850S Series MS Deadlock, except that the massive laminated bolt is provided in a hook shape to resist the parting motion of sliding door and jamb. The over-center maximum security (MS) locking action assures that forced entry attempts to pry the door in any direction, up, down, or sideways will be defeated. Also useful for swinging doors closing against jambs too shallow for the 1-3/8" [34.9 mm] throw of the MS1850SN Series MS® Deadlock.

MS1850SN-45X

Operation

360° turn of key or thumbturn projects or retracts the counterbalanced bolt. Key can be removed only when bolt is in a positively locked or unlocked position. Lock accepts any standard 1" [25.4 mm] length, 1-5/32" [29.4 mm] diameter mortise cylinder with MS® cam such as the 4036 Mortise Cylinder, available separately or thumbturn such as the 4066 Thumbturn, available separately. Lock accepts cylinder from either or both sides.

ASSA ABLOY, the global leader in door opening solutions

ARM-014-9/17

800.872.3267 800.232.7329 adamsrite.com
10027 S. 51st Street, Ste 102, Phoenix, Arizona 85044

Adams Rite
ASSA ABLOY

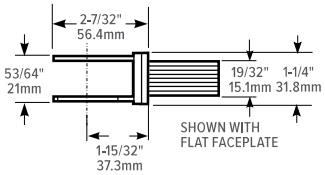
CDH

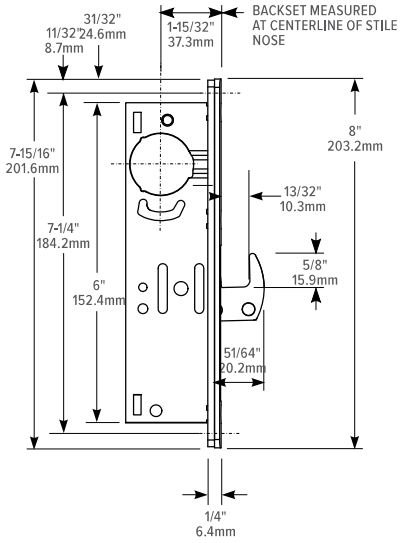
Commercial Doors & Hardware Ltd.
2150 Winston Park Drive, Unit 16
Oakville, L6H 5V1

BURNHAMTHORPE PS ELEV & ACCESSIBLE WR
RENO
MISSISSAUGA

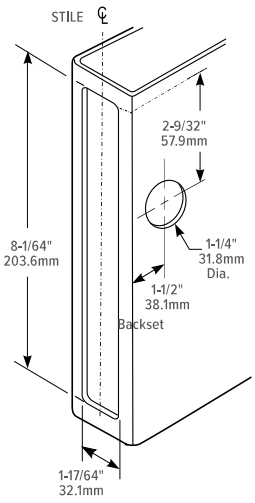
Submittal Date: May 15/26, JUNE 1/26

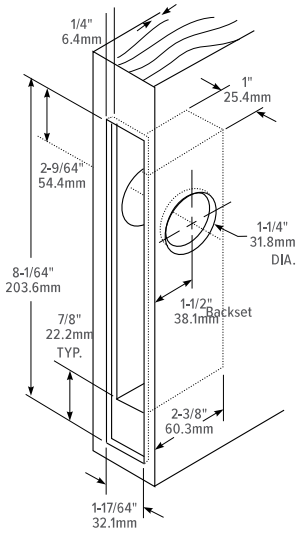
MS1850S-45X
Dimensions



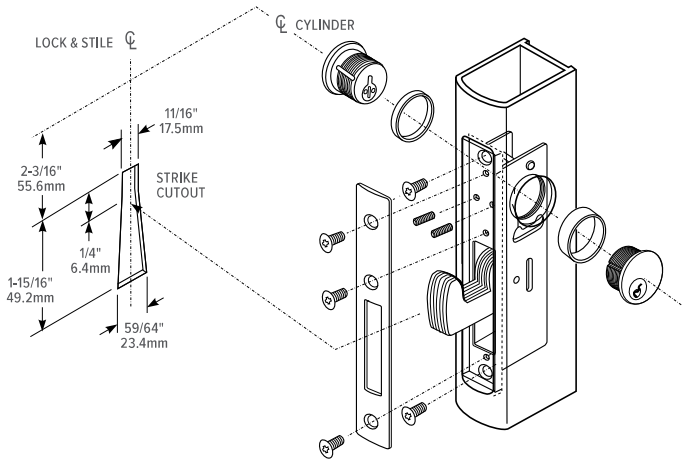


Stile & Wood Preparation





Lock & Cylinder Installation



4000 Series

MS® Deadlock Strikes

4000 Series MS® Deadlock Strikes add aesthetics and finish to strike cutouts in jambs.

Function

The majority of Adams Rite MS® deadlocks are installed in aluminum construction where the strike cutout can be simply a slot in the jamb. However, for aesthetic reasons or in the case of the MS4002 for added security, many who specify an MS® deadlock add one of these strikes.

4000 Trim Strike

A simple strike plate that can be surface mounted or mortised flush in hollow metal or wood applications.

Materials
Made of aluminum. Available in choice of 313 Dark bronze anodized, 335 Black anodized, 628 Clear anodized.

4001 Box Strike

Similar to the 4000 Strike, but with dust box added. Customarily used only for wood construction where the dust box prevents chips, sawdust, and other debris from entering strike.

Materials
Trim plate is aluminum, dust box is steel plated for corrosion resistance. Available in choice of 313 Dark bronze anodized, 335 Black anodized, 628 Clear anodized, US3 (605) Bright brass, US26D (626) Satin chrome.

Aluminium

Hollow Metal

Wood

4000

4001

MS4002

MS4002

Similar to the 4000 and 4001 strike plates, but backed up by a massive steel doubler designed to prevent the method of forced entry known as “jamb peeling”. Fits within aluminum or other hollow jamb sections with trim face flush, the steel completely hidden.

- Available flat for single doors or radiused for pairs of doors.
- May be used with two-point and three-point MS® deadlocks, including the hookbolt version in sliding doors where hookbolt use dictates door/jamb gap of 1/8" or less.
- MS4002 Armored Strike is unhanded and may be used with RH or LH swinging or sliding doors.

Materials
Trim plate is aluminum, reinforcement doubler is steel-plated for corrosion resistance. Available in choice of 313 Dark bronze anodized, 335 Black anodized, 628 Clear anodized, US3 (605) Bright brass, US26D (626) Satin chrome.

ASSA ABLOY, the global leader in door opening solutions

ARM-014-9/17

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Adams Rite
ASSA ABLOY

BEST
dormakaba Group

40H Series

Heavy Duty Mortise Locks

by BEST

BEST: Setting the Standard for Security

E. Provide locksets with 7 pin [BEST] interchangeable core cylinders. [All mortise cylinders shall have a concealed internal set screw for securing the cylinder to the lockset. The internal set screw will be accessible only by removing the core from the cylinder body with a control key]

F. All mortise locksets and latchsets must conform to ANSI A156.13, Series 1000, Operational Grade 1 [Security Grade 2 for locksets in security areas] and be listed by UL. [High Security Option: All mortise locksets must conform to ANSI A156.13, Series 1000, Operational Grade 1, Security Grade 1 and listed by UL, and must include interchangeable core cylinders which conform to High Security Cylinder requirements of UL 437.]

G. Locksets must fit ANSI A115.1 door preparation.

H. Locksets and latchsets to have self-aligning through-bolted trim.

I. Locksets and latchsets must have the ability to change handing without opening case.

J. Auxiliary latch to be made of one-piece self-lubricating stainless steel.

K. Locksets must be available with tactile or knurled knobs or levers for identification of hazardous areas.

L. Lever handles must be of forged or cast brass, bronze or stainless steel construction and conform to ANSI A117.1.

Subparagraphs m through r describe quality features of BEST mortise locksets which may or may not be available from other lock manufacturers. Edit accordingly.

M. [Spindle to be such that if forced it will twist first, then break, thus preventing forced entry.]

N. [Knobs and levers to be operated with a roller bearing spindle hub mechanism.]

O. [Permanent core face must be the same finish as the lockset finish.]

P. Cylinder retaining screw, auxiliary latch, and strike must be non-handed.]

Q. [Locking toggle on face of door must clearly indicate whether mortise lock is in the "locked" or "unlocked" state.]

R. [Cover and armored front must interlock at the latch, preventing the cover from spreading or bowing while under duress.]

Subparagraphs s through x describe quality features of BEST mortise locksets which may or may not be available from other lock manufacturers. Subparagraphs s, t, and u should remain as a group, and subparagraphs v, w, and x should remain as a group. Choose either s-u or v-x, but not both groups.

S. [Mortise lock to offer a complete lock (including trim) with the ability to be configured in the field to any of the following ANSI functions: F01, F04, F05, F07, F31.]

T. [Mortise lock to offer a complete lock (including trim) with the ability to be configured in the field to any of the following ANSI functions: F19, F13]

U. [Mortise lock to offer a complete lock (including trim) with the ability to be configured in the field to any of the following ANSI functions: F12, F20]

V. [Mortise lock to offer a multi-function case with the ability to be configured in the field to any of the following ANSI functions: F01, F04, F05, F07, F09, F30, F31, F32.]

W. [Mortise lock to offer a multi-function case with the ability to be configured in the field to any of the following ANSI functions: F13, F19, F33.]

X. [Mortise lock to offer a multi-function case with the ability to be configured in the field to any of the following ANSI functions: F12, F15, F20]

40H Series - Standard Knob & Trims


Knob- 4
Rose - H


Knob- 4
Rose - R


Knob- 4
Rose - S


Knob- 4
Escutcheon - J


Knob- 4
Escutcheon - N

40H Series - Standard Lever & Trims


Lever- 3
Rose - H


Lever- 12
Rose - H


Lever- 14
Rose - H


Lever- 15
Rose - H


Lever- 16
Rose - H

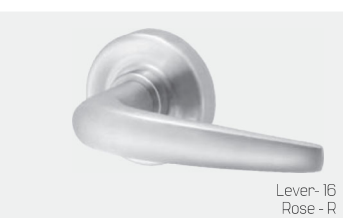

Lever- 17
Rose - H


Lever- 3
Rose - R


Lever- 12
Rose - R


Lever- 14
Rose - R


Lever- 15
Rose - R

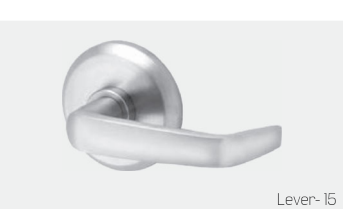

Lever- 16
Rose - R

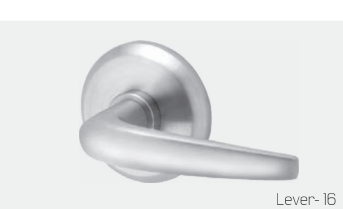

Lever- 17
Rose - R


Lever- 3
Rose - S


Lever- 12
Rose - S


Lever- 14
Rose - S


Lever- 15
Rose - S


Lever- 16
Rose - S

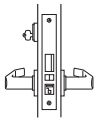
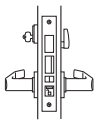
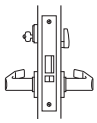
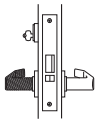
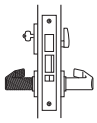
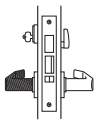
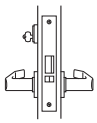

Lever- 17
Rose - S

CDH
Commercial Doors & Hardware Ltd.
2150 Winston Park Drive, Unit 16
Oakville, L6H 5V1

BURNHAMTHORPE PS ELEV & ACCESSIBLE WR
RENO
MISSISSAUGA

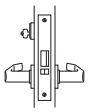
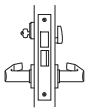
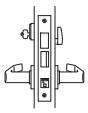
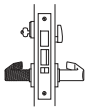
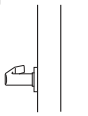
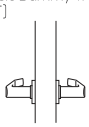
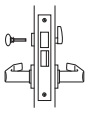
Submittal Date: May 15/26, JUNE 1/26

Functions

	Description		Outside Lever or Knob		Inside Knob/Lever	
Function & Diag (ANSI No.)	Latch operated by	Deadbolt operated by	Locked by	Unlocked by	Locked by	Unlocked by
Single keyed						
Office (A) F04 	Rotating inside lever Rotating outside lever– only when locking toggle is in unlocked position Turning key in outside cylinder	N/A	Placing locking toggle in locked position	Placing locking toggle in unlocked position	Cannot be locked	Always unlocked
Office (AB) F20 	Rotating inside lever; Rotating outside lever– only when locking toggle is in unlocked position; Turning key in outside cylinder	Turning key in outside cylinder Inside turn lever Inside lever retracts deadbolt and latch simultaneously.	Placing locking toggle in locked position; Projecting dead-bolt by key or turning inside turn lever	Turning key in outside cylinder and placing locking toggle in unlocked position	Cannot be locked	Always unlocked
Office (AT) F04 	Rotating inside lever; Rotating outside lever only when unlocked by key or turn lever; Turning key in outside cylinder	N/A	Turning inside turn lever Turn key in outside cylinder	Turning inside turn lever Turning key in outside cylinder	Cannot be locked	Always unlocked
Storeroom (D) F07 	Rotating inside lever Turning key in outside cylinder	N/A	Always unlocked	Cannot be unlocked	Cannot be locked	Always unlocked
Hotel (H) F15 	Rotating inside lever; Turning key in outside cylinder	Turning inside turn lever Turning emergency key in O/S cylinder (Rotating inside lever retracts deadbolt and latch simultaneously.)	Always unlocked	Cannot be unlocked	Cannot be locked	Always unlocked
Hotel (HJ) F15 	Rotating inside lever Turning key in outside cylinder	Turning inside turn lever Turning emergency key in O/S cylinder (Rotating inside lever retracts deadbolt and latch simultaneously.)	Always unlocked	Cannot be unlocked	Cannot be locked	Always unlocked
Classroom (R) F05 	Rotating inside lever Rotating outside lever only when unlocked by key Turning key in outside cylinder	N/A	Turning key in outside cylinder	Turning key in outside cylinder	Cannot be locked	Always unlocked

NOTE: The latchbolt is deadlocked with an auxiliary deadlatch. (H) F15 & (HJ) F15 - Throwing deadbolt blocks out all keys except "ER" key.

Functions

Function & Diag. (ANSI No.)	Description: Latch operated by	Description: Deadbolt operated by	Outside Lever or Knob: Locked by	Outside Lever or Knob: Unlocked by	Inside Knob/Lever: Locked by	Inside Knob/Lever: Unlocked by
Single keyed (continued)						
Classroom Holdback (RHB) F06 	Rotating inside lever Turning key in outside cylinder O/S lever except when locked by outside key Latchbolt held retracted by turning O/S key while holding up I/S lever.	N/A	Turning key in outside cylinder	Turning key in outside cylinder	Cannot be locked	Always unlocked
	The latchbolt is deadlocked with an auxiliary deadlatch					
Dormitory (T) F13 	Rotating inside lever Rotating outside lever—only when deadbolt is retracted Turning key in out side cylinder.	Turning key in outside cylinder; Inside turn lever Inside lever retracts deadbolt and latch simultaneously.	Turning key in outside cylinder Turning inside turn lever.	Turning key in outside cylinder Turning inside turn lever. Rotating inside lever	Cannot be locked	Always unlocked
Dormitory (TA) F12 	Rotating inside lever Rotating O/S lever only when locking toggle is in unlocked position and deadbolt is retracted, Turning key in outside cylinder	Turning key in outside cylinder Turning inside turn lever. (Rotating inside lever retracts deadbolt and latch simultaneously.)	Placing locking toggle in locked position Projecting deadbolt by key or turning inside turn lever.	Turning key in outside cylinder and placing locking toggle in unlocked position	Cannot be locked	Always unlocked
Dormitory (TD) 	Rotating inside lever Turning key in outside cylinder.	Turning inside turn lever Rotating inside lever retracts deadbolt and latch simultaneously.) Turning key in outside cylinder.	Always unlocked	Cannot be unlocked	Cannot be locked	Always unlocked
	The latchbolt is deadlocked with an auxiliary deadlatch					
Non-keyed						
Single Dummy Trim (1DT) 	This is a single, surface-mounted lever for an inactive door or a non-latching door					
Double Dummy Trim (2DT) 	This is a through bolt mounted pair of matching levers for an inactive door or a non-latching door					
L-Privacy (F19) 	Rotating inside lever Rotating outside lever only when deadbolt is retracted.	Turning the emergency key, Turning inside turn lever. (Rotating inside knob/lever retracts deadbolt and latch simultaneously.)	Turning inside turn lever Turning the emergency key.	Turning inside turn lever Rotating inside lever retracts latch and dead-bolt simultaneously Turning the emergency key.	Cannot be locked	Always unlocked

BEST
dormakaba Group

E Series Mortise and Rim Cylinders
by BEST

Smart access means BEST in class

TABLE OF CONTENTS

1E Series – Features

1E Mortise Cylinder

Standard mortise applications require use of BEST's 1E series cylinders with standard 1E-C4 cam. BEST cylinders may be altered to function with other manufacturers' locks by use of different cams (see page 8) and different cylinder rings (see page 9). Special cylinder variations are available for most applications (see pages 4 & 5). BEST cylinders are machined from brass or bronze bar stock and are available in a variety of finishes. Additional security is provided by a set screw that mounts diagonally in the cylinder wall and when tightened, holds the cylinder securely in the housing. BEST mortise cylinders feature the BEST interchangeable core and may be master-keyed into any existing BEST system. Contact your local BEST sales office for information on special cylinder applications not listed in this catalog.

Cylinder Nomenclature	Dimension "A"	Door Thickness
1E-64	1-1/8"	1-5/8" to 2-1/4"
1E-74	1-1/4"	1-7/8" to 2-1/2"

Cylinder diameter: 1-5/32"
How to order example: 1E74-C4-RP3-626
Products covered by on or more of the following patents: 5,590,555 5,794,472

12E Rim Cylinder

Standard rim cylinder applications require the use of BEST's 1E rim cylinder series. BEST rim cylinders are interchangeable with other manufacturers' rim cylinders. BEST rim cylinders are machined from solid bar stock and are available in a variety of finishes. The standard package for the BEST rim cylinder includes cylinder, RP3 ring package, 1E-S2 spindle, clamp plate and clamp plate screws. BEST rim cylinders feature the BEST interchangeable core and may be masterkeyed into any existing BEST system.

Cylinder Nomenclature	Dimension "A"	Door Thickness
12E62	1-3/16"	1" to 2-3/4"
12E72	1-11/32"	1-1/4" to 3"

Cylinder diameter: 1-5/32"
How to order example: 12E72-S2-RP3-626

1E Series How To Order

1E	7	4		C4	RP3	626	**
Series	Core Housing	Function Code	Length Code	Cam or Spindle	Rings	Finish	
See p.12	0 – dummy 6 – 6-pin 7 – 7 pin housing accepts all Best cores	See p.12	(1E74 only) Blank – Standard 22 – 1-3/8" 24 – 1-1/2" up to 6" (See page 4-5)	C4 – Standard cam C181 – Adams Rite MS cam S2 – Standard spindle (For special cams see page 8)	RP – Rim cylinder RP1 – Tapered cylinder RP2 – 6 pin mortise RP3 – 7 pin mortise (For special rings see page 9)	626 690 Satin* 606 612 613 619 Bright* 605 611 625	

*Indicates extra cost ** Must specify keymark and number of keys or designate L/C for less core.

HD8000 SERIES SURFACE CLOSERS

Versatile, durable, and reliable, featuring modern styling for institutional or high-traffic commercial applications.

BEST HD8000 series, Grade 1 hydraulic surface closers are housed in corrosion-resistant aluminum with a hardened pinion/piston providing toughness and high-strength. The arm hub is made from forged steel.

Standard on the HD8000 series closers are backcheck with two adjustment valves and adjustable spring size options from 1 - 6 or 5 - 6. The HD8000 series closers are ideal for a variety of heavy-duty, as well as barrier-free applications.

HD8000—Features

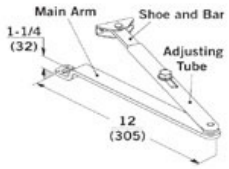
- Available with fully adjustable spring sizes 1 -6. Size 1 (5 lb opening force) meets interior barrier-free AD requirements.
- May be used on doors up to 48" wide interior (42" wide exterior) and up to 180 lb.
- Available with adjustable spring sizes of 5 -6 +50% for use on exceptionally wide, tall, or heavy doors.
- Non-handed for regular, top jamb, and parallel arm applications.
- Backcheck (BC) valve (standard) provides adjustable-intensity hydraulic cushioning, preventing uncontrolled door opening to protect door and frame during abusive or abrupt opening.
- AVB - advanced variable backcheck option maintains an effective backcheck range on parallel arm applications. Valve is accessible with the closer installed.
- Full adjustment using BC, Sweep and Latch valves standard.
- DA, AVB & AVB DA options with separate independent valve to allow for unobstructed passage through opening.
- Full plastic cover standard. Lead lined as well as full and over-sized metal and plastic covers available to assist in concealing existing holes.
- All tamper-resistant (hex key) valve adjustments.
- Standard components required for three mounting configurations (Reg., TJ, PA).
- SNDTPK - Standard fasteners include separate self-drilling and self-tapping and sex nuts for 1-3/4" thick doors and machine screws.
- A variety of specialty arm options, interchangeable across most surface closer models.
- Full complement of optional plates and brackets available for special applications

HD8000—Certification

- ANSI/BHMA A156.4 Grade 1 certified
- UL and CUL listed
- Meets UL10C for positive pressure
- Meets ANSI/BHMA A117.1 and ADA for barrier-free accessibility.

Intertek Intertek dormakaba USA quality and environmental management systems in Reamstown, PA and Indianapolis, IN are certified to ISO 9001:2015 and ISO 14001:2015.

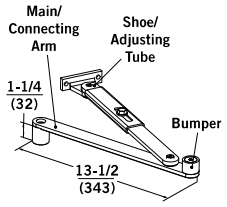
Arms



Flat Form Arm

AF80P (HD8000 only) — Parallel flat form arm complete (Tri-Pack) (0" - 4" [0 mm -102 mm] reveal). P80 included.

AF80J (HD8000 only) — Top jamp flat form arm complete (4" - 8" [102 mm to 203 mm] reveal).



Cushion IS Arm

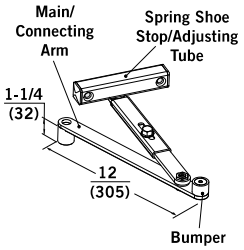
Provides a cushioned opening function for regular and top jamb applications at 85°, 90°, 95°, 100°, 105°, and 110°. Arm is non-handed.

IS — Cushion IS arm complete (0"– 3-1/2" [0 mm–89 mm] reveal).

ISJ — Cushion IS top jamb arm complete (3-1/2"–6-1/2" [89 mm–165 mm] reveal).

ISH — Cushion IS hold open arm complete (0"–3-1/2" [0–89 mm] reveal).

ISJH — Cushion IS top jamb hold open arm complete. (3-1/2"–6-1/2" [89 mm–165 mm] reveal).



Spring Stop IS Arm

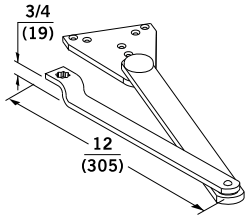
Provides a spring assisted dead stop function for regular and top jamb applications at 85°, 90°, 100°, and 110°. Arm is non-handed.

SIS — Spring stop IS arm complete (0"–3-1/2" [0 mm–89 mm] reveal).

SISH — Spring stop IS hold open arm complete (0"–3-1/2" [0 mm– 89 mm] reveal).

SISJ — Spring stop IS top jamb arm complete (3-1/2"–6-1/2" [89 mm–165 mm] reveal).

SISJH — Spring stop IS top jamb hold open arm complete (3-1/2"–6-1/2" [89 mm–165 mm] reveal).



Super Parallel Arm

Heavy-duty parallel arm. Available in non-hold open and thumb turn hold open. Units can be installed for maximum opening of 100° or 180°. Hold open units will hold open at 90° or 125°. Maximum opening is 180° (permitting). Arm is non-handed. Non-hold open arm illustrated.

SPA — Super parallel arm non-hold open.

SPA/R — Heavy duty parallel arm with LCN PA foot

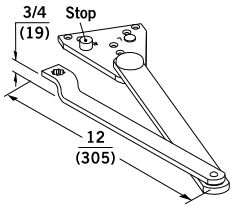
SPA/RCP — Heavy duty parallel arm with LCN PA foot & CP4040 conv. plate

SPA — Super parallel arm non-hold open.

SPAT — Super parallel arm thumb turn hold open.

SPAT/R — Heavy duty parallel arm, thumbturn hold open with LCN PA foot

SPAT/RCP — Heavy duty parallel arm, thumbturn hold open with LCN PA foot & CP4040 conv. plate



Door Saver Arm

Heavy-duty parallel arm with integral cushioned opening function. Available in non-hold open, thumb turn hold open, and hex key turn hold open. Units can be installed to achieve either stop or stop and hold open at 85°, 90°, 100°, and 110°. Maximum opening is 110° (conditions permitting). Arm is non-handed. Non-hold open arm illustrated.

DS — Door saver arm non-hold open.

DS/R — Heavy duty parallel arm, stop with LCN PA foot

DS/RCP — Heavy duty parallel arm, stop with LCN PA foot & CP4040 conv. plate

DST — Door saver arm thumb turn hold open.

DST/R — Heavy duty parallel arm, hold open, stop with LCN PA foot

DST/RCP — Heavy duty parallel arm, hold open, stop with LCN PA foot & CP4040 conv. plate

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BURNHAMTHORPE PS ELEV & ACCESSIBLE WR
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MISSISSAUGA

Submittal Date: May 15/26, JUNE 1/26

BEST
dormakaba Group

BEST Technical Catalog

HD7000

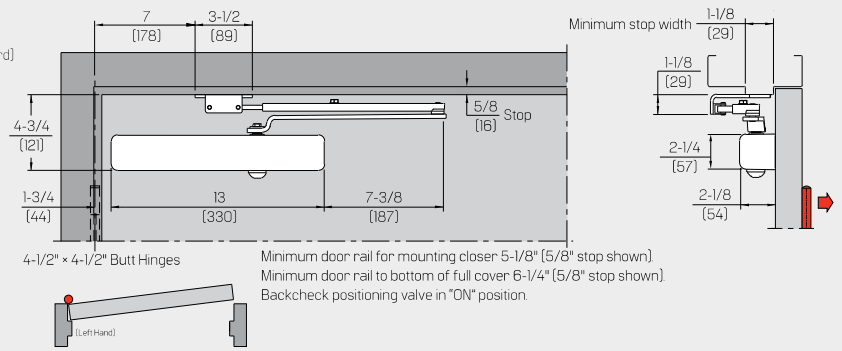
Surface Door Closers

BEST: Setting the Standard for Security

Parallel Arm × Round Form Arm

Technical Drawings

HD7016 ARP
HD7016 A08P
(Round Form Arm)
(P70 bracket furnished standard)



Minimum door rail for mounting closer 5-1/8" (5/8" stop shown).
Minimum door rail to bottom of full cover 6-1/4" (5/8" stop shown).
Backcheck positioning valve in "ON" position.

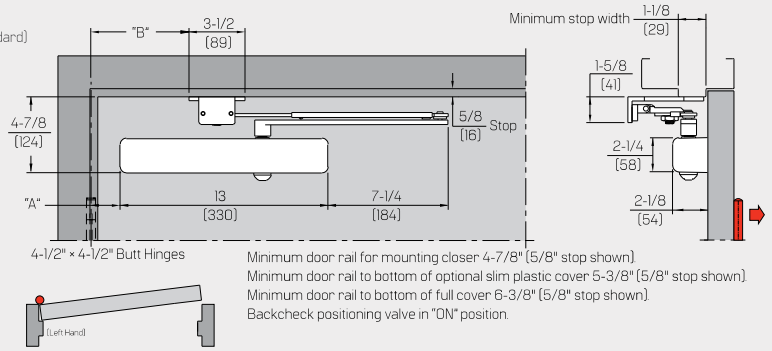
Size Selection Chart

Interior/ Exterior	Door Width				
	2'-0" min.	2'-6" max.	3'-0" max.	3'-6" max.	4'-0" max.
Interior	·	·	♿	·	·
Exterior	·	·	·	·	N/A

Maximum Opening	Approximate Backcheck	Approximate Delayed Action	Minimum Door Width
180°	60–180°	180°–75°	24"

Parallel Arm × Friction Hold Open

HD7016 FHP
(PHB bracket furnished standard)



Minimum door rail for mounting closer 4-7/8" (5/8" stop shown).
Minimum door rail to bottom of optional slim plastic cover 5-3/8" (5/8" stop shown).
Minimum door rail to bottom of full cover 6-3/8" (5/8" stop shown).
Backcheck positioning valve in "ON" position.

Size Selection Chart

Interior/ Exterior	Door Width				
	2'-0" min.	2'-6" max.	3'-0" max.	3'-6" max.	4'-0" max.
Interior	·	·	♿	·	·
Exterior	·	·	·	·	N/A

Template Ref.	Dim "A"	Dim "B"	Approx. Maximum Opening	Approx. Backcheck	Approx. Delayed Action	Min. Hold Open	Max. Hold Open	Min. Door Width
To 100°	3-5/8" (92)	9" (228)	110°	65°–110°	110°–80°	45°	105°	29"
Over 100°	1-1/8" (29)	6-1/2" (165)	180°	80°–180°	180°–95°	45°	175°	24"

5 Knuckle Full Mortise Hinges

Heavy Weight Ball Bearing

FBB168 – (ANSI A8111) Steel – polished and plated or phosphated and prime coated for painting

FBB199 – (ANSI A2111) Brass or bronze – polished and plated or painted

FBB199 (32) – (ANSI A5111) Stainless steel – highly polished

FBB199 (32D) – (ANSI A5111) Stainless steel – satin finish

- For use on heavy doors or doors where high frequency is expected such as entrance doors to office buildings, stores, public buildings and corridor entrance doors to offices
- All hinges have template screw hole location for use on either wood or hollow metal doors and frames
- Equipped with four Stanley permanently lubricated non-detachable ball bearings
- Pins in non-ferrous hinges are stainless steel
- Hole in bottom tip for easy pin removal
- Reversible flush tips and pins
- Hinges can be furnished as follows:
  - with raised barrel (RB)
  - with electric wires and/or switches (CE and/or CS)
  - with hospital tips (HT)
  - with decorative tips
  - with security studs
  - with non-removable pins (NRP)

Size Open		Gauge of Metal		Flat Head Screws Per Piece		Quantity Per Box	Quantity Per Case	Case Weight Bronze		Case Weight Steel	
Inches	(mm)	Inches	(mm)	Machine	Wood	Each	Each	Lbs.	(Kg)	Lbs.	(Kg)
4-1/2 x 4-1/2	[114 x 114]	.180	[4.6]	8 - 12-24 x 1/2	8 - 12 x 1-1/4	3	30	45	[21]	42	[19]
5 x 4-1/2	[127 x 114]	.190	[4.8]	8 - 12-24 x 1/2	8 - 12 x 1-1/2	3	24	46	[21]	40	[18]
5 x 5	[127 x 127]	.190	[4.8]	8 - 12-24 x 1/2	8 - 12 x 1-1/2	3	24	50	[23]	46	[21]
6 x 4-1/2	[152 x 114]	.203	[5.2]	10 - 1/4 -20 x 1/2	10 - 14 x 1-1/2	3	24	63	[29]	53	[24]
6 x 5	[152 x 127]	.203	[5.2]	10 - 1/4 -20 x 1/2	10 - 14 x 1-1 /2	3	24	65	[30]	55	[25]
6 x 6	[152 x 152]	.203	[5.2]	10 - 1/4 -20 x 1/2	10 - 14 x 1-1/2	3	24	76	[35]	64	[29]
8 x 6*	[203 x 152]	.203	[5.2]	16 - 1/4 -20 x 1/2	16 - 14 x 1-1/2	3	12	57	[26]	51	[23]
8 x 8*	[203 x 203]	.203	[5.2]	16 - 1/4 -20 x 1/2	16 - 14 x 1-1/2	3	12	68	[31]	61	[28]

* Available in Steel only
Consult factory for other sizes not listed

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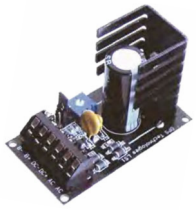
Submittal Date: May 15/26, JUNE 1/26

CX-PS13 V3: VARIABLE OUTPUT LINEAR POWER SUPPLY

*The low cost **CX-PS13** linear power supply is designed to provide regulated low voltage power for electrified locks, MProx™ card access systems, washroom control packages and other electronic devices. A 120 VAC transformer with a 6 to 26 VAC output is required. Recommended for use with electric strikes.*



Features

- Low cost linear power supply
- Compact board-only design
- Input voltage: 6 - 26 VAC, depending on output voltage selected
- Self-resetting smart fuse protection
- Input voltage transformer required. See manual for specification
- 3 year warranty

Specifications

Voltage:	6-26 VAC
Output Voltage:	6,12, 24 VDC Selectable or 2-24 VDC if ADJ is selected
Output Protection:	PPTC Resettable Fuse
Output Power:	800mA, 200mA Charging Current
Ripple:	<40mV
Efficiency:	12 VDC = 85% , 24 VDC = 90%
Dimensions:	2-3/4"H x 1-1/2"W x 1-3/4"D (69mm x 38mm x 46mm)

MODEL

CX-PS13V3	Variable Output Linear Power Supply

TRANSFORMERS AND RECTIFIERS

*Camden offers a range of 12 VAC to 24 VAC standard, plug-in and panel (nipple) mount transformers to support any low voltage system application. The **CX-5024** rectifier is used to convert AC power for use with DC powered devices.*

Features

- AC and DC models
- Standard mount & plug-in models
- Fused model for additional circuit protection

MODELS

Panel (Nipple) Mount	
CX-TRN-2024*°	24 VAC, 20VA panel (nipple) mount transformer
Standard Mount	
CX-TRX-2012*°	12 VAC, 20VA standard mount transformer
CX-TRX-4024*°	24 VAC, 40VA standard mount transformer
CX-TRX-5024°^	24 VAC, 50VA standard mount transformer
Fused Standard Mount	
CX-TRX-2024*°	24 VAC, 20VA, fused, standard mount transformer
Plug-in	
CX-TRP-4016°	16 VAC, 40VA plug-in transformer
Rectifier	
CX-5024	Rectifier (AC-DC) 50 VA
CX-TRK-2450	24 VAC, 40VA standard mount transformer and AC to DC Rectifier

Specifications

Input Voltage:	120 VAC 60H
Output Voltage:	12-24 VAC

CX-TRX-2012

CX-TRN-2024

CX-TRX-5024

CX-TRP-4016

Dimensions:

CX-TRN-2024:
2"H x 2-3/8"W x 2-1/4"D
(51mm x 60mm x 57mm)

CX-TRX-2012:
3"H x 2"W x 2-1/8"D
(76mm x 51mm x 54mm)

CX-TRX-4024:
2"H x 2-3/8"W x 2-1/2"D
(51mm x 60mm x 64mm)

CX-TRX-5024:
2-1/8"H x 3-1/8"W x 2-5/16"D
(54mm x 80mm x 60mm)

CX-TRX-2024:
2"H x 2-3/8"W x 2-1/2"D
(51mm x 60mm x 64mm)

CX-TRP-4016:
3-1/2"H x 2-1/2"W x 2-1/8"D
(89mm x 64mm x 54mm)

CX-5024:
1"H x 3/4"W x 1/4"D
(25mm x 19mm x 6mm)

CM-160 / 170 / 180 SERIES: KEY SWITCHES

***Key switches** for automatic doors are designed for mounting on the door operator cabinet or door frame, and are available in a range of 2 or 3 position momentary or maintained models. The key cylinder and 2 keys are included.*

Features

- Black lamacoid (plastic) or stainless steel faceplates
- Key removable in all maintained positions
- 2, 3, 4 position maintained and 2 position momentary models
- All switches are keyed alike

MODELS

CM-160	Key switch with plastic lamacoid (mini) faceplate
CM-170	Key switch with stainless steel (narrow stile) faceplate
CM-180	Key switch with stainless steel (single gang) faceplate

OPTIONS (Add suffix to model above)

Faceplate Graphics

MOMENTARY	MAINTAINED	MAINTAINED	MAINTAINED	MAINTAINED
OFF / OPEN	OFF / AUTO	OFF / AUTO / HOLD OPEN	OFF / DAY / NIGHT	EXIT / AUTO / OFF / HOLD OPEN
CX-xx/20	*CX-xx/21*	*CX-xx/22*	*CX-xx/23*	*CX-xx/24*

Extra Keys

CM-A126	(2) Extra keys for CM-160, 170 and 180 series key switches

Listed Components

CM-160/23

CM-170/21

CM-180/23

Specifications

Voltage:	12/24 VDC
Contact Rating:	4A @ 28 VDC
Switch Life:	100,000 cycles
Dimensions:	**CM-160:** 3"H x 1-11/16"W x 1-3/8"D (76mm x 42mm x 35mm) **CM-170:** 4-1/2"H x 1-3/4"W x 1-3/8"D (114mm x 44mm x 35mm) **CM-180:** 4-1/2"H x 2-3/4" W x 1-3/8" D (114mm x 70mm x 35mm)

CM-190 SERIES: TOGGLE SWITCH

***CM-190 Series** maintained toggle switches are designed to control automatic door operators, featuring a choice of faceplates, for mounting on the operator cabinet/wall.*

Features

- Mini metal faceplate designed to install on door operator cabinet or door frame
- 2 or 3 position maintained operation
- Single gang faceplate for mounting on standard electrical box
- Heavy duty 6 Amp. contacts

MODELS

CM-190	Mini aluminum faceplate
CM-195	Single gang stainless steel faceplate

OPTIONS (Add suffix to model above)

Faceplate Graphics

ON / OFF	*CX-xx/30*
AUTOMATIC / OFF / OFF / HOLD OPEN	*CX-xx/31*

Listed Components

CM-190/30

CM-195/31

Specifications

Voltage:	12/24 VDC
Contact Rating:	6A @ 30 VDC
Switch Life:	50,000 cycles
Temp Range:	-4°F - 185°F (-20°C - 85°C)
Dimensions:	**CM-190:** 2-5/8" H x 1-1/2" W x 2"D (59mm x 38mm x 51mm) **CM-195:** 4-1/2" H x 2-3/4" W x 2"D (114mm x 70mm x 51mm)

CX-33: ADVANCED LOGIC RELAY

CX-33 is a 'state of the art' door controller designed for 'universal' operation in automatic door and application security. This compact unit is small enough to fit inside most door operator cases. It provides a large 3 segment LED and simple push buttons for the easiest programming, and supports illuminated signage in restroom applications. It also leads the market with a range of exclusive operating features, including time duration in airlock applications and protection of automatic door operators when utilizing magnetic locks.

Features

- 15 operating modes with sub-modes
- Easily sequence multiple inputs with multiple maintain and hold outputs
- New V3.2 Features Include:
  - Lock down mode
  - Delayed relay activation
  - Selectable N.O or N.C. inputs
- Large 3 segment (blue) LED display
- Outstanding power filtering and surge protection
- Selectable time delays with delay on input activation
- Larger terminal strips
- 12V to 24V AC/DC
- 3 year warranty

MODEL	
CX-33	Advanced Logic Relay

Specifications

Voltage:	12V to 24V AC/DC
Current Draw:	105mA Typical, 320mA Max
Response Time:	0.5 Seconds
Display:	Blue Multi-Segment LED
Input:	4 x Dry 1 x Wet: min. 5V AC/DC N/O or N/C Selectable
Output:	3 x Form C (SPDT)
Contact Rating:	3A @ 30 VDC
Temp Range:	-22°F to +185°F (-30°C to +85°C)
Time Delay:	Hold 1 timer: 0-50 Seconds Delay 1 Timer: 0-15 Seconds Hold 2 timer: 0-50 Seconds Delay 2 timer: 0-60 Seconds Hold 3 Timer: 0-50 Seconds Delay on Activate: 0-10 Seconds
Dimensions:	2"H x 6"W x 7/8"D (51mm x 152mm x 22mm)

CX-33PS: ADVANCED LOGIC RELAY, POWER SUPPLY AND CABINET

*The industry leading **CX-33** Advanced Logic Relay is available in a metal cabinet that centralizes all door and security control system components; a 12/24 VDC power supply module, and color coded termination blocks for quick and easy installation.*

Features

- Rugged and compact metal cabinet
- Pre-wired with large terminal block for easy access
- Removable door with option for cabinet lock
- Five convenient conduit knockouts; one per side
- 12/24V DC power supply, 2 Amp. (UL listed)
- Available as part of Camden Restroom Control Kits (See pages 36-37)
- Short circuit and thermal overload protection
- 3 year warranty

MODEL	
CX-33PS	Advanced Logic Relay, 2 Amp Power Supply, Cabinet and Transformer
Option	
'L'	Add suffix '**L**' to model number for Cabinet Lock

Specifications

Voltage:	12V to 28V AC/DC
Output:	12V or 24 VDC
Current:	2 Amps
Temp Range:	32°F to +120°F (0°C to +49°C)
Dimensions:	11-1/16" H x 7-7/8"W x 2-13/16"D 281mm x 200mm x 72mm)

CDH

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MISSISSAUGA

Submittal Date: May 15/26, JUNE 1/26

CX-PS13 V3: VARIABLE OUTPUT LINEAR POWER SUPPLY

*The low cost **CX-PS13** linear power supply is designed to provide regulated low voltage power for electrified locks, MProx™ card access systems, washroom control packages and other electronic devices. A 120 VAC transformer with a 6 to 26 VAC output is required. Recommended for use with electric strikes.*

Features

- Low cost linear power supply
- Compact board-only design
- Input voltage: 6 - 26 VAC, depending on output voltage selected
- Self-resetting smart fuse protection
- Input voltage transformer required. See manual for specification
- 3 year warranty

Specifications

Voltage:	6-26 VAC
Output Voltage:	6,12, 24 VDC Selectable or 2-24 VDC if ADJ is selected
Output Protection:	PPTC Resettable Fuse
Output Power:	800mA, 200mA Charging Current
Ripple:	<40mV
Efficiency:	12 VDC = 85% , 24 VDC = 90%
Dimensions:	2-3/4"H x 1-1/2"W x 1-3/4"D (69mm x 38mm x 46mm)

MODEL

CX-PS13V3	Variable Output Linear Power Supply

TRANSFORMERS AND RECTIFIERS

*Camden offers a range of 12 VAC to 24 VAC standard, plug-in and panel (nipple) mount transformers to support any low voltage system application. The **CX-5024** rectifier is used to convert AC power for use with DC powered devices.*

Features

- AC and DC models
- Standard and panel mount models
- Fused model for additional circuit protection

MODELS

Panel (Nipple) Mount	
CX-TRN-2024*°	24 VAC, 20VA panel (nipple) mount transformer
Standard Mount	
CX-TRX-2012*°	12 VAC, 20VA standard mount transformer
CX-TRX-4024*°	24 VAC, 40VA standard mount transformer
CX-TRX-5024°^	24 VAC, 50VA standard mount transformer
Fused Standard Mount	
CX-TRX-2024*°	24 VAC, 20VA, fused, standard mount transformer
Rectifier	
CX-5024	Rectifier (AC/DC) 50 VA
CX-TRK-2450	24 VAC, 40VA standard mount transformer and AC to DC Rectifier

Specifications

Input Voltage: 120 VAC 60 MHz.
Output Voltage: 12 / 24 VAC

Dimensions:

CX-TRN-2024:
2"H x 2-3/8"W x 2-1/4"D (51mm x 60mm x 57mm)

CX-TRX-2012:
3"H x 2"W x 2-1/8"D (76mm x 51mm x 54mm)

CX-TRX-4024:
2"H x 2-3/8"W x 2-1/2"D (51mm x 60mm x 64mm)

CX-TRX-5024:
2-1/8"H x 3-1/8"W x 2-5/16"D (54mm x 80mm x 60mm)

CX-TRX-2024:
2"H x 2-3/8"W x 2-1/2"D (51mm x 60mm x 64mm)

CX-5024:
1"H x 3/4"W x 1/4"D (25mm x 19mm x 6mm)


CX-TRN-2024


CX-TRX-2012


CX-TRX-5024


CX-5024

ACTIVE INFRARED HANDS-FREE SWITCHES

RoHS COMPLIANT

ADA Compliant

SureWave™ *touchless switches include exclusive features, including an extended range (up to 6 ft.), the option for wireless or hybrid wireless / wired operation and 'short range' activation designed to reduce false activation from highly reflective surfaces! CM-333 and CM-336 models are supplied with (2) 'AA' alkaline batteries.*

Outdoor Applications: *Lithium batteries recommended for environments below 32°F (0°C). Rain Hood recommended when installed with direct exposure to rain or snow.*

Hands-Free Features	
• A wide range of wired, wireless and battery powered models • Adjustable operating range 1" - 6 ft. • Adjustable time delay • Super-fast activation response	• Heavy duty relays, for use with all automatic operators and electrified locks • Narrow, single or double gang faceplates, stainless steel or polycarbonate

NOTE: See page 64 for faceplate, graphic and light ring options

Specifications - All Models

Technology:	Active Infrared with Micro Burst
Temp Range:	-4°F to 153°F (-20°C to +85°C)
Security:	Fail Secure or Fail Safe

CM-331: WIRED, 1 RELAY

Features	
• Standard Operating range, 1"- 28" • Extended Range up to 6 ft. • Adjustable time delay 1 - 30 seconds • (5) Selectable operating modes	• Inputs for REX and door contact • Option for light ring (stainless steel faceplates only) • Option for plug-in wireless transmitter

MODEL	
CM-331	Hands-free switch, wired, with 1 relay

NOTE: See page 64 for faceplate, graphic and light ring options

Specifications

Sensors: (2)	Voltage: 12/24V AC/DC
Current Draw:	40mA
Relay Outputs:	(1) Form 'C', 3A @ 30 VDC
Active Output:	9-12V
Inputs:	REX and Door Contact
Operating Modes:	Momentary, Momentary with Alarm, Maintained, Toggle, Extended Range

CM-332: WIRED, 2 RELAY

Features	
• Advanced switch with Door Control Functions • Standard operating range, 1" - 28" • Extended Range up to 6 ft. • Adjustable time delay 1 - 30 seconds	• (7) Selectable operating modes • Inputs for REX and door contact • Option for light ring (stainless steel faceplates only) • Option for plug-in wireless transmitter

MODEL	
CM-332	Hands-free switch, wired, with 2 relays

NOTE: See page 64 for faceplate, graphic and light ring options

Specifications

Sensors: (2)	Voltage: 12/24V AC/DC
Current Draw:	40 mA
Relay Outputs:	(2) Form 'C', 3A @ 30 VDC
Active Output:	9-12V
Inputs:	REX and Door Contact
Operating Modes:	Momentary, Momentary with Alarm, Maintained, Toggle, Security, Extended Range, and Sequence

CM-325: 'SHORT RANGE' MODEL

Features	
• Designed to eliminate false activations from highly reflective surfaces, commonly found in healthcare applications • Adjustable time delay 1 - 5 seconds	• Operating range : - 2" (51mm) minimum (Hand) - 12" (304mm) maximum (Hand) - 18" (457mm) maximum (Mirror)

MODEL	
CM-325	'Short Range' Hands-free switch, wired, with 1 relay. No option for light ring.

Specifications

Sensors: (1)	Voltage: 12/24V AC/DC
Current Draw:	60mA
Relay Outputs:	(1) Form 'C', 5A @ 30 VDC
Operating Modes:	Momentary

ALL HANDS-FREE SWITCH MODEL OPTIONS

OPTIONS	
NOTE: Unless specified, single gang polycarbonate faceplate will be supplied.	
Faceplate Material	
CM-xx/S	Single Gang Stainless Steel Faceplate. 2-3/4 W" x 4-1/4 H"
Faceplate Size Options - No Illumination	
CM-xx/N	Narrow Faceplate. Rubber gasket supplied. CM-324, 325, 331 & 332 Series narrow switches are compatible with CM-23D narrow jamb surface box. CM-336 Series narrow switches and CM-331, 332 & 336 Series narrow switches with optional CM-TX-99 plug-in wireless transmitter require CM-23DSER 1-7/8" deep surface box. 1-3/4 W" x 4-1/2 H"
CM-xx/W	Double Gang Faceplate. Rubber gasket supplied for weather/water resistant applications. Compatible surface mounting box CM-43CBLA. 4-1/2 W" x 4-1/2 H"
CM-xx/R	6" Round Stainless Steel Faceplate. Mounts on single gang in-wall box, CM-69SER surface round box or CM-79A semi-flush escutcheon. Not water resistant
Light Ring	
CM-xx-SGLR	Red / Green / Blue selectable. Supplied with stainless steel faceplate. Light ring option not available on battery powered SureWave™ (Only for CM-331 & CM-332)
Lithium Batteries	
CX-xxL1 CM-LP1	Add suffix 'L1' for (2) 'AA' Lithium Batteries in place of (2) Alkaline 'AA' lithium battery, pack of (2)
Wireless Options	
CM-TX-99	915MHz. plug-in transmitter for CM-331 & 332 series switches
CM-RX-90	Advanced, Compact Single Relay Receiver

Single Gang Stainless Steel
(CM-xx/S)

Polycarbonate Single Gang
(standard option)

Narrow
(CM-xx/N)

Double Gang
(CM-xx/W)

6" Round
(CM-xx/R)

Single Gang Faceplate & Light Ring
(SGLR)

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Submittal Date: May 15/26, JUNE 1/26

FACEPLATE GRAPHIC OPTIONS (Add suffix to model above)

CM-xx/40 *CM-xx/41* *CM-xx/42* *CM-xx/43* *CM-xx/44*

NOTE: FE Bilingual options available for stainless steel faceplates only

Configured SureWave™ Switch Model Numbers (Sequence of Options / Characters)

CM-331/41SW-SGLR-SB

- SB — Optional Architectural Finish (SS only)
- LR — Optional Light Ring
- G — Optional Narrow, Double Gang or 6Ó Round
- S — Optional Stainless Steel
- 41 — Graphic Option (Required)
- 331 — Base Model (Required)

MOUNTING BOXES

COMPATIBLE SUREWAVE™ MOUNTING BOXES	
CM-23D	Narrow (Jamb) width surface box, ABS, 1-3/4"W x 4-1/2"H x 1-1/2"D. Not compatible with CM-333 or CM-336 SureWave™ battery powered touchless switches
CM-23DSER	Narrow (Jamb) width surface mount box with 3/8" extension ring, ABS, 1-3/4"W x 4-5/8"H x 2-1/16"D. For use with CM-333 & CM-336 SureWave™ switches
CM-34BL	Single gang surface box, ABS, 2-3/4"W x 4-1/2"H x 1-3/4"D
CM-43CBLA	Double gang surface mounting box, ABS, 4-1/2"W x 4-1/2"H x 2"D
CM-69SER	6" round surface box, ABS, 6-1/2"W x 2-5/8"D
CM-79AK	6" round semi-flush escutcheon, mounts to existing in-wall single/double gang or 4x4 boxes
CM-RH-SG	Stainless steel, single gang rain hood
CM-RH-DG	Stainless steel, double gang rain hood
SUREWAVE™ / VALUEWAVE™ SURFACE MOUNTING BOX CONVERSION KITS	
CM-54i-ADP1	Aura™ CM-54i or CM-55i box conversion to accept SureWave™ double gang switch
CM-43CBL-ADP1	CM-43CBL box conversion to accept SureWave™ double gang switch
CM-43CBL-ADP2	CM-43CBL box conversion to accept ValueWave™ double gang switch
CM-43LP-ADP1	CM-43LP box conversion to accept ValueWave™ double gang switch

CM-23D *CM-23DSER* *CM-34BL* *CM-43CBLA* *CM-79AK* *CM-69SER* *CM-RH-SG* *CM-RH-DG*

CM-54, CM-55 & CM-57 SERIES: ILLUMINATED PUSH PLATE ENCLOSURES & SWITCH KITS

UL Listed Components | ADA Compliant | RoHS COMPLIANT

*Aura™ **CM-54** (surface square) **CM-55** (flush square) and **CM-57** (flush round) illuminated push plate enclosures and switch kits provide high visibility and enhanced user convenience in ADA compliant automatic door and other applications.*

***Features include:** selection of backlight color activation, an audible sounder that confirms switch activation, and Form 'C' contacts used to switch your device.*

Aura™ illuminated mounting boxes are compatible with the widest range of 4-1/2" all-active push plate switches in the industry. Options include a complete selection of stock and custom graphic designs, architectural finishes (including polished brass and bronze) and water tight models.

CM-45/454

CM-45/455

CM-40/457

Features

- Illuminated surface and flush mount box compatible with any CM-40, CM-45 or CM-46 'All Active' push plate switch
- High efficiency LED technology
- Improves switch visibility, even in daylight
- Flame and impact resistant polycarbonate construction
- Selectable 12/24V, AC/DC

AURA™ ILLUMINATED ENCLOSURES	
CM-54i	Surface, 4-1/2" Square, Aura™ illuminated. Red, Green, Blue
CM-55i	Flush, 4-1/2" Square, Aura™ illuminated. Red, Green, Blue
CM-57GR	Flush, 4-1/2" Round (Illuminated Red/Green)
AURA™ ILLUMINATED SWITCH KITS - SURFACE MOUNT	
CM-45/x54	4-1/2" Square push plate (concealed screws)
CM-46/x54	4-1/2" Square push plate (exposed screws)
AURA™ ILLUMINATED SWITCH KITS - FLUSH MOUNT	
CM-40/x57	4-1/2" Round push plate
CM-45/x55	4-1/2" Square push plate
CM-46/x55	4-1/2" Square push plate

NOTES:

- DPDT Contacts: CM-40, CM-45 or CM-46 'DP' option cannot be used with Aura™ illuminated enclosures

- See Page 75 for faceplate graphic options and suffix to replace "x" in above models

Specifications

Voltage:	12/24V AC/DC
Current Draw:	130 mA. max.
Lumina:	**Red:** 5760 MCD **Green:** 3780 MCD
Contact Type:	1 Form 'C'
Contact Rating:	3A @ 24V AC/DC
Sounder:	85 DB @ 10cm
Dimensions:	**CM-54:** 5-1/4"H x 5-1/4"W x 2-1/8"D (133mm x 133mm x 54mm) **CM-55:** 6-1/2"H x 6-1/2"W x 2"D (165mm x 165mm x 51mm) **CM-57:** 6-5/8" Dia. x 2"D (168mm x 51mm)

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Submittal Date: May 15/26, JUNE 1/26

CM-1200 / CM-2200 SERIES: FLUSH MOUNT KEY SWITCHES - STAINLESS STEEL FACEPLATE

RoHS COMPLIANT UL Listed Components

*'Camden Tough' **stainless steel key switches** are available in narrow and single gang widths. The preassembled switch mounting bracket is designed to minimize installation time. They accept virtually any 1" - 1-1/4" mortise cylinder (sold separately) and cam.*

CM-1200

CM-2200

(Mortise cylinders sold separately)

Features

- Heavy duty stainless steel faceplate
- Complete range of 1 and 2 switch SPST, SPDT and DPDT models, momentary and maintained, left and/or right operation
- Locators prevent cylinders from spinning
- Accepts standard mortise cylinders, 1" - 1-1/4"
- Tamper proof screws and driver supplied
- Indoor or outdoor applications
- 3 year warranty

Note: See page 100 for LED and faceplate graphic options

SINGLE GANG KEY SWITCHES	
CM-1200	Flush mount key switch, SPST Momentary, N/O
CM-1205	Flush mount key switch, SPST Momentary, N/C
CM-1210	Flush mount key switch, SPST Maintained
CM-1220	Flush mount key switch, SPDT N.O. & N.C. Momentary
CM-1230	Flush mount key switch, SPDT N.O. & N.C. Maintained
CM-1250	Flush mount key switch, (2) SPDT Momentary
CM-1260	Flush mount key switch, (2) SPDT Maintained
CM-1270	Flush mount key switch, SPDT Momentary and SPDT Maintained
CM-1280	Flush mount key switch, DPDT Momentary
CM-1282	Flush mount key switch, (2) DPDT Momentary
CM-1290	Flush mount key switch, DPDT Maintained
CM-1292	Flush mount key switch, (2) DPDT Maintained
NARROW KEY SWITCHES	
CM-2200	Flush mount key switch, SPST Momentary, N/O
CM-2205	Flush mount key switch, SPST Momentary, N/C
CM-2210	Flush mount key switch, SPST Maintained
CM-2220	Flush mount key switch, SPDT Momentary
CM-2230	Flush mount key switch, SPDT Maintained
CM-2250	Flush mount key switch, (2) SPDT Momentary
CM-2260	Flush mount key switch, (2) SPDT Maintained
CM-2270	Flush mount key switch, SPDT Momentary and SPDT Maintained
CM-2280	Flush mount key switch, DPDT Momentary
CM-2282	Flush mount key switch, (2) DPDT Momentary
CM-2290	Flush mount key switch, DPDT Maintained
CM-2292	Flush mount key switch, (2) DPDT Maintained

Specifications

Contact Rating:	6A @ 30 VDC
Switch Life:	100,000 cycles
Temp Range:	32°F - 85°F (0°C to +30°C)
Std. Finish:	US32 / C32D
Dimensions:	**CM-1200 Series:** 4-1/2"H x 2-3/4"W x 1-5/8"D (114mm x 70mm x 41mm)
	CM-2200 Series: 4-1/2"H x 1-3/4"W x 1-5/8"D (114mm x 44mm x 41mm)

CX-WEC: EMERGENCY CALL SYSTEM CONTROL KITS FOR UNIVERSAL & RESTROOM APPLICATIONS

CX-WEC Series equipment packages are designed to provide a complete solution that includes assistance request and notification that meets the latest OBC building code requirements. CX-WEC Series Emergency Call System kits are available with white only or red/green/blue/white multi-color dome lights with sounder, and with system reset that support the use of momentary 'PRESS FOR ASSISTANCE' switches.

CX-WEC10: Universal Emergency Call System Kit

(1) **CM-450R/12** Mushroom push button, single gang, stainless steel faceplate, push/pull, 'PRESS FOR EMERGENCY ASSISTANCE'

(1) **CM-AF501SO** Single gang LED annunciator with adjustable sounder 'ASSISTANCE REQUESTED'

(1) **CM-AF141SO** Single gang LED dome light with adjustable sounder

(1) **CM-SE21** White panel sign, 12.5" x 8.5" (317.5mm x 216mm)

Add suffix 'F' for French, 'FE' for French/English, 'SP' for Spanish

CX-WEC10K2: Universal Emergency Call System Kit

(1) **CM-AF540SO** Double gang, push/pull mushroom push button, red, 'Assistance Required', with LED annunciator & adjustable sounder, 'Assistance Requested'

(1) **CM-AF141SO** Single gang LED dome light with adjustable sounder

(1) **CM-SE21** White panel sign, 12.5" x 8.5" (317.5mm x 216mm)

Add suffix 'F' for French, 'FE' for French/English, 'SP' for Spanish

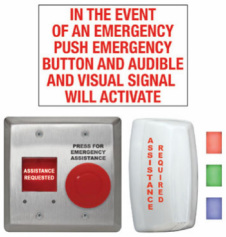
CX-WEC10BK2: Universal Emergency Call System Kit with Multi-Color LED Dome Light

(1) **CM-AF540SO** 'PRESS FOR EMERGENCY ASSISTANCE' maintained mushroom push button & 'ASSISTANCE REQUESTED' LED annunciator with adjustable sounder

(1) **CM-SE21** White panel sign, 12.5" x 8.5" (317.5mm x 216mm)

(1) **CM-AF142SO** Single gang multi-volor LED dome light with adjustable sounder and flashing LED

Add suffix 'F' for French, 'FE' for French/English, 'SP' for Spanish



CX-WEC10CK2: Emergency Call System Kit 2 Door Restrooms Multi-Color Dome Light

(1) **CM-AF540SO** 'PRESS FOR EMERGENCY ASSISTANCE' maintained mushroom push button & 'ASSISTANCE REQUESTED' LED annunciator with adjustable sounder

(2) **CM-AF142SO** Single gang multi-color LED dome light with adjustable sounder and flashing LED

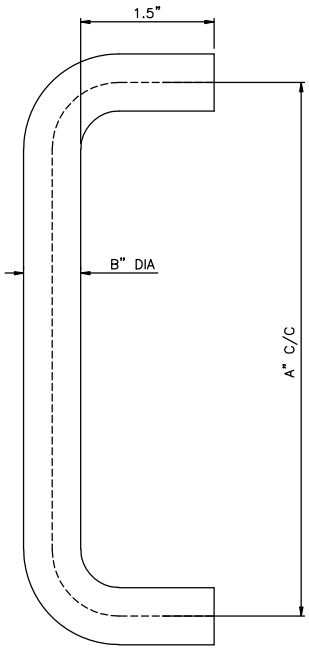
(1) **CM-SE21** White panel sign, 12.5" x 8.5" (317.5mm x 216mm)

Add suffix 'F' for French, 'FE' for French/English, 'SP' for Spanish

GSH 4007 7"-4009 9"-4012 12" (1, 2, 3 OR 4)

Gallery™
specialty hardware ltd.

GallerySpecialty.com
1.800.267.1236



- Wrought Brass, Bronze, Aluminum and Stainless Steel
- Fasteners for 1 3/4" Door provided
- C3, C4, C9, C10, C10B, C14, C15, C26, C26D, C28 and C32D
- 1=3/4" DIA
- 2=1" DIA
- 3=1-1/4" DIA
- 4=1-1/2" DIA

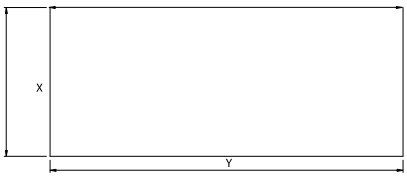
676 Petrolia Road, Toronto, ON, Canada M3J 2V2
Tel: 416.667.9593 Fax: 416.667.0806
Email: info@galleryspecialty.com

GSH 80 KICK PLATE

Gallery™
specialty hardware ltd.

GallerySpecialty.com
1.800.267.1236

- Base Metal: Brass, Bronze, Aluminum and stainless steel (Type 304).
- Screw Mounting with Beveled Edges supplied standard
- Finishes: All Standard
- Tape Mounting available
  GSH80 = 20ga
  GSH80A = 18ga
  GSH80B = .062ga
  GSH80C = .125ga



676 Petrolia Road, Toronto, ON, Canada M3J 2V2
Tel: 416.667.9593 Fax: 416.667.0806
Email: info@galleryspecialty.com

All product specifications are subject to change. For the most updated product features, contact our customer service department Toll Free at 1.800.267.1236

MADE TO ORDER P.O.A.

1006 Series Electric Strike

Works with all cylindrical and mortise locksets with or without a deadbolt

Also available in Complete One Box Solution

The strongest, most versatile electric strike available.

The HES 1006 series is the strongest and most versatile electric strike available. The dual interlocking plunger design and heavy duty stainless steel construction, enables it to exceed every standard developed for electric strikes. With multiple faceplate options, the 1006 will fully accommodate every lock designed to work within an ANSI 4-7/8" strike plate. Tested to exceed 3,000 lbs. of static strength, 350 ft-lbs. of dynamic strength and factory tested to exceed 1,000,000 cycles of operation, the 1006 is in a class of its own.

Features

- Stainless steel construction
- Tamper resistant
- Static strength 2,500 lbs. (fail secure)
- Dynamic strength 350 ft-lbs. (fail secure)
- Endurance 1,000,000 cycles
- Fail secure (standard)
- Non-handed
- Accommodates up to 1" [25.4mm] deadbolt
- Plug-in connector
- Full keeper shims for horizontal adjustment
- Trim enhancer
- Strike body depth 1-11/16" [43mm]
- SecuriCare five-year, no-fault, no questions asked warranty (Addition of SMART Pac® III extends the warranty to 10 years)

Options

- LBM - Latchbolt monitor
- LBSM - Latchbolt strike monitor
- Fail Safe
- Interchangeable faceplates
- Monitor switch may not work with all faceplate options

Accessories

- **157** Torx® screws
- **1000-102** Rain guard
- **1006-103** Full Keeper Shims
- **1000-104** Lip Extension Trim Adapter
- **1006-105** Trim Enhancer
- **1000-110** Replacement Strike Plate
- **1000-130** KD Filler Plate
- **150** Strike Latch Guard
- **HESCUT-MTK** Metal Template Kit
- **2005M3** SMART Pac® III

Grade 1 · 5 Year SecuriCare Warranty · Mortise Locks with Deadbolt · Mortise Locks without Deadbolt · Cylindrical Locksets · Specialty Locksets · 12/24 Dual Voltage · Fire Rated · Windstorm Resistant · Outdoor Rated · Burglary Rated

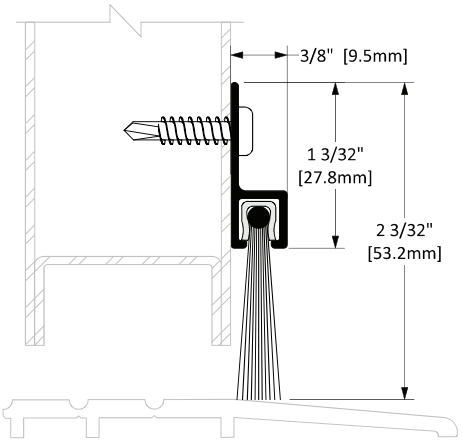
h.e.s. ASSA ABLOY

Accessories

ITEM	ACCESSORY	DESCRIPTION
	*157D* Torx® security bit	• Tamper resistant Torx® R20 insert bit.
	*310-2-3* Astragal strike latch guard	• Designed to prevent tampering with the latchbolt, and the latchbolt keeper. Prevents one door from being opened before the other.
	*2001-1* Wire-in bridge rectifier	• Converts AC to unfiltered DC. Rated 35 V, 2 Amp. • Not recommended for 1006 Electric Strike.
	*2001M* Plug-in bridge rectifier	• Converts AC to unfiltered DC. Rated 35 V, 1 Amp. • Includes MOV and self-resettable fuse Not recommended for 1006 Electric Strike.
	*2004M* ElectroLynx® adapter	• Adapter between existing electric strikes and ElectroLynx® connectors.
	*2005M3* SMART Pac® III *Addition of Smart Pac to any electric strike extends the 5 year no-fault warranty to a 10 year no-fault warranty.*	• In-line power controller able to receive input voltages from 12- 32V AC or DC. Built-in bridge rectifier. Reduces initial voltage by 25% to extend the life of the electric strike. • Includes built-in resettable fuse, MOV, voltage regulation and input voltage level indicating and unit status. • For use with 1006, input voltage must be DC.
	*2006M* Plug-in buzzer	• Audible operation indicator at 24 VDC, 75db at 11-3/4".
	*2007M* Plug-in pigtail connectors	• With 4" wire leads.

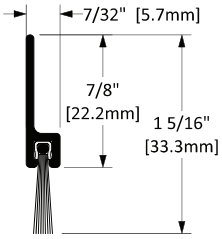
NYLON BRUSH SWEEPS

ALL PRODUCTS ON THIS PAGE



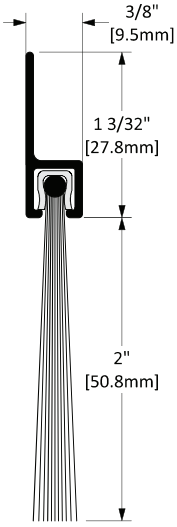
W-24S

Screw Type: A
OPT Screw Type: B
STD Finish: Clear Anodized
OPT Finish: B.A., BL.A.



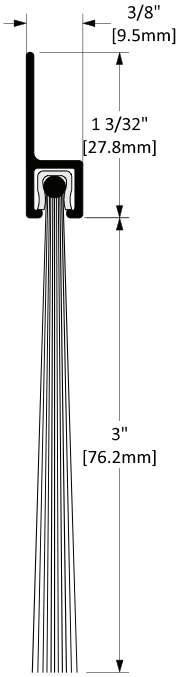
W-25S

Screw Type: A
OPT Screw Type: B
STD Finish: Clear Anodized
OPT Finish: B.A., BL.A.



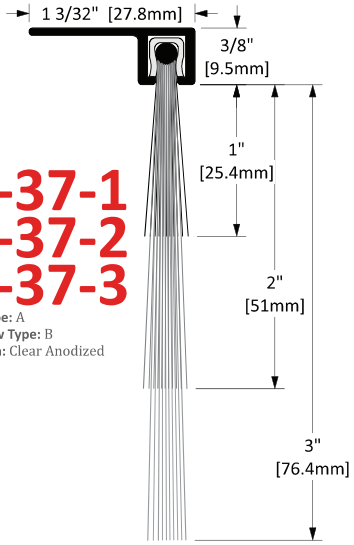
W-33S

Screw Type: A
OPT Screw Type: B
STD Finish: Clear Anodized
OPT Finish: B.A., BL.A.



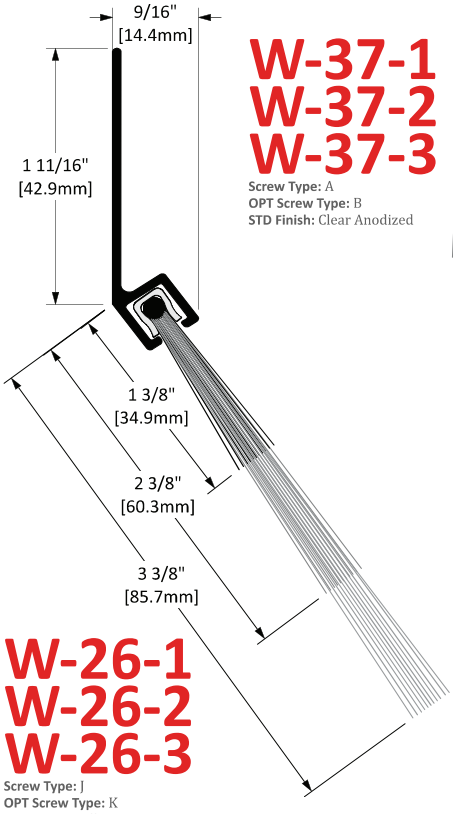
W-34S

Screw Type: A
OPT Screw Type: B
STD Finish: Clear Anodized
OPT Finish: B.A., BL.A.



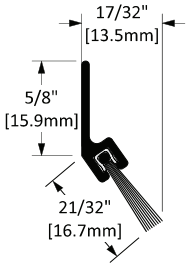
W-37-1
W-37-2
W-37-3

Screw Type: A
OPT Screw Type: B
STD Finish: Clear Anodized



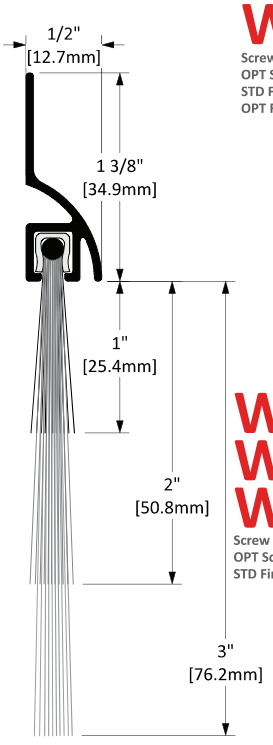
W-26-1
W-26-2
W-26-3

Screw Type: J
OPT Screw Type: K
STD Finish: Mill



W-23

Screw Type: A
OPT Screw Type: B
STD Finish: Clear Anodized



W-35-1
W-35-2
W-35-3

Screw Type: A
OPT Screw Type: B
STD Finish: Clear Anodized

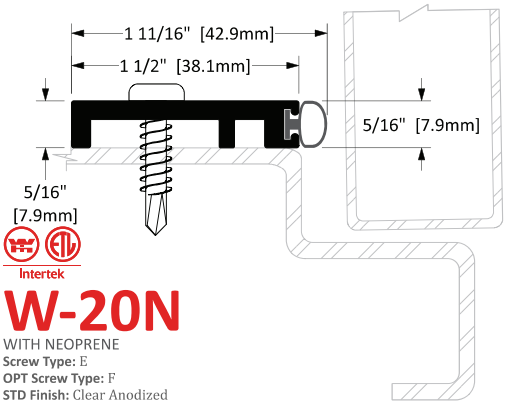
CDH

Commercial Doors & Hardware Ltd.
2150 Winston Park Drive, Unit 16
Oakville, L6H 5V1

BURNHAMTHORPE PS ELEV & ACCESSIBLE WR
RENO
MISSISSAUGA

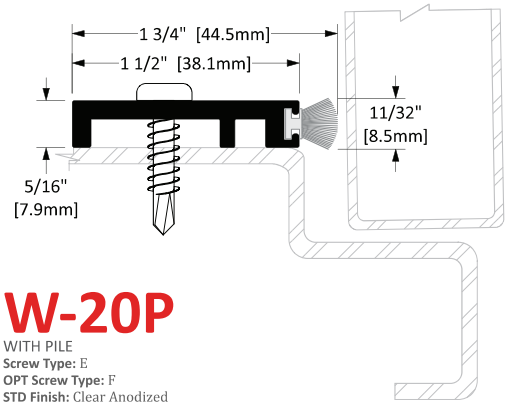
Submittal Date: May 15/26, JUNE 1/26

WEATHERSTRIP



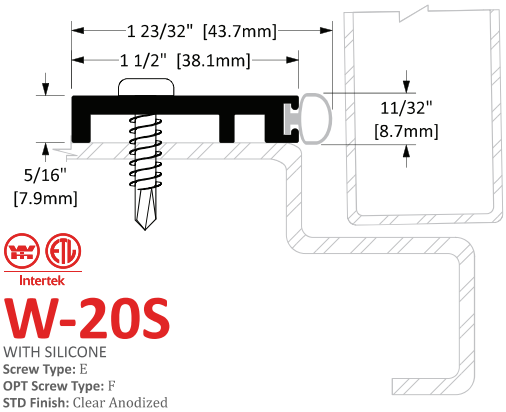
W-20N

WITH NEOPRENE
Screw Type: E
OPT Screw Type: F
STD Finish: Clear Anodized
OPT Finish: B.A., BL.A.



W-20P

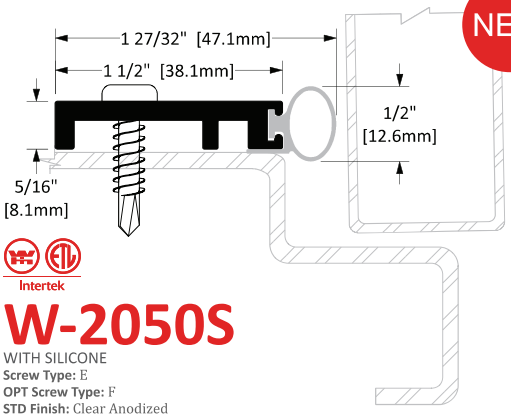
WITH PILE
Screw Type: E
OPT Screw Type: F
STD Finish: Clear Anodized
OPT Finish: B.A., BL.A.



W-20S

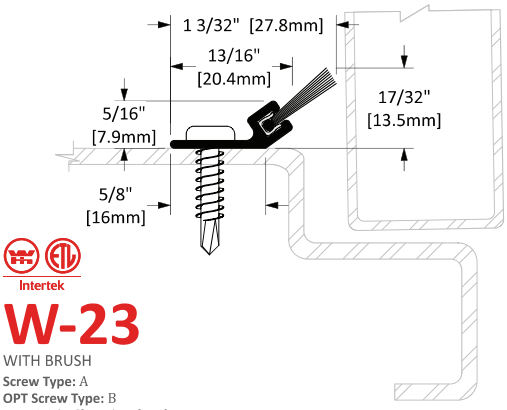
WITH SILICONE
Screw Type: E
OPT Screw Type: F
STD Finish: Clear Anodized
OPT Finish: B.A., BL.A.

NEW



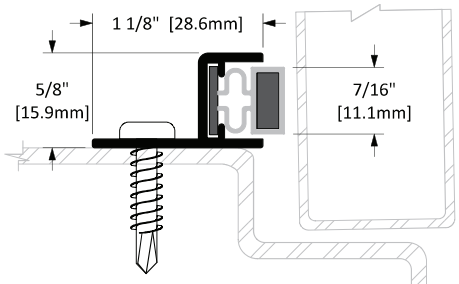
W-2050S

WITH SILICONE
Screw Type: E
OPT Screw Type: F
STD Finish: Clear Anodized
OPT Finish: B.A., BL.A.



W-23

WITH BRUSH
Screw Type: A
OPT Screw Type: B
STD Finish: Clear Anodized

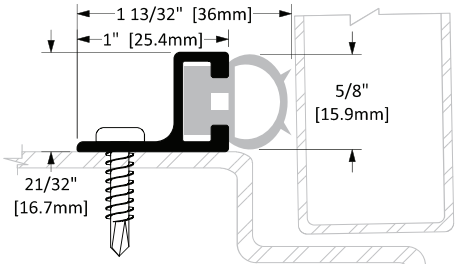


W-27

WITH VINYL & MAGNET
Screw Type: A
OPT Screw Type: B
STD Finish: Clear Anodized

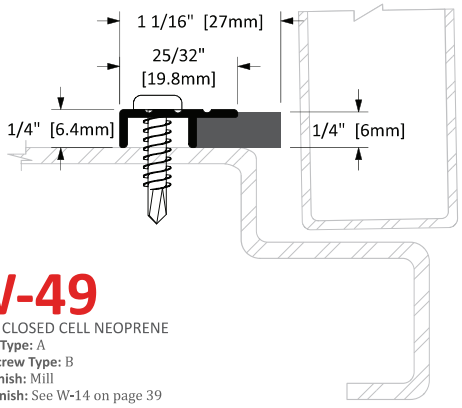
ALL PRODUCTS ON THIS PAGE

WEATHERSTRIP



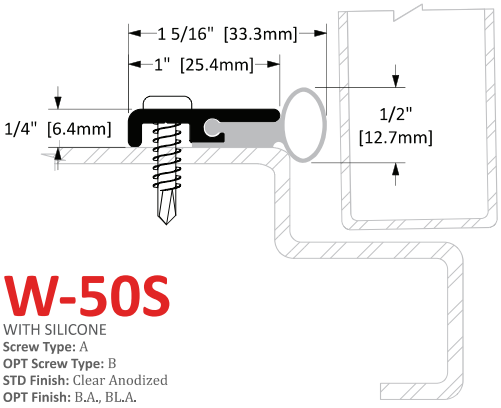
W-47S

WITH SILICONE
Screw Type: A
OPT Screw Type: B
STD Finish: Clear Anodized



W-49

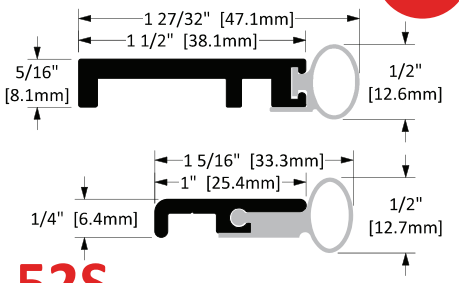
WITH CLOSED CELL NEOPRENE
Screw Type: A
OPT Screw Type: B
STD Finish: Mill
OPT Finish: See W-14 on page 39



W-50S

WITH SILICONE
Screw Type: A
OPT Screw Type: B
STD Finish: Clear Anodized
OPT Finish: B.A., BL.A.

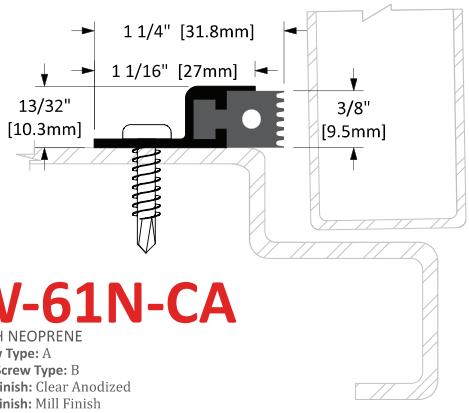
NEW



W-52S

WITH SILICONE
Screw Type: E
OPT Screw Type: F
STD Finish: Clear Anodized
OPT Finish: B.A., BL.A.

SET INCLUDES:
ONE (1) W-2050S X HEADER WIDTH &
TWO (2) W-50S X JAMB HEIGHT.



W-61N-CA

WITH NEOPRENE
Screw Type: A
OPT Screw Type: B
STD Finish: Clear Anodized
Opt Finish: Mill Finish

CCS- and CCSF-998

KNC
Catch 'N' Close

FEATURES

- 300 lbs. [136 kg] weight capacity
- Effortless opening and closing of the door with the Catch 'N' Close Closing System (for doors wider than 20 in [508 mm])
- Easy Connect Hanger System for easy installation
- Nylon wheels and precision ball bearings provide smooth and quiet door operation
- Cycle tested for up to 150,000 cycles without fail
- ADA Compliant (Barrier-free) design
- Available in clear or black anodized, mill finish or powder coated

COMPLETE 1 DOOR KIT BREAKDOWN

1 - CC-908 Side Mount Track
x length based on kit size (e.g. 72 in [1829 mm] kit for 36 in [914 mm] wide door)

2 - CC-998 Heavy-Duty Easy Connect Catch 'N' Close Hangers
complete with screws and adjustment tools

2 - CC-101HD Catch 'N' Close In-Track Stops
complete with set screws for friction fit

2 - Catch 'N' Close Closing Devices
complete with screws
CC-2 for doors up to 200 lbs. [90 kg]
CC-3 for doors up to 300 lbs. [136 kg]

1 - C-914 Aluminum Guide Channel
x length based on kit size (e.g. 36 in [914 mm] guide channel for 72 in [1829 mm] kit)
1 - C-913 Floor Guide
complete with screws

OPTIONAL

Door Locks & Pulls

Add-On Products

CC-980 Fascia
x length based on required size

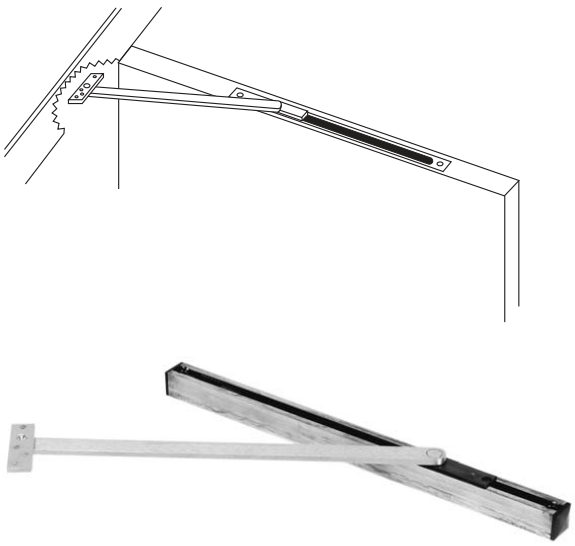
CC-982 End Cap Pair
Complete with screws

Customer Name _____ **Job No./Name** _____ **Date** _____ **Provided By** _____

Notes

KN Crowder
1220 Burloak Drive, Burlington, Ontario, Canada, L7L 6B3
T. 1–866–999–1562 customerservice@kncrowder.com kncrowder.com

1 Series



Application
- Interior or exterior doors
- Single or double acting
- Non-handed
- Recommended for high traffic, heavy abuse installations

Features
- Heavy-duty
- Slide track design
- Stop, friction stay or hold open functions
- 1-3/4" minimum door thickness. For thicker doors, specify when ordering
- 110° maximum opening
- Heavy shock absorber spring provides 5-7° compression before dead stop
- LS option omits spring for special applications
- Durable slider cam and shock block
- Surface on/off knob on hold open models
- 1-3/16" square channel
- Complete screw packet for installation in wood and machine screws for door and frame.
- For security areas, Torx® screws available for exposed fasteners
- Hanging means other than standard butts or offset pivots require special templating and pricing. Consult factory
- Standard architectural finishes

Compliance
- Stop function UL listed for fire door assemblies
- ANSI: C01531 (Friction)
  C01511 (HO)
  C01541 (Stop)

Door Opening Chart (In Inches)

Butts Offset Pivots	Center Hung Pivots	Model Number		
		Friction	H.O.	Stop
*24 - 28	—	1-116	1-126	1-136
28-1/16 - 33	30 - 36	1-216	1-226	1-236
33-1/16 - 38	36-1/16 - 41	1-316	1-326	1-336
38-1/16 - 43	41-1/16 - 46	1-416	1-426	1-436
43-1/16 - 48	46-1/16 - 50	1-516	1-526	1-536

Butt hung only on this size door. No swing clear hinges.

RIXSON®
ASSA ABLOY

ASSA ABLOY, the global leader in door opening solutions

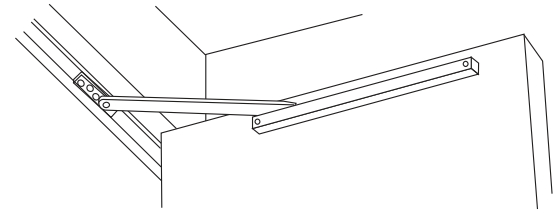
CDH

Commercial Doors & Hardware Ltd.
2150 Winston Park Drive, Unit 16
Oakville, L6H 5V1

BURNHAMTHORPE PS ELEV & ACCESSIBLE WR
RENO
MISSISSAUGA

Submittal Date: May 15/26, JUNE 1/26

9 Series



Application
- Interior or exterior doors
- Doors are single acting
- Non-handed
- Recommended for high traffic, heavy abuse installations

Features
- Heavy-duty
- Slide track design
- Heavy shock absorber spring provides 5-7° compression before deadstop
- LS option omits spring for special application
- On/off knob on hold open models
- Stop, friction stay or hold open function
- Complete screw packet with thru-bolts for door, wood and machine screws for frame
- Torx® screws optional for security applications
- Standard architectural finishes
- Durable slider cam and shock block
- 110° maximum opening
- 1-3/4" minimum door thickness
- 1-3/16" square channel
- For pull side mounting or flush mounting on push side or for rabbeted push side use angle jamb bracket adapter 5458-LH or 5459-RH
- Hanging means other than standard butts or offset pivots require special templating

Compliance
- Stop function UL listed for fire door assemblies
- ANSI: C02531 (Friction)
  C02511 (HO)
  C02541 (Stop)

Door Opening Chart (in inches)

Butts Offset Pivots	Center Hung Pivots	Model Number		
		Friction	H.O.	Stop
*24 - 28	25-1/2 - 30	9-116	9-126	9-136
28-1/16 - 33	30-1/16 - 36	9-216	9-226	9-236
33-1/16 - 38	36-1/16 - 41	9-316	9-326	9-336
38-1/16 - 43	41-1/16 - 46	9-416	9-426	9-436
43-1/16 - 48	46-1/16 - 50	9-516	9-526	9-536

Butt hung only on this size door. No swing clear hinges.

RIXSON®
ASSA ABLOY

ASSA ABLOY, the global leader in door opening solutions

GT710/8710

Low-Energy
ADA Swing Door Operator

Where SOLUTIONS are AUTOMATIC

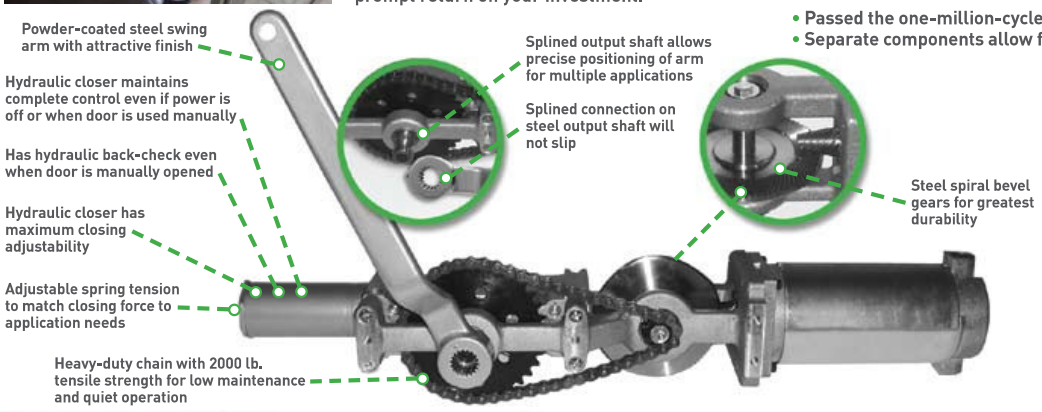
Product Features and Benefits

- Hydraulic design offers **proven reliability**
- Adjustable closing speeds to **enhance energy savings**
- Manual mode requires very little pressure to open **promoting ease of operation**
- Approved on fire door assemblies rated up to 3 hours, **maintaining security and safety**
- Hydraulic back-check during windy conditions **protects the door and operator from damage**

GT710/8710 Low-Energy ADA Swing Door Operator

The NABCO GT710/8710 Low-Energy Operator is engineered for interior and exterior use, and designed to automate essentially any new or existing door frame. The GT710/8710 operates in both automatic and manual modes with a hydraulic back-check that protects the door and mechanical operator from damage when forced open in windy conditions or when manually operated. The GT710/8710 Operator has been approved for use on fire door assemblies rated up to 3 hours. The low-energy performance, combined with the adjustable opening and closing speeds, reduces energy consumed, which offers a prompt return on your investment.

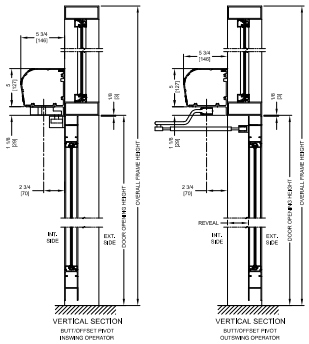
- Passed the one-million-cycle endurance test
- Separate components allow for lower repair costs



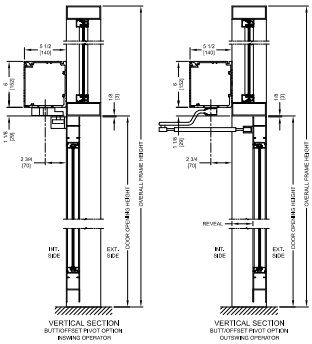
PRODUCT INFORMATION

Header dimensions	Side load - 5" H X 5 3/4" D (GT710) curved header Side load - 6" H X 5 1/2" D (GT8710)
Standard finish	Clear and dark bronze anodized
Optional finishes	Painted, clad, special anodized
Mounting	Surface applied or overhead concealed
Installation types	Push or pull
Operating voltage	120 VAC @ <5 amps
Auxiliary power output	12VDC 750mA
Operator drive	Electro-hydraulic
Motor voltage	Pulse width modulated
Motor type	1/8th HP @ peak
Control type	Microprocessor
Door panel weight	300 lbs.
Adjustable open	Force and speed
Adjustable close	Force and speed
Closing method	Spring/hydraulic (with selectable power assist)
Adjustable opening angle	Up to 145º
Power boost close	Selectable
Basic features	Low-energy operation Push and go Obstacle detection in opening and closing cycles Sequential or timer mode operation LCD display for programming and diagnostics Open- or closed-circuit safety inputs Momentary or maintained activation
Switch modes	On, off, hold-open
Opening and closing speed	Adjustable
Hold-open time	Adjustable (0-30 seconds)
Code compliances	ANSI A156.19/ANSI A117.1
Approvals	UL, ULC

GT710 Operator



GT8710 Operator



CONFIGURATIONS:
The GT710/8710 is available for multiple configurations, such as single doors, simultaneous pairs, and dual-egress, as well as the Opman configuration, which is a single continuous header for a pair of doors containing a manual closer on one side and an automatic operator on the other.

NABCO Service and Specifications

Along with the NABCO factory branches, NABCO has the largest independently owned network of automatic door distributors in North America. Their friendly, qualified installers and technicians always strive to exceed your expectations from install to after-sales service. NABCO's factory branches and independent distributors provide AAADM-certified technicians to ensure your doors meet all ANSI A156.10/A156.19 standards.

Complete three-part specifications and CAD drawings are available on the NABCO website.

NABCO
Member of the Nabtesco Group

Member AAADM

NABCO ENTRANCES INC.
S82 W18717 Gemini Drive | Muskego, WI 53150 | 877-622-2694 | Fax 888-679-3319
www.NABCOentrances.com | Email info@nabcoentrances.com

Distributed by:

06/15

CDH

Commercial Doors & Hardware Ltd.
2150 Winston Park Drive, Unit 16
Oakville, L6H 5V1

BURNHAMTHORPE PS ELEV & ACCESSIBLE WR
RENO
MISSISSAUGA

Submittal Date: May 15/26, JUNE 1/26

WASHROOM ADO PARTS

CX-WEC10K2 Kit
Includes 2 Gang Plate
with Mushroom Button,
LED Sounder and Sign

CC-CUST-FP-ENTDOO-04
Remote Satus LED
Annunciator
(1 - 6) Washrooms
Mounted in the
Main Office.
Location approved
by PDSB
Project Manager
Notee - This is a
custom Entrex part

CX-PS150UL
Power supply for the
Main Office
Annunciator.
To be mounted above
the main office ceiling

V-5748-2
Wiremold 2 gang
box to mount the
Annciator below
the V4000

No Substitute for
any parts

NOTE
LED Keyswitch power can
beconnected at PTO or in
ADO header

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 11 – Final Cleaning.

.3 Section 01 78 00 - Closeout Submittals

.4 Section 08 11 14 – Metal Doors and Frames.

.5 Section 08 50 50 – Aluminum Windows.

.6 Section 07 92 10 - Joint Sealing: caulking of joints between frames and other building components.

.7 Section 10 28 10 – Toilet, Bath and Laundry Accessories.

1.2 REFERENCES

.1 American National Standards Institute (ANSI).

.1 ANSI/ASTM E330-[02], Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

.2 American Society for Testing and Materials International, (ASTM).

.1 ASTM C542-[94(1999)], Specification for Lock-Strip Gaskets.

.2 ASTM D790-[02], Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

.3 ASTM D1003-[00], Test Method for Haze and Luminous Transmittance of Plastics.

.4 ASTM D1929-[96(R2001)e1], Test Method for Determining Ignition Temperature of Plastics.

.5 ASTM D2240-[02b], Test Method for Rubber Property - Durometer Hardness.

.6 ASTM E84-[01], Test Method for Surface Burning Characteristics of Building Materials.

.7 ASTM F1233-[98], Test Method for Security Glazing Materials and Systems.

.3 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-12.1-[M90], Tempered or Laminated Safety Glass.

.2 CAN/CGSB-12.2-[M91], Flat, Clear Sheet Glass.

.3 CAN/CGSB-12.3-[M91], Flat, Clear Float Glass.

.4 CAN/CGSB-12.4-[M91], Heat Absorbing Glass.

.5 CAN/CGSB-12.5-[M86], Mirrors, Silvered.

.6 CAN/CGSB-12.6-[M91], Transparent (One-Way) Mirrors.

.7 CAN/CGSB-12.8-[97], Insulating Glass Units.

□

.8 CAN/CGSB-12.9-[M91], Spandrel Glass.

.9 CAN/CGSB-12.10-[M76], Glass, Light and Heat Reflecting.

.10 CAN/CGSB-12.11-[M90], Wired Safety Glass.

.11 CAN/CGSB-12.12-[M90], Plastic Safety Glazing.

.12 CAN/CGSB-12.13-[M91], Patterned Glass.

.13 CAN/CGSB-12.1-M90 Tempered or Laminated Safety Glass

.14 CAN/CGSB-12.3-M76 Glass, Polished Plate or Float, Flat, Clear

.4 Canadian Standards Association (CSA International).

.1 CSA A440.2-[98], Energy Performance Evaluation of Windows and Sliding Glass Doors.

.2 CSA Certification Program for Windows and Doors [2000].

.5 Environmental Choice Program (ECP).

.1 CCD-045-[95], Sealants and Caulking.

.6 Flat Glass Manufacturers Association (FGMA).

.1 FGMA Glazing Manual - [1997].

.7 Laminators Safety Glass Association (LSGA).

.1 LSGA Laminated Glass Design Guide [2000].

1.3 SAMPLES

.1 Submit a 300 x 300 sample of all glass products in accordance with Section 01 33 00 - Submittal Procedures.

1.4 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 013300 – Submittal Procedures. Co-ordinate location with Consultant.

1.5 WARRANTY

.1 Contractor hereby warrants glass against defects and failure, including leakage, under normal conditions of use, in accordance with the Contract, but for ten (10) years total, as follows:

.2 Supplier shall submit a written warranty from the insulated glass manufacturer to replace or repair any defects in materials or sealed units for a period of ten (10) years from the date of Substantial Completion.

.3 Mirrors:

.1 Submit a warranty for mirrors, covering the repair or replacement of defective work in accordance with the Contract, but for five (5) years total.

.2 Warranty shall apply against defects in workmanship and materials and, against silver deterioration and loosening of fastenings.

□

1.6 WASTE MANAGEMENT AND DISPOSAL

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

.2 Collect and separate for disposal [paper] [plastic] [polystyrene] [corrugated cardboard] packaging material [in appropriate on-site] for recycling.

.3 Unused or damaged glazing materials are not recyclable and must not be diverted to municipal recycling programs.

.4 Divert unused or damaged wood materials from landfill to [recycling] [reuse] [composting] facility approved by Consultant.

.5 Divert unused metal materials from landfill to metal recycling facility approved by Consultant.

.6 Divert unused caulking material from landfill to official hazardous material collections site approved by Consultant.

.7 Plastic caulking tubes are not recyclable and must not be diverted for recycling with other plastic materials.

Part 2 Products

2.1 MATERIALS

.1 Acceptable Manufacturers:

.1 AFG Glass Inc

.2 Libby-Owens Ford

.3 PPG Industries

.2 Exterior Tempered Safety Glass: All exterior Vision Glass to exterior windows, curtain wall and non-fire-rated screens to be sealed insulated units conforming to CAN/CGSB-12.8. Exterior lite 6mm tempered clear glass, Solarban 67 Low Emmissivity Coating on inner pane (2nd surface), 13mm Argon filled air space, inner lite 6 mm clear tempered glass.

.1 All tempered glass to conform to CAN2-12.1 M-90 Type 2 tempered glass, Class B Double glazed units to have an integral non-metallic space creating a 13 mm hermetically sealed Argon filled air space. Spacers shall be continuous with butt joints (if any) at corners only. Pieces are not permitted. Butyl based spacers are not permitted.

.2 Interior Tempered Safety Glass: All interior Vision Glass to non-fire rated interior doors and screens to be tempered 6 mm clear float glass complete with etched tempered glass designation visible.

.3 Spandrel Glass (SP): CAN/CGSB-12.9-M, 6 mm thick unless otherwise indicated, with water-based silicone emulsion coating applied to backside, ‘Opaci-Coat 300' by ICD High Performance Coatings or approved alternative. Colour: To be selected by the Consultant.

.4 Polished Plate or Float Glass: To CAN/CGSB-12.3 clear.

□

.5 Fire Rated Glazing ('FRG' or 'GW' or 'FR'): Fire rated glazing to be min. 8mm thick, impact safety rated, intumescent laminated glazing to meet required fire resistance rating. Refer to drawing "A01 Fire Separations & OBC Data Matrix" for fire separation ratings. Intumescent laminated glazing to be supplied by:

.1 Fireswiss by Glas Trosch
.2 Pyrostop by Pilkington
.3 Pyrobel by AGC
.4 ContraFlam by VetroTech/St-Gobain

.6 No georgian-wired glazing is to be used on this project.

.7 Impact/safety film for all Fire Rated Glazing is to be approved and factory applied by manufacturer/distributor.

.8 Locations: as required on drawings to fire rated doors and screens.

.9 Mirrors: Refer to Section 10 28 10 Washroom Accessories.

.10 Setting blocks: neoprene, 80 durometer hardness, 102 mm x 6 mm width to suit glass to extend from the fixed stop to the opposite face of the glazing unit.

.11 Spacer Blocks: neoprene, thickness to provide a minimum glass to face clearance of 3mm.

.12 Glazing tape**:** preformed polyisobutylene-butyl glazing tape with integral shim strip, 10-15 durometer, hardness, paper release, black color. Acceptable materials**:** Tremco Polyshim II by Tremco Ltd. or approved alternate.

.13 Gasket: black neoprene "U" cavity type with lock strip.

.14 Sealant: one component silicone, Spectrem 2 by Tremco Ltd. Refer to Section 07900.

.15 Display cases: shelves to be 13mm tempered glass with polished rounded edges. Doors to be tempered 8mm tempered glass. Coordinate sizes and provide to Section 06 40 00 for installation.

2.2 FABRICATION

.1 Fabricate in accordance with CSA-A440/A440.1 supplemented as follows:

.2 Make field measurements before cutting and assembling materials.

.3 Maintain minimum bite or lap of glass as recommended by the glazing unit manufacturer.

.4 Each glass lite shall be labeled with the name of the product, weight and quality and year manufactured.

.5 If requested, provide owner or consultant access to the plant or shop to review fabrication. Consultant or owner to provide 24 hour advance notice of visit.

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Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 EXAMINATION

.1 Verify that openings for glazing are correctly sized and within tolerance.

.2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

3.3 PREPARATION

.1 Clean contact surfaces with solvent and wipe dry.

.2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.

.3 Prime surfaces scheduled to receive sealant.

3.4 INSTALLATION:

.1 Inspect all glazing channels prior to application. All openings in joints and channels to be sealed shall be clean, dry and free of dust, oil, grease, loose mortar or any foreign material.

.2 All surfaces to receive glazing tape shall be wiped dry with a clean rag dampened in Xylol, followed by a dry wipe.

.3 Examine all sashes prior to glazing to determine if the openings are square and plumb. Any butt and miter joints which are open shall be sealed prior to glazing. Adjust all operating sashes and glaze in the closed position.

.4 Compression Glazing:

.1 When butt joint is in a vertical direction, the glazier shall first run the tape on the head and sill members while going over the joint. If joints at the sash run horizontally, the tape must be applied first to the jambs so that it crosses over the joint.

.2 When an offset condition exists at each corner where a horizontal member passes behind vertical mullions, two different sized tapes shall be used to equalize the pressure seal. The thinner tape is to applied first on the glazing leg closest to the interior. The thicker tape shall be cut to the length between the two tapes and applied.

.3 Each section of tape shall butt the adjoining tape and be united with a tool to eliminate any openings. Lapping of the adjoining tapes at the corners is not permitted.

□

.4 Remove paper backing just prior to setting glass and apply a toe bead of sealant 150 mm long in each of the corners.

.5 Position one setting block at the quarter point of each corner on the sill members or as recommended by IGMA guidelines.

.6 Set the glass on the setting blocks and press firmly in place. Snap in the interior glazing stops.

.7 Set the spacer blocks to prevent any “walking” of the lite.

.5 Mirrors:

.1 Install mirrors by means of concealed vandalproof clips If clips are used, install cushioning tape completing around perimeter of mirror back, set in concealed location within 25 mm of edge. Install fixed mirrors in washrooms at two different heights as indicated on drawings.

.2 Follow manufacturer’s installation recommendations.

.6 Install any wired glass with the wire parallel to the opening.

.7 Replace any loose glazing stops and tighten all screws.

.8 Contractor shall include for needle point (cap beads) at all lower horizontal rail joints of all sash/glazing units at the discretion of and as may be requested by the Consultant or owner.

3.5 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Remove traces of primer, caulking.

.3 Remove glazing materials from finish surfaces.

.4 Remove labels after work is complete.

.5 Immediately upon job completion and when sealants have cured, remove any temporary protection and clean all exposed interior and exterior surfaces. Use proper cleaning materials only which will not harm the window components or any adjacent surfaces.

.6 Ensure all temporary labels have been removed and fully cleaned.

.7 Mirrors:

.1 Clean mirrors using non-abrasive soap or detergent and rinse with clean water. Leave in clean, polished condition for Owner occupancy.

3.6 INSPECTION

.1 Where inspection is called for elsewhere in the specification, perform Window air and water leakage test to ensure installation meets performance requirements stated herein. Should test fail, take remedial measures and re-test a different location at not additional cost to the owner until the test passes.

□

END OF SECTION

□

1 General

1.1 **SECTION INCLUDES**

.1 Labour, Products, equipment and services necessary for terrazzo restoration Work in accordance with the Contract Documents.

1.2 **REFERENCES**

.1 CSA A23.1, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.

.2 CAN/CSA A3000, Cementitious Materials Compendium.

.3 TTMAC, Terrazzo, Tile and Marble Association of Canada

1.3 **SUBMITTALS**

.1 Product data:
- .1 Submit duplicate copies of manufacturer's Product data in accordance with Section 01 33 00 indicating:
  - .1 Performance criteria, compliance with appropriate reference standard(s), characteristics, limitations, and trouble-shooting protocol.
  - .2 Product transportation, storage, handling and installation requirements.

.2 Shop drawings:
- .1 Submit shop drawings in accordance with Section 01 33 00 indicating:
  - .1 Terrazzo layout.
  - .2 Perimeter conditions, junctions with dissimilar materials.
  - .3 Setting details.

.3 Certificates: Submit manufacturer's certificates stating that materials supplied are in accordance with this specification.

.4 Closeout submittals: Submit recommended maintenance instructions and listing of recommended maintenance Products for incorporation into Operations and Maintenance Manuals in accordance with Section 01 78 23.

1.4 **QUALITY ASSURANCE**

.1 Installers qualifications: Perform Work of this Section by a company that has a minimum of five years proven experience in the installation of terrazzo units of a similar size and nature and that is approved by manufacturer. Submit to Consultant, applicator’s current certificate of approval by the material manufacturer as proof of compliance.

1.5 **SITE CONDITIONS**

.1 Do not install Work of this Section outside of the following environmental ranges without the Consultant's and Product manufacturer's written acceptance:
- .1 Ambient air and surface temperature: 15^0C to 45^0C.
- .2 Precipitation: None.

.2 Install temporary protection and facilities to maintain the Product manufacturer's, and specified, environmental requirements for 7 Days before, during, and 7 Days after installation.

2 Products

2.1 **MATERIALS**

.1 Cement: Portland cement to meet specified requirements of CAN/CSA A3000, Normal or High-Early strength. Use white portland cement in white matrix.

.2 Sand: To meet specified requirements of CSA A23.1, sharp, screened, washed. Use white sand in white matrix.

.3 Water: Potable, free from acids, alkalies, oil, or organic materials.

.4 Divider Strips: To match existing material and size.

.5 Topping:
- .1 Marble Chips: To meet specified requirements of Terrazzo, Tile and Marble Association of Canada, match existing size gradation and colour.
- .2 Colour pigments: Pure mineral, alkali-resistant, non-fading, colour to match existing.

.6 Cleaner: To meet specified requirements of #1000 Series of Terrazzo, Tile and Marble Association of Canada.

.7 Sealer: To meet specified requirements of #2000 Series of Terrazzo, Tile and Marble Association of Canada.

.8 Floor Finish: To meet specified requirements of Type #3001 of Terrazzo, Tile and Marble Association of Canada.

.9 Curing Agent: Non-staining, maximum moisture retention 0.015 grams, to meet specified requirements of Terrazzo, Tile and Marble Association of Canada.

2.2 **MIXES**

.1 Underbed:
- .1 One part cement to four parts sand by volume.

.2 Add water to product stiff mix, but use no more than four gals/80 lb. bag of cement to make workable.

.2 Topping:

.1 Marble chip aggregate and cement mixed dry with colour pigments to match existing. Grind a small area to determine the true colours of existing terrazzo and chip gradation.

.2 Water shall not exceed 18 L /bag of cement.

.3 Prepare topping by mechanical mixing with materials added in the following order: one-half of aggregate, total of cement, water, remaining aggregate.

3 Execution

3.1 EXAMINATION

.1 Ensure that environmental conditions and backing surfaces have been provided according to specified requirements. Do not proceed with work until satisfied that installation will meet specified standard.

3.2 PREPARATION

.1 Take extreme care that surfaces adjacent to terrazzo work are protected from staining by terrazzo materials, and that slurry is not tracked into other building areas any time during installation.

.2 Verify condition and dimensions of previously installed Work upon which this Section depends. Report defects to Consultant. Commencement of Work means acceptance of existing conditions.

.3 Sweep backing surfaces clean of all loose materials, and remove the debris. Clean off contaminants which would cause a defective installation.

.4 Locate and prepare for equipment or accessories recessed in finished terrazzo work.

.5 Cut terrazzo at panel joints where repair/extension is required.

3.3 INSTALLATION

.1 General:

.1 Installation shall match existing type. Profile of base shall match existing. Where bases are of different profiles, install new base of profile to match finished installation.

.2 When patching terrazzo, extend area to nearest divider strip in all directions.

.2 Underbed for Bonded Installation:

.1 Wet backing surfaces with water, remove excess, and when surface water has dried, slush into soaked backing a neat portland cement grout.

.2 Immediately following application of grout, place underbed, spread evenly, and screed to true levels to receive specified topping.

.3 Divider Strips:
- .1 Install divider strips in underbed while it is still semi-plastic.
- .2 Locate divider strips accurately. Set them straight, aligned, to line up with existing and at correct level; make junctions tight; and firmly trowel them along edges into underbed to ensure anchorage.
- .3 Set edging strips at junctions with other floor finishes to provide precisely for their thicknesses and finished levels after grinding. At openings set edging strips under doors.
- .4 Extend divider strips at right angles across borders.

.4 Placing of Topping:
- .1 Let underbed cure for at least 24 hours.
- .2 Wet top of underbed with water, remove excess, and when surface water had dried slush into soaked underbed a neat Portland cement grout of same colour cement and pigment as for matrix.
- .3 Apply topping to slurry or underbed while it is still wet.

3.4 TOPPING

.1 Standard Finish:
- .1 Into wet topping surface of floors, sprinkle wet aggregate of same materials in same proportions as specified for topping.
- .2 Apply so that finish surfaces match existing.

.2 Surface Preparation:
- .1 After finish aggregates are added, immediately roll floor topping with a heavy roller to compact and to remove excess water and cement. Pack bases.
- .2 Hand trowel all terrazzo surfaces to expose divider strips level with topping.

.3 Curing:
- .1 Cure topping for a minimum of six days following placing.
- .2 Cure to ensure that topping is kept damp until cement is hydrated.
- .3 Use wet mats or sand, paper or plastic sheets, or liquid curing compound.

3.5 FINISHING

.1 Grind terrazzo surfaces by machine. Hand rub places inaccessible to grinding machines.

.2 Constantly flood surfaces with water during grinding.

.3 For initial grinding, use 24 to 60 grit carborundum stones.

.4 After initial grinding, wash surfaces clean, remove all residue from holes and voids, and thoroughly rinse with only water.

.5 Trowel plastic grout, of same mix and colour as matrix, into holes and voids of wetted surface, and remove excess. When grout begins to set, work it into holes and voids with burlap or excelsior pads, and remove excess.

.6 Cure grout for a minimum of 48 hours as specified above for curing.

.7 Give final grinding with 120 grit stones and water.

.8 Wash off surfaces thoroughly after grinding.

.9 Provide carborundum strips on landings at stariwells as shown on drawings.

3.6 SITE TOLERANCES

.1 Finish surfaces shall be level or straight within a tolerance of 1.6 mm between division strips.

3.7 REPAIR

.1 Before Project completion, remove and replace defective, off-colour, and damaged work. Defective work shall include areas where distribution of surface aggregate is visually different from surrounding area. Removed areas shall be completely bounded by divider strips or edges. Regrout and regrind surfaces left with open fissures and holes.

3.8 CLEANING

.1 Scrub terrazzo surfaces with an abundance of clean water. Use machine scrubbers where possible for floors.

.2 Rinse with clean water and allow to dry.

.3 Remove dust with heavy-duty vacuum cleaner.

.4 If further cleaning is required, use Terrazzo, Tile and Marble Association of Canada #1001 cleaner in accordance with their specifications.

.5 Sealing:

- .1 As soon as possible after final cleaning, apply a coat of sealer. Wipe off excess before it dries.
- .2 Just before completion of Project, clean terrazzo, as specified above, and apply a second coat of sealer as before.
- .3 Apply two coats of floor finish.

3.9 **PROTECTION**

.1 Prevent all traffic and work on newly laid floors by barricading areas for at least 24 hours following installation.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 04 21 13 – Masonry

.3 Section 09 22 16 – Non-structural Metal Framing.

.4 Supply of access doors for mechanical and electrical devices in mechanical and electrical sections.

1.2 REFERENCES

.1 Aluminum Association

.1 Designation for Aluminum Finishes-[1997].

.2 American Society for Testing and Materials International, (ASTM)

.1 ASTM C36/C36M-[01], Specification for Gypsum Wallboard.

.2 ASTM C79/C79M-[01], Standard Specification for Treated Core and Non-treated Core Gypsum Sheathing Board.

.3 ASTM C442/C442M-[01], Specification for Gypsum Backing Board, Gypsum Coreboard, and Gypsum Shaftliner Board.

.4 ASTM C475-[01], Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.

.5 ASTM C514-[01], Specification for Nails for the Application of Gypsum Board.

.6 ASTM C557-[99], Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.

.7 ASTM C630/C630M-[01], Specification for Water-Resistant Gypsum Backing Board.

.8 ASTM C840-[01], Specification for Application and Finishing of Gypsum Board.

.9 ASTM C931/C931M-[01], Specification for Exterior Gypsum Soffit Board.

.10 ASTM C954-[00], Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.

.11 ASTM C960/C960M-[01], Specification for Pre-decorated Gypsum Board.

.12 ASTM C1002-[01], Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.

.13 ASTM C1047-[99], Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.

.14 ASTM C1280-[99], Specification for Application of Gypsum Sheathing Board.

.15 ASTM C1177-[01], Specification for Glass Mat Gypsum Substrate for Use as Sheathing.

□

.16 ASTM C1178/C1178M-[01], Specification for Glass Mat Water-Resistant Gypsum Backing Board.

.3 Association of the Wall and Ceilings Industries International (AWEI)

.4 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-51.34-[M86(R1988)], Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

.2 CAN/CGSB-71.25-[M88], Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.

.5 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC-S102-[1988(R2000)], Surface Burning Characteristics of Building Materials and Assemblies.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials in original packages, containers or bundles bearing manufacturers brand name and identification.

.2 Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.

.3 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.

1.4 SITE ENVIRONMENTAL REQUIREMENTS

.1 Maintain temperature minimum 10 degrees C, maximum 21 degrees C for 48 hours prior to and during application of gypsum boards and joint treatment, and for at least 48 hours after completion of joint treatment.

.2 Apply board and joint treatment to dry, frost free surfaces.

.3 Ventilation: Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

1.5 WASTE MANAGEMENT AND DISPOSAL

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

.2 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material in appropriate on-site for recycling.

.3 Divert unused gypsum from landfill to gypsum recycling facility for disposal approved by Consultant.

.4 Divert unused metal materials from landfill to metal recycling facility approved by Consultant.

.5 Divert unused wood materials from landfill to recycling facility.

.6 Divert unused paint and caulking material from landfill to official hazardous material collections site approved by Consultant.

□

.7 Do not dispose of unused paint and caulking materials into sewer systems, into lakes, streams, onto ground or in other locations where it will pose health or environmental hazard.

Part 2 Products

2.1 MATERIALS

.1 Standard board: to ASTM C36/C36M, 16 mm or 19 mm thick or as indicated, tapered edges.

.2 Standard board: to ASTM C36/C36M, X Rated, 16 mm or 19 mm thick or as indicated, tapered edges.

.3 Water-resistant board: to ASTM C630/C630M, 13 mm water resistant, tapered edges (WRGB in Finish Schedule).

.4 Abuse resistant/Fire rated: to CSA A82.27-M1977 Fire-Rated Type X, 5/8" thick, "Abuse Resistant Fire Code" gypsum board panels, tapered edges, by CGC, Fibrerock interior AquaTuff and CertainTeed, AirRenew Extreme Abuse Resistant Type X Gypsum Board with M2Tech. All gypsum board to have anti-microbial and anti-mould properties.

.5 All gypsum board to have Anti-Microbial and Anti Mold properties.

.6 Nails: to ASTM C514.
.7 Steel drill screws: to ASTM C1002.
.8 Stud adhesive: to CAN/CGSB-71.25.

.9 Laminating compound: as recommended by manufacturer, asbestos-free.

.10 Concrete Anchors: Phillips Red Head TW-614 or equivalent. Do not use powder activated fasteners for ceiling support.

.11 Tie Wire: #16 ga. galvanized soft annealed steel wire.

.12 Caulking: Acoustical sealant.

.13 38 mm thick mineral wool batts ULC labeled, if indicated on drawings.

.14 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, 0.5 mm base thickness commercial sheet steel with G90 zinc finish, perforated flanges, and one piece length per location.

.15 Sealants: in accordance with Section 07 92 10 - Joint Sealing.

.16 Insulating strip: rubberized, moisture resistant, 3 mm thick closed cell neoprene strip, 12 mm wide, with self sticking permanent adhesive on one face, lengths as required.

.17 Joint compound: to ASTM C475, asbestos-free.

2.2 ACOUSTIC WALL ASSEMBLY AND NOISE BARRIER CEILING MATERIALS

.1 **Location: Music Practice Rooms**:

.2 Acoustic insulation inside partitions: AFB Acoustic Fire Bat by Roxul or equivalent product by Fibrex, or Quietzone by Owens Corning.

.3 Steel deck closures: Emseal 25V Expanding Foam Sealant sized and shaped to fit flutes.

.4 Acoustic Insulation: mineral fibre acoustical batt insulation, as specified under Section 07210. Thickness of 90% of wall assembly cavity depth; Acceptable products:

.1 Fibrex 'Sound Attenuation Fire Batt (SAFB)'
.2 Johns Manville 'Sound-SHIELD'.
.3 Roxul 'AFB'.
.4 Owens-Corning 'QuietZone'.
.5 CertainTeed Canada Inc., Sustainable Insulation NoiseReducer Sound Attenuation Batts.

.5 Acoustical sealant: CAN/CGSB-19.21-M87; non-skinning acoustic sealant, non-hardening type.

.6 Acoustical compound: pre-mixed perlite plaster.

.7 Fasteners: use mechanical fasteners to secure batts into position as recommended by manufacturer.

Part 3 Execution

3.1 ERECTION

.1 Do application and finishing of gypsum board in accordance with ASTM C840 except where specified otherwise.

.2 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C840 except where specified otherwise.

.3 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.

.4 Install work level to tolerance of 1:1200.

3.2 APPLICATION

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

.2 Apply single layer gypsum board to metal furring or framing using screw fasteners and laminating adhesive. Maximum spacing of screws 300 mm on centre.

.1 Single-Layer Application:

.1 Apply gypsum board on ceilings prior to application of walls in accordance with ASTM C840.

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.2 Apply gypsum board vertically or horizontally, providing sheet lengths that will minimize end joints.

.2 Double-Layer Application:

.1 Install gypsum board for base layer and exposed gypsum board for face layer.

.2 Apply base layer to ceilings prior to base layer application on walls; apply face layers in same sequence. Offset joints between layers at least 250 mm.

.3 Apply base layers at right angles to supports unless otherwise indicated.

.4 Apply base layer on walls and face layers vertically with joints of base layer over supports and face layer joints offset at least 250 mm with base layer joints.

.3 Apply concrete board where wall tiles are to be applied and adjacent to sinks or showers. Apply water-resistant sealant to edges, ends, cut-outs which expose gypsum core and to fastener heads. Do not apply joint treatment on areas to receive tile finish.

.4 Apply gypsum board to concrete block surfaces, where indicated, using laminating adhesive.

.5 Apply type X gypsum board where indicated, in accordance with U.L.C. requirements and with supplement to the National Building Code of Canada to obtain the required fire protection, fire rating and fire separation.

.6 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.

.7 Where indicated on drawings, staple blanket to wallboard in accordance with ULC design requirements. Blanket shall be continuous and tightly fitted between studs and at perimeter.

.8 Install gypsum board on walls vertically to avoid end-butt joints. At stairwells and similar high walls, install boards horizontally with end joints staggered over studs, except where local codes or fire-rated assemblies require vertical application.

.9 Install gypsum board with face side out.

.10 Do not install damaged or damp boards.

.11 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

.12 Where a floor or roof structural member interferes with an interior partition wall at which a smoke or fire separation is required, a gypsum board enclosure with a fire rating not less than required for the wall must be provided to continue the required, a gypsum board enclosure with a fire rating not less than required for the wall must be provided to continue the required separation to the floor or roof above (typical)

3.3 INSTALLATION

.1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit

corners accurately, free from rough edges. Secure at 150 mm on centre[using contact adhesive for full length.

.2 Install casing beads around perimeter of suspended ceilings.

.3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.

.4 Construct control joints of [preformed units] [two back-to-back casing beads] set in gypsum board facing and supported independently on both sides of joint.

.5 Provide continuous polyethylene dust barrier behind and across control joints.

.6 Locate control joints at approximate 10 m spacing on long corridor runs at approximate 15 m spacing on ceilings.

.7 Install control joints straight and true.

.8 Construct expansion joints at building expansion and construction joints. Provide continuous dust barrier.

.9 Install expansion joint straight and true.

.10 Install cornice cap where gypsum board partitions do not extend to ceiling.

.11 Fit cornice cap over partition, secure to partition track with two rows of sheet metal screws staggered at 300 mm on centre.

.12 Splice corners and intersections together and secure to each member with 3 screws.

.13 Seal with acoustical sealant at ceilings, floors, wall intersections and all penetrations such as electrical outlets.

.14 Install access doors to electrical and mechanical fixtures specified in respective sections.

.1 Rigidly secure frames to furring or framing systems.

.15 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.

.16 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with Association of the Wall and Ceiling Industries (AWCI) International Recommended Specification on Levels of Gypsum Board Finish:

.1 Levels of finish:

.1 Level 0: No tapping, finishing or accessories required.

.2 Level 1: Embed tape for joints and interior angles in joint compound. Surfaces to be free of excess joint compound; tool marks and ridges are acceptable.

.3 Level 2: Embed tape for joints and interior angles in joint compound and apply one separate coat of joint compound over joints, angles, fastener

heads and accessories; surfaces free of excess joint compound; tool marks and ridges are acceptable.

.4 Level 3: Embed tape for joints and interior angles in joint compound and apply two separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.

.5 Level 4: Embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.

.6 Level 5: Embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; apply a thin skim coat of joint compound to entire surface; surfaces smooth and free of tool marks and ridges.

.17 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.

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

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

.20 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

.21 Apply one coat of white primer sealer over surface to be textured. When dry apply textured finish in accordance with manufacturer's instructions.

.22 Mix joint compound slightly thinner than for joint taping.

.23 Apply thin coat to entire surface using trowel or drywall broadknife to fill surface texture differences, variations or tool marks.

.24 Allow skim coat to dry completely.

.25 Remove ridges by light sanding or wiping with damp cloth.

.26 Provide protection that ensures gypsum drywall work will remain without damage or deterioration at time of substantial completion.

END OF SECTION

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Part 1 General

1.1 RELATED SECTIONS

.1 Section 09 21 16 - Gypsum Board Assemblies.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).

.1 ASTM C645-[00], Specification for Nonstructural Steel Framing Members.

.2 ASTM C754-[00], Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.

.2 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-1.40-[97], Primer, Structural Steel, Oil Alkyd Type.

.3 Environmental Choice Program (ECP).

.1 CCD-047a -[98], Paints - Surface Coatings.

.2 CCD-048-[98], Surface Coatings - Recycled Water-borne.

1.3 WASTE MANAGEMENT AND DISPOSAL

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

.2 Collect and separate for disposal [paper] [plastic] [polystyrene] [corrugated cardboard] packaging material in appropriate on-site bins for recycling.

.3 Divert unused metal materials from landfill to metal recycling facility approved by Consultant.

.4 Divert unused gypsum materials from landfill to recycling facility approved by Consultant.

Part 2 Products

2.1 MATERIALS

.1 Non-load bearing channel stud framing: to ASTM C645, roll formed from 0.59mm thickness hot dipped galvanized steel sheet, for screw attachment of gypsum lath and metal lath. Knock-out service holes at 150 mm centres.

.2 Floor and ceiling tracks: to ASTM C645, in widths to suit stud sizes, 30 mm legs for floor track, 50 mm for ceiling track.

.3 Metal channel stiffener: 38 mm size, 2 mm thick cold rolled galvanized steel.

.4 Metal Accessories: CSA A82.30-1965 (R-1971).

.5 “Unistrut” support channel framing, by Tyco Electrical and Metal Products.

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Part 3 Execution

3.1 ERECTION

.1 Align partition tracks at floor and ceiling and secure at 600 mm on centre maximum.

.2 Place studs vertically at 400 mm on centre and not more than 50 mm 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.

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

.4 Attach studs to bottom track using screws.

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

.6 Install steel frames and anchor frames securely to studs using minimum of three (3) anchors per jamb for jambs up to 2100 mm high and a minimum of four (4) anchors per jambs for jambs over 2100 mm high.

.7 Provide two (2) studs at each side of openings wider than stud centre specified.

.8 Install, cut to length, piece of runner horizontally over door frames and at top and bottom of rough opening in glazed partitions.

.9 Provide 38 mm x 89 mm vertical and horizontal wood studs secured between metal studs for attachments of bathroom fixtures, accessories, cabinet work, and other fixtures, including grab bars, towel rails, attached to steel stud partitions.

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

.11 Extend all partitions to underside of deck above for sound and fire separation.

.12 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs.

3.2 CEILING FURRING TO CANOPIES & CEILING PANELS

.1 Provide to all interior and exterior canopies where shown to receive wood slat or plywood finishes.

.2 Framing channel to be model P1000 (1-5/8”) ; 12 ga.

.3 For exterior locations provide with 4 m dia. Holes at 500 o.c. for drainage and hot dip galvanize.

.4 Provide shop drawings for layouts.

.5 Refer to drawings for locations.

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3.3 CEILING FURRING

.1 Install runners level to tolerance of 3 mm over 3.5 m. Provide runners at interruptions of continuity and change in direction.

.2 Frame with furring channels, perimeter of openings to accommodate access panels, light fixtures, diffusers, grilles, etc.

.3 Furr for bulkheads within or at termination or ceilings.

.4 Install furring channels at 400 mm o.c. maximum.

3.4 WALL FURRING

.1 Install steel furring, as indicated.

.2 Frame opening and around built-in equipment on four (4) sides with channels.

.3 Box-in beads, columns, pipes, and around exposed services.

3.5 FIRE RATED ASSEMBLIES

.1 If required, install Metal Stud System and Furring in accordance with appropriate ULC Design and with supplement to the National Building Code of Canada 1985.

3.6 CLEANING

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

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Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures.

.2 Section 07 92 10 – Joint Sealing.

1.2 REFERENCES

.1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)

.1 ANSI A108.1-[99], Specification for the Installation of Ceramic Tile (Includes ANSI A108.1A-C, 108.4-.13, A118.1-.10, ANSI A136.1).

.2 CTI A118.3-[92], Specification for Chemical Resistant, Water Cleanable Tile Setting and Grouting Epoxy and Water Cleanable Tile Setting Epoxy Adhesive (included in ANSI A108.1).

.3 CTI A118.4-[92], Specification for Latex Portland Cement Mortar (included in ANSI A108.1).

.4 CTI A118.5-[92], Specification for Chemical Resistant Furan Resin Mortars and Grounts for Tile Installation (included in ANSI A108.1).

.5 CTI A118.6-[92], Specification for Ceramic Tile Grounts (included in ANSI A108.1).

.2 American Society for Testing and Materials (ASTM International) International

.1 ASTM C144-[99], Specification for Aggregate for Masonry Mortar.

.2 ASTM C 207-[91(1997)], Specification for Hydrated Lime for Masonry Purposes.

.3 ASTM C847-[95(2000)], Specification for Metal Lath.

.4 ASTM C979-[99], Specification for Pigments for Integrally Coloured Concrete.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-51.34-[M86(R1988)], Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

.2 CGSB 71-GP-22M-[78], Adhesive, Organic, for Installation of Ceramic Wall Tile.

.3 CAN/CGSB-75.1-[M88], Tile, Ceramic.

.4 CAN/CGSB-25.20-[95], Surface Sealer for Floors.

.4 Canadian Standards Association (CSA International)

.1 CAN/CSA-A3000-[98], Cementitious Materials Compendium (Consists of A5-98, A8-98, A23.5-98, A362-98, A363-98, A456.1-98, A456.2-98, A456.3-98).

.2 CSA A123.3-[98], Asphalt Saturated Organic Roofing Felt.

.5 Terrazzo Tile and Marble Association of Canada (TTMAC)

.1 Tile Specification Guide 09300 [2000], Tile Installation Manual.

.2 Tile Maintenance Guide [2000].

1.3 PRODUCT DATA

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

.2 Include manufacturer's information on:

.1 Ceramic tile, marked to show each type, size, and shape required.
.2 Chemical resistant mortar and grout (Epoxy and Furan).
.3 Cementitious backer unit.
.4 Dry-set Portland cement mortar and grout.
.5 Divider strip.
.6 Elastomeric membrane and bond coat.
.7 Reinforcing tape.
.8 Levelling compound.
.9 Latex-Portland cement mortar and grout.
.10 Commercial Portland cement grout.
.11 Organic adhesive.
.12 Slip resistant tile.
.13 Waterproofing isolation membrane.
.14 Fasteners.

1.4 SAMPLES

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

.2 Base tile: submit 300 x 300 mm sample panels of each colour, texture, size, and pattern of tile.

.3 Floor tile: submit 300 x 300 mm sample panels of each colour, texture, size, and pattern of tile.

.4 Trim shapes, bullnose cap and cove including bullnose cap and base pieces at internal and external corners of vertical surfaces, each type, colour, and size.

.5 Adhere tile samples to 11 mm thick plywood and grout joints to represent project installation.

.6 Prepare a 2 m x 3m Mock up sample on site to ensure demonstration of installation details and quality control.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials in containers with labels legible and intact and grade-seals unbroken.

.2 Store material so as to prevent damage or contamination.

.3 Store materials in a dry area, protected from freezing, staining and damage.

.4 Store cementitious materials on a dry surface.

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1.6 WASTE MANAGEMENT AND DISPOSAL

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

.2 Collect and separate for disposal recyclable packaging material in appropriate on-site for recycling.

.3 Unused adhesive, sealant and coating materials must be disposed of at an official hazardous material collections site as approved by the Consultant.

.4 Unused adhesive, sealant and coating materials must not be disposed of into the sewer system, into streams, lakes, onto the ground or in other location where it will pose a health or environmental hazard.

.5 Broken ceramic materials must be diverted from landfill to a local facility as approved by Consultant.

1.7 ENVIRONMENTAL CONDITIONS

.1 Maintain air temperature and structural base temperature at ceramic tile installation area above 12° C for 48 h before, during, and 48 h after, installation.

.2 Do not install tiles at temperatures less than 12° C or above 38° C.

.3 Do not apply epoxy mortar and grouts at temperatures below 15° C or above 25° C.

1.8 EXTENDED WARRANTY

.1 Submit a warranty for entire wall tile installation , covering materials and labour and the repair or replacement of defective work in accordance with Stipulated Sum Contract, PDSB-1998, but for three (3) years total.

Part 2 Products

2.1 FLOOR TILE

.1 Porcelain floor tile (Designation: POR): to CAN/CGSB-75.1.

.1 Acceptable Materials: Size 300 mm x 600 mm; "Urbancrete" by Centura, "Regal" by Olympia Tile, "Astronomy" by Daltile, all in matte finish. Allow for one (1) field colour from manufacturer's full line and two (2) accent floor tiles.

.2 Locations: First Floor corridors, vestibules, washrooms and stairs where indicated – refer to drawings. Refer to Room Finish Schedule for locations.

.3 Install in a one-third staggered pattern.

.4 Provide prefabricated movement joints in conjunction with slab saw cuts approx. 3500-6000mm distance (refer to floor pattern drawing).

.2 Porcelain floor tile bull-nose base (Designation: POR): to CAN/CGSB-75.1.

.1 Acceptable Materials: Size 76mm or 100 mm x 300 mm 'sit-on' bull-nose base; "Vitra", by Centura or "Omnia", by Olympia Tile, "Ultra Modern" by Daltile, or "Anchorage" by Daltile, all in matte finish. Allow for two (2) colours from manufacturer's Category/Group 2 colours.

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.3 Designation CMT: 50 x 50 porcelain mosaic floor tile to CAN/CGSB-75.1.

.1 Acceptable materials: Dotti by Vitra as distributed by Centura Tile. 2 colours from full range in matte non-slip finish.

.2 Acceptable Alternates: Quebec distributed by Olympia; Dal 'Keystone' by Dal-tile and American Olean full mosaic collection, including 'Egyptstone' Series. Allow 2 colours from manufacturer's full range.

.3 Include cove base, top slope edges, fitted corners; include all pieces and trims. Contractors to fit around bullnose block walls.

.4 Locations: Floors of all shower areas.

2.2 WALL TILE

.1 Ceramic tile: to CAN/CGSB-75.1, Type 5, Class MR 4, 100mm (4") x 400mm (16") x 6mm size, glazed surface. allow for three (3) colors as selected, for Thin-set application.

.2 Acceptable Materials: "Rainbow" by Centura. "Maple Leaf CDC", by Olympia Tile

.3 Tile Edging: Purpose-made,anodized aluminum,polished chrome finish,metal edge strips as manufactured Schluter Systems at all exposed tile edging: Profile – JOLLY; thickness as required for tile and tile set. Provide square tile return to wall at tops and sides of tile areas in wahrooms, with purpose made outside edging.

.4 Locations: Refer to drawings and schedule.

2.3 TRIM SHAPES

.1 Conform to applicable requirements of adjoining floor and wall tile.

.2 Use slip resistant trim shapes for horizontal surfaces of showers, overflow ledges, recessed steps, shower curbs, drying area curbs, and stools.

.3 Use trim shapes sizes conforming to size of adjoining field wall tile, including existing spaces, unless specified otherwise.

.4 Internal and External Corners: Provide trim shapes as follows where indicated.

.1 Bullnose shapes for external corners including edges.

.2 Coved shapes for internal corners.

.3 Special shapes for:

.1 Base to floor internal corners to provide integral coved vertical and horizontal joint.

.2 Base to floor external corners to provide bullnose vertical edge with integral coved horizontal joint. Use as stop at bottom of openings having bullnose return to wall.

.3 Wall top edge internal corners to provide integral coved vertical joint with bullnose top edge.

.4 Wall top edge external corners to provide bullnose vertical and horizontal joint edge.

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.5 Provide cove and bullnose shapes for countertops and where indicated and required to complete tile work.

2.4 MORTAR AND ADHESIVE MATERIALS

.1 Walls: Mortarcrete Latex Mortar conforming to ANS1A118.4-1973, manufactured by L & M Ceramo Inc.

.2 Floors:

.1 Cement Mortar: Mixture of 1 part Portland cement, 4 parts dry sand and 1/10 hydraulic lime. Materials shall conform to the following:

.2 Portland Cement: To CAN3-A, Type 10.

.3 Hydrated Lime: To ASTM C-206 or 207, Type 5.

.4 Sand: To CSA A82.56, passing 1.6 mm sieve.

.5 Water: Potable, containing no contaminants which cause efflorescence.

.6 Thin Set Mortar: field mixed, blended sand-Portland cement-latex mortar, "Kerabond/Keralastic by Mapei.

.1 Acceptable Alternates: "Laticrete 4237 distributed by Ceratec Inc., or Flextile 52 thin set.

.2 Latex Additive: "Cemtex" by Master Builders, Laticrete 2022" distributed by Ceratec Inc.,

2.5 GROUT

.1 Colouring Pigments:

.1 Pure mineral pigments, limeproof and nonfading, complying with ASTM C979.

.2 Grout to be grey in colour.

.3 Job coloured grout are not acceptable.

.4 Use in Commercial Portland Cement Grout, Dry-Set Grout, and Latex-Portland Cement Grout.

.5 Colour shall be selected by Consultant from Manufacturer's standard colour range.

.2 Chemical-Resistant Grout for Walls:

.1 Epoxy grout: to ANSI A108.1, having quality, colour and characteristics to match epoxy bond coat. Adhesive and grout by same manufacturer.

.2 Epoxy Grout: "Latapoxy SP-100" Stainless, chemical resistant epoxy grout by Laticrete International. Colour from manufacturer's full range. Alternate: Kerapoxy by Mapei.

.3 Floors:

.1 Polymer modified grout as manufactured by MAPEI.

2.6 ACCESSORIES

.1 Floor Porcelain Tile Control Joints: by Schluter Systems

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.1 Typical along all corridors, provide flush floor control joints by Schluter, model BWS 100G-3/8". Acceptable alternates by Bengard Manufacturing.

.2 Reinforcing mesh: 50 x 50 x 1.6 x 1.6 mm galvanized steel wire mesh, welded fabric design, in flat sheets.

.3 Cleavage plane: polyethylene film to CGSB 51-34.

.4 Metal lath: to ASTM C847 painted finish, 10 mm rib at 2.17 kg/m^2.

.5 Transition Strips: purpose made metal extrusion; stainless steel type.

.6 Reducer Strips: purpose made metal extrusion; stainless steel type; maximum slope of 1:2.

.7 Prefabricated Movement Joints: purpose made, having a Shore A Hardness not less than 60 and elasticity of plus or minus 40 percent when used in accordance to TTMAC Detail 301EJ.

.8 Sealant: in accordance with Section 07 92 10 - Joint Sealing.

.9 Floor sealer and protective coating: to tile and grout manufacturers recommendations.

.10 Thresholds: marble, 13 mm thick, rounded edges, honed finish to exposed surfaces, size to suit door opening and frame width.

2.7 MIXES

.1 Portland Cement:

.1 Scratch coat: 1 part portland cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand, 1 part water, [and latex additive where required]. Adjust water volume depending on water content of sand.

.2 Slurry bond coat: portland cement and water mixed to creamy paste. Latex additive may be included.

.3 Mortar bed for floors: 1 part portland cement, 4 parts sand, 1 part water. Adjust water volume depending on water content of sand. [Latex additive may be included].

.4 Mortar bed for walls and ceilings: 1 part portland cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand and 1 part water. Adjust water volume depending on water content of sand. [Latex additive may be included].

.5 Levelling coat: 1 part portland cement, 4 parts sand, minimum 1/10 part latex additive, 1 part water including latex additive.

.6 Bond or setting coat: 1 part portland cement, 1/3 part hydrated lime, 1 part water.

.7 Measure mortar ingredients by volume.

.2 Dry set mortar: mix to manufacturer's instructions.

.3 Organic adhesive: pre-mixed.

.4 Mix bond and levelling coats, and grout to manufacturer's instructions.

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.5 Adjust water volumes to suit water content of sand.

2.8 PATCHING AND LEVELING COMPOUND

.1 Portland cement base, acrylic polymer compound, manufactured specifically for resurfacing and levelling concrete floors. Products containing gypsum are not acceptable.

.2 Have not less than the following physical properties:

.1 Compressive strength - 25 MPa.
.2 Tensile strength - 7 MPa.
.3 Flexural strength - 7 MPa.
.4 Density - 1.9.

.3 Capable of being applied in layers up to 50 mm thick, being brought to feather edge, and being trowelled to smooth finish.

.4 Ready for use in 48 hours after application.

2.9 CLEANING COMPOUNDS

.1 Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including patching and levelling compounds and elastomeric waterproofing membrane and coat.

.2 Materials containing acid or caustic material are not acceptable.

Part 3 Execution

3.1 WORKMANSHIP

.1 Do tile work in accordance with TTMAC Tile Installation Manual 2000, "Ceramic Tile", except where specified otherwise.

.2 Apply tile or backing coats to clean and sound surfaces.

.3 Fit tile around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.

.4 Maximum surface tolerance 1:800.

.5 Make joints between tile uniform and approximately 1.5 mm wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.

.6 Lay out tiles so perimeter tiles are minimum 1/2 size.

.7 Install floor tiles as per pattern. Layout and install flash cove tile first, before floor tile, ensuring a flush edge on the horizontal surface by feathering to masonry walls as required to produce a straight line on the floor. Install floor tiles to pattern supplied by Consultant

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at a later date. Contact consultant to review when approximately no more than 10 sq. m has been installed.

.8 Sound tiles after setting and replace hollow-sounding units to obtain full bond.

.9 Make internal angles square, external angles rounded.

.10 Make internal angles square, external angles chamfered at 45° with narrow tile strip.

.11 Construct cove base, as described using all special pieces available for inside and outside corners.

.12 For Floors: Use bull nose edged tiles at termination of wall tiles, except where tiles abut projecting surface or differing plane.

.13 Seal grouted joints with sealer.

.14 Keep building expansion joints free of mortar or grout.

.15 For Walls: Use round edged tiles at termination of wall tile panels, except where panel abuts projecting surface or differing plane.

.16 Install divider strips at junction of tile flooring and dissimilar materials.

.17 Allow minimum 24 h after installation of tiles, before grouting.

.18 Clean installed tile surfaces after installation and grouting cured.

3.2 FLOOR TILE

.1 Install in accordance with TTMAC to applicable thinset detail.

3.3 FLOOR SEALER AND PROTECTIVE COATING

.1 Apply in accordance with manufacturer's instructions.

3.4 CONTROL JOINT

.1 Provide flush control joints by Schluter, model BWS 100G-3/8. Acceptable alternates by Bengard Manufacturing. Allow for control joints every 5 metres along corridors and at each corner of intersecting corridors.

END OF SECTION

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Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 78 00 - Closeout Submittals.

.3 Section 06 10 10/06101 - Rough Carpentry: Wood strapping.

.4 Fabrication: to ASTM 365-78 and CAN/GSB-92.1-M77.

.5 Installation: to ASTM C636-76, except where specified otherwise.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.1 ASTM E1264-[98], Classification for Acoustical Ceiling Products.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-51.34-[M86], Vapour Barrier, Polyethylene Sheet, for Use in Building Construction.

.2 CAN/CGSB-92.1-[M89], Sound Absorptive Prefabricated Acoustical Units.

.3 Canadian Standards Association (CSA)

.1 CSA B111-[74(R1998)], Wire Nails, Spikes and Staples.

.4 Underwriters Laboratories of Canada (ULC)

.1 CAN/ULC-S102-[88(R2000)], Surface Burning Characteristics of Building Materials.

1.3 SAMPLES

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

.2 Submit two each 300 x 300 mm samples of each individual tile and grid type in accordance with Section 01340.

1.4 REGULATORY REQUIREMENTS

.1 Fire-resistance rated floor/ceiling and roof/ceiling assembly: certified by a Canadian Certification Organization accredited by Standards Council of Canada.

1.5 DESIGN CRITERIA

.1 Maximum deflection 1/360 of span to ASTM 365-78 deflection test.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan

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1.7 ENVIRONMENTAL REQUIREMENTS

.1 Permit wet work to dry before commencement of installation.

.2 Maintain uniform minimum temperature of [15]^{0}C and humidity of [20] - [40] % before and during installation.

.3 Store materials in work area [48] hours prior to installation.

1.8 EXTRA MATERIALS

.1 Provide extra materials of acoustic units in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide acoustical units amounting to [2] % of gross ceiling area for each pattern and type required for project.

.3 Extra materials to be from same production run as installed materials.

.4 Clearly identify each type of acoustic unit, including colour and texture.

.5 Store where directed by Consultant.

Part 2 Products

2.1 MATERIALS

.1 Acoustic units for suspended ceiling system: to CAN/CGSB-92.1.

.2 Acoustic Ceiling Panels, Designation LAP: Acoustic Ceiling Panels, wet formed mineral fibre panels, by Armstrong World Industries Canada Inc., Mississauga. Colour: White; Types as noted below:

.3 **Panel Types**:

.1 Type 1: LAP 1: 600 x 1200 mm x 15.9 mm thick; 'Fine Fissured' with medium texture, Square Lay-In, #1729; Location: For use at classroom areas and any additional areas as indicated.

.2 Type 2: LAP 2: 600 x 1200 mm; 'Fine Fissured (Fireguard)' with medium texture, Square Lay-In, #1830. Location: For use at main corridor areas requiring smoke separation and any additional areas as indicated.

.4 Acceptable alternates: similar purpose-designed high humidity ceiling panels by CGC Interiors, BPB Canada Inc. and Certainteed.

.5 **Suspension system Type 1**: 23.8 mm (15/16") "Prelude XL" exposed tee bar grid, including wall moulding, by Armstrong. Colour: white. Acceptable alternate: similar suspension system by CGC Interiors, Oakville, Chicago Metal Corp. and Certainteed. Grid sizes to suit ceiling panel types as shown on drawings.

.6 Suspension System Type 2: 'Prelude XL' Fireguard 15/16" exposed tee bar grid, including wall moulding, by Armstrong World Industries Canada. Acceptable alternates meeting tested Fire Rating by CGC Interiors, Oakville. Colour: White.

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.8 Suspension System for Radiant Panel Heaters: not applicable to this project.

.9 Hangers: 2.6 mm galvanized soft annealed steel wire.

.10 Accessories: splices, clips, retainers, etc., to complement suspension system components.

.11 Adhesive: low VOC type recommended by acoustic unit manufacturer.

.12 Staples, nails and screws: to CSA B111 non-corrosive finish as recommended by acoustic unit manufacturer.

.13 Hold down clips: purpose made clips to secure tile to suspension system, approved for use in fire-rated systems.

Part 3 Execution

3.1 EXAMINATION

.1 Do not install acoustical panels and tiles until work above ceiling has been inspected by Consultant.

3.2 INSTALLATION

.1 Install acoustical panels and tiles in ceiling suspension system.

.2 Install acoustic units parallel to building lines with edge unit not less than 50% of unit width.

.3 Scribe acoustic units to fit adjacent work. Butt joints tight, terminate edges with moulding.

.4 Support suspension system main runners at 1200 oc maximum with hangers from structure. Assembly shall support super-imposed loads. Maximum permissible deflection, 1/360 of span.

.5 Attach cross member to main runner to provide rigid assembly.

.6 Install suspension assembly to manufacturer's written instructions.

.7 Install flush edge moulding at junction of acoustic unit ceiling and other materials around entire length of joint. Secure to construction. Butt joints neatly, square and true in alignment.

.8 Set acoustic units in place.

.9 Set all ceiling levels by the use of transit or laser level.

.10 Ensure all installations are clean upon owner acceptance. Be responsible for monitoring damage and soiling after installation and before owner occupancy. Prior to owner takeover, replace all tiles with damage, blemishes or soiling whether caused by

subcontractor handling or post installation above-ceiling adjustments, balancing, cabling, etc.

.11 Provide for Owner twenty-four (24) complete, undamaged ceiling tiles of each type, sealed and boxed. Leave in location as directed by Architect.

3.3 INTERFACE WITH OTHER WORK

.1 Co-ordinate ceiling work to accommodate components of other sections, such as light fixtures, diffusers, speakers, sprinkler heads, to be built into acoustical ceiling components.

END OF SECTION

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Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 03 30 00 – Cast-in-Place Concrete.

.3 Section 03 35 05 – Concrete Floor Hardeners.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM International)

.1 ASTM F1066-[99], Specification for Vinyl Composition Floor Tile.

.2 ASTM F1344-[00], Specification for Rubber Tile.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-25.20-[95], Surface Sealer for Floors.

.2 CAN/CGSB-25.21-[95], Detergent-Resistant Floor Polish.

1.3 SAMPLES

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

.2 Submit duplicate tile in size specified, 300 mm long.

1.4 WASTE MANAGEMENT AND DISPOSAL

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

.2 Collect and separate for disposal [paper] [plastic] [polystyrene] [corrugated cardboard] packaging material in appropriate on-site bins for recycling.

.3 Dispose of unused finish and adhesive materials at official hazardous material collections site approved by Consultant.

.4 Do not dispose of unused finish and adhesive materials into sewer system, into streams, lakes, onto ground or in other locations where it will pose health or environmental hazard.

1.5 ENVIRONMENTAL REQUIREMENTS

.1 Maintain air temperature and structural base temperature at flooring installation area above 20°C for 48 hours before, during and for 7 days after installation.

1.6 EXTRA MATERIALS

.1 Provide 6 m^2 or 3% of each colour, pattern and type flooring material required for this project for maintenance use.

.2 Extra materials to be from same production run as installed materials.

.3 Clearly identify each container of floor tile and each container of adhesive.

.4 Store where directed by Consultant.

Part 2 Products

2.1 MATERIALS

.1 Luxury Vinyl Tile (LVT): Gerflor's Creation 55 a 2.5mm thick vinyl tile product in plank or tile format with a printed design protected by a 0.55mm thick transparent wearlayer and including the ProtecShield surface treatment.

.1 1278 Charming Oak Beige, Creation 55, distributed by Gerflor.

Flooring installed with full-spread standard adhesive.

.2 Resilient base (RR): rubber, top set coved, 3 mm thick, rubber, 100 mm high minimum 1200 mm long, including premoulded end stops and external corners. Acceptable materials: non-shrink Rubber Wall Base with toe as manufactured by Johnsonite. Colours: Six (6) from full Johnsonite "Coloright" colour line.

.3 Vinyl Cove Base adhesives: 'Johnsonite 990 Solvent Free Environmentally Safe White Acrylic Cove Base Adhesive'. Submit product data sheets.

.4 Primer: 'Flextile 43 Latex Additive' by Flextile. Submit product data sheets

.5 Sub-floor filler and leveller: 'Flextile Patch' by Flextile, or alternate as recommended by flooring manufacturer for use with their product.

.6 VCT Adhesive: Acceptable Materials: Armstrong S-515 Moisture Resistant, clear, waterproof adhesive. Submit product data sheets

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

.8 Polyethylene sheet: to CAN2 51.33-M77, Type 2, for protection.

.9 Nose filler: Epoxy caulking compound Johnsonite 930.

.10 Nose filler: Epoxy caulking compound Johnsonite 930.

Part 3 Execution

3.1 INSPECTION

.1 Ensure concrete floors are dry, by using test methods recommended by tile manufacturer. Inspect for negative alkalinity, carbonization or dusting.

.2 Commencement of work indicates acceptance of conditions by flooring installer.

3.2 SUB-FLOOR TREATMENT

.1 Confirm concrete floors where porcelain tile meets resilient has been depressed to allow for flush condition. Do NOT feather edges of resilient tile floors flush without prior review and approval of the Architect.

.2 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.

.3 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.

3.3 TILE APPLICATION

.1 Apply adhesive uniformly using recommended trowel in accordance with flooring manufacturer's instructions. Do not spread more adhesive than can be covered by flooring before initial set takes place.

.2 Lay flooring with joints parallel to building lines to produce symmetrical tile pattern. Border tiles minimum half tile width.

.3 Install tiles in corridor as per pattern provided by Consultant. Pattern will be provided at a later date.

.4 Cut tile and fit neatly around fixed objects.

.5 Install flooring in pan type floor access covers. Maintain floor pattern.

.6 Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.

.7 Install metal edge strips at unprotected or exposed edges where flooring terminates.

.8 At doorways to incrapack units, extend tile and base fully into door opening to incrapak classroom.

.9 Install solid colour vinyl strip to form gymnasium game lines, as indicated on drawings. Cut field tiles tight and smooth contour against game lines. Strips to be minimum of 300 mm long on curves and of indicated width and colour.

3.4 BASE APPLICATION

.1 Lay out base to keep number of joints at minimum. Use lengths as long as practicable and not less than minimum 500 mm long.

.2 Clean substrate and prime with one coat of adhesive.

.3 Apply adhesive to back of base.

.4 Set base against wall and floor surfaces tightly by using 3 kg hand roller.

.5 Install straight and level to variation of 1:1000.

.6 Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.

.7 Miter internal corners. Use premoulded corner pieces at all external corners and ensure full adhesion through to ends of corner pieces. See detail for termination at door frames.

.8 Install toeless type base before installation of carpet on floors.

.9 Leave in the building one (1) complete carton of each of two (2) colours of floor tile and twelve (12) tiles of each of the remaining colours. Colours of extra tile to be specified by Consultant.

3.5 INITIAL MAINTANANCE AFTER INSTALLATION

.1 Broom sweep or vacuum thoroughly.

.2 Do not wet mop, wash, scrub, or strip the floor. These procedures will be done by the Owner.

3.6 PROTECTION OF FINISHED WORK

.1 Following broom sweeping, protect new floors with 0.15 mm thick Polyethylene cover and lay planking in all necessary traffic areas to minimize damage by other trades. Maintain until just before final inspection.

.2 Prohibit traffic on floor for 48 hours after installation.

3.7 PREPARATION FOR INSPECTION

.1 Only if so notified by Architect, and in the presence of the Owner, scrub the floor using a neutral detergent and a floor machine of 170-250 rpm capability equipped with a scrub brush or a scrubbing pad (3M blue or equal).

.2 Lightly rinse and allow to dry. Note: Do not flood the floor with rinse water, scrubbing, or stripping solutions. Final re-washing, if required will be done by owner.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 06 40 00 - Architectural Woodwork.

.3 Section 05 12 23 – Structural Steel for Buildings.

.4 Section 05 50 00 – Metal Fabrications.

.5 Section 08 11 14 – Metal Doors and Frames.

.6 Section 09 91 27 – Finish and Colour Notes.

.7 Section 09 91 30 – Door and Room Finish Schedule.

1.2 REFERENCES

.1 Architectural Painting Specifications Manual, Master Painters Institute (MPI).

1.3 WARRANTY

.1 Upon completion of the work, contractor shall warrant that the work has been performed with respect to the standards and requirements incorporated in the MPI specification manual-latest edition.

1.4 ENVIRONMENTAL PERFORMANCE REQUIREMENTS

.1 Do not apply paint finish in areas where dust is being generated.

.2 Conform to requirements of MPI Manual.

.3 Comply with the requirements of Section 01 35 30- Health and Safety.

1.5 JOB MOCK-UP

.1 Complete a mock-up room to be reviewed and approved by Owner and Consultant for approval on application of block filler and finish paint coats.

1.6 SCHEDULING OF WORK

.1 Submit work schedule for various stages of painting to Consultant for approval. Submit schedule minimum of 72 hours in advance of proposed operations.

.2 Obtain written authorization from Consultant for any changes in work schedule.

.3 Schedule painting operations to prevent disruption of occupants in and about the building.

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1.7 EXTRA MATERIALS

.1 Submit one - four litre can of each type and colour of [primer] [stain] [finish coating]. Identify colour and paint type in relation to established colour schedule and finish system.

.2 Deliver to Contractor and store where directed.

1.8 DELIVERY, HANDLING AND STORAGE

.1 Labels shall clearly indicate:

- .1 Manufacturer's name and address.
- .2 Type of paint or coating.
- .3 Compliance with applicable standard.
- .4 Colour number in accordance with established colour schedule.

.2 Remove damaged, opened and rejected materials from site.

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

.4 Observe manufacturer's recommendations for storage and handling.

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

.6 Store materials and equipment in a well ventilated area with temperature range 7^0C to 30^0C.

.7 Store temperature sensitive products above minimum temperature as recommended by manufacturer.

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

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

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

.11 Fire Safety Requirements:

- .1 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.
- .2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

1.9 FINISHES AND COLOURS

.1 Review the requirements outlined in Section 099127, Finish Schedule and Colour Notes. A separate colour schedule will be issued after contract award.

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.2 Allow for 10 colours total from all formulations for this project including room wall accent colours.

1.10 WASTE MANAGEMENT AND DISPOSAL

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

.2 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.

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

.4 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into ground the following procedures shall be strictly adhered to:

.1 Retain cleaning water for water-based materials to allow sediments to be filtered out.

.2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.

.3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.

.4 Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.

.5 Empty paint cans are to be dry prior to disposal or recycling (where available).

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

.6 Set aside and protect surplus and uncontaminated finish materials: galvanized touch up; wood stain, prefinished metal touch up paint. Deliver to or arrange collection by recycling organization for verifiable re-use or re-manufacturing.

.7 Close and seal tightly partly used sealant and adhesive containers and store protected in well ventilated fire-safe area at moderate temperature.

Part 2 Products

2.1 MATERIALS

.1 Acceptable Manufacturer's: Where MPI code numbers are not referenced, use Products from one of the following manufacturers:

.1 Benjamin Moore & Co. Ltd.

.2 Canadian Industries Ltd.

.3 ICI (Glidden) Paints.

.4 Para Paints.

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.5 Pratt & Lambert Inc.
.6 SICO Coatings.
.7 The Sherwin-Williams Company.

.2 Manufacturers of intumescent coatings having Product considered acceptable for use:

.1 A/D Fire Protection Systems Inc.
.2 Carboline.

.3 Paint materials for paint systems shall be products of a single manufacturer.

.4 Acceptable products: Per MPI Manual and as listed.

.5 Paint materials for each paint system to be products of a single manufacturer.

.6 Use low-VOC and low-odour paints only.

Part 3 Execution

3.1 GENERAL

.1 Prepare surfaces to receive paint per MPI Manual.

3.2 APPLICATION

.1 Sand and dust between each coat to remove defects visible from distance up to 1.5 m.

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

.3 Apply each coat at the proper consistency. Each coat of finish should be fully dry and hard before applying the next coat, unless the manufacturer’s instructions state otherwise.

.4 Method of application to be as approved by Consultant. Apply paint by brush and roller. Conform to manufacturer's application instructions unless specified otherwise.

.5 Brush and Roller Application:

.1 Apply paint in a uniform layer using brush and/or roller of types suitable for application.
.2 Work paint into cracks, crevices and corners.
.3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.
.4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces shall be free of roller tracking and heavy stipple unless approved by Consultant.
.5 Remove runs, sags and brush marks from finished work and repaint.

.6 Spray application:

.1 Provide and maintain equipment that is suitable for intended purpose, capable of properly atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.

.2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.

.3 Apply paint in a uniform layer, with overlapping at edges of spray pattern.

.4 Brush out immediately all runs and sags.

.5 Use brushes to work paint into cracks, crevices and places which are not adequately painted by spray.

.7 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access and only when specifically authorized by Consultant.

.8 Apply coats of paint as a 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 cut-outs of doors after fitting as specified for door surfaces.

3.3 MECHANICAL/ELECTRICAL EQUIPMENT

.1 Refer also to Finish Notes in Section 099127- Finish and Colour Notes.

.2 Paint exposed conduits, pipes, hangers and other mechanical and electrical equipment occurring in finished areas as well as inside cupboards and cabinet work. Colour and texture to match adjacent surfaces, except as noted otherwise. Coordinate with mechanical trades applying banding and labeling after pipes have been painted. Do not paint white PVC covers on exposed mechanical water, drain and other lines

.3 Paint gas piping standard yellow where visible on roof or in service spaces. Do not paint gas meter or gas equipment in wall niche yellow—colour to later selection by Architect.

.4 Paint surfaces inside of ductwork and elsewhere behind grilles where visible using primer and one coat of matte black paint.

.5 Paint both sides and edges of plywood backboards for equipment before installation.

.6 Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

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3.4 PAINT SYSTEMS

.1 System references listed are based on Chapters 4A and 4B of MPI Manual and are MPI Premium Grade, unless noted otherwise.

3.5 INTERIOR FINISHES

.1 Wood, where applicable:

- .1 Miscellaneous trim: INT. 1-A, Alkyd Semi-Gloss Finish, Premium Grade
- .2 Wood slat ceiling to Foyer 102: INT. 1-J Premium Grade; satin finish, Fire Retardent. Slats to be sealed and shop finished prior to installation. Refer also to Section 064000.
- .3 Casework and miscellaneous wood items:
  - .1 Exterior surfaces: INT. 1-A, Alkyd Semi-Gloss Finish, Premium Grade
  - .2 Interior surfaces: INT. 1-A, Alkyd Semi-Gloss Finish, Premium Grade
  - .3 Wood Benches and Upper Shelves: INT. 2-F, Stained Alkyd Satin Finish, Premium Grade.
  - .4 Gym Storage Shelves: INT. 3-A, Stain Finish, Custom Grade

.2 Gypsum board: INT.4-B, Latex Eggshell Finish, Premium Grade.

.3 Acoustical wall panels: INT. 6-A, Latex Flat Finish, Custom Grade.

.4 Concrete Block: INT.8-C -modified; Latex Semi-Gloss Finish, Premium Grade. Modified system refers to all work where 2 full coats of block filler shall be applied.

.5 Concrete Block (P-GF): Two-coats of 100% zero VOC epoxy, Premium Grade - shown on Room Finish Schedule as P-GF (Paint - Gloss) finish.

.6 Concrete Floors (S.CONC); refer to Section 033505 - Concrete Floor Hardeners and Sealers for liquid sealer.

.7 Concrete Floors (EWPM); refer to Section 099724 for epoxy floor finish.

.8 Exposed Cast in Place Concrete ceilings: INT. 8-A, Latex Flat Finish, Premium Grade

.9 Exposed Precast Concrete ceilings: INT. 8-A, Latex Flat Finish, Custom Grade

.10 Miscellaneous metal:

- .1 Primed: INT. 12-A, Alkyd Semi-Gloss Finish, Premium Grade
- .2 Galvanized: INT. 13-A, Alkyd Semi-Gloss Finish, Premium Grade
- .3 INT. 12-G, Water based Epoxy finish, two coats on a rust inhibitive primer for all exposed steel on Stairs 1S1 & 1S2 including exposed steel nosing at porcelain tile stair landing, stair stringer, pickets and railings".

.11 Galvanized metal: INT. 13-A, Alkyd Semi-Gloss Finish, Premium Grade

.12 Hollow Metal Doors and Frames: Without exception, all wipecoated Galvanized Hollow Metal Doors, Frames and Screens, interior and exterior shall be field cleaned with

solvent, galvanized prime paint coated and then finished with INT. 13-A Premium Grade, Gloss Finish. Base coat primer shall be submitted for review in advance or door/frame painting shall be rejected by Consultant. For exterior hollow metal frames, if any, adjacent to aluminum windows, provide finish coat as an exterior premium grade metallic gloss finish to match anodized windows or Aluminum Composite panels. Colour to be confirmed by Architect during construction.

.13 Gymnasium Painting:

.1 note that painting of gymnasium acoustic deck and structural steel is part of painting contract.

.2 Allow for single colour for deck and joists.

.3 Allow for complete painting of all hangers and equipment brackets including but not limited to basket ball baskstops, electrical pipe rails, mechanical equipment fan cages, etc.

.4 Allow for accent painting of 2 perimeter stripes to all walls and over proscenium, shown on drawings. Total of 2 accent colours for these stripes.

.14 Other Painting:

.1 Painting of Elevator/Lift doors and frame is part of this contract.

.2 In the following rooms with exposed metal deck including mechanical rooms and storage rooms:

.1 Allow for single colour for deck and joists.

.2 Allow for complete painting of all hangers and equipment brackets including but not limited to, electrical and mechanical equipment, etc.

.3 painting deck/floor slab and structural steel is part of painting contract.

.15 Corridor Graphic Silouette Painting:

.1 Provide the single colour silhouette image in one location of corridor as shown on drawing A17.

.2 Consultant can provide the digital file of images to be transcribed if required.

3.6 EXTERIOR PAINTING

.1 Wood Soffits and Column Inserts: Refer to Section 06 20 13.

.2 Pavement markings: EXT. 7-A, Zone Marking Alkyd Finish, Premium Grade.

.3 Concrete columns at front entrance: EXT. 6F, Two component epoxy finish, Premium Grade.

.4 Miscellaneous metal:

.1 Primed: EXT. 11-A-Gloss, Premium Grade

.2 Galvanized: Touch up any welds, cuts or damage with ‘Galvafroid’ Paint by W.R. Meadows prior to prime and finish coats.; Finish System EXT. 12-A-Gloss, Premium Grade

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.5 Galvanized Structural Steel: Touch up any welds, cuts or damage with 'Galvafroid' Paint by W.R. Meadows prior to prime and finish coats.; Finish System: EXT. 12-A-Gloss, Premium Grade.

.6 Steel - high heat: EXT. 15-A

.7 Paint exterior vents and louvres located in masonry to match adjacent masonry in colour.

3.7 INSPECTIONS

.1 Provide Architect with all formulations at outset of project.

.2 Provide inspections by representative of the Master Painters Institute (MPI) in compliance with the terms of the Canadian Painting Contractors Association Inspection and Guarantee Program.

.3 Cooperate at all times with the paint inspection agency in the performance of their duties as required as part of the work of this Section.

.4 MPI inspection costs to be paid from Cash Allowance.

END OF SECTION

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Part 1 General

1.1 GENERAL FINISH NOTES

.1 The Material and Colour Schedule will be issued by the Consultant after tender. It shall be read in conjunction with the Drawings, Specifications, Room Schedule and Door Schedule. Colour and material references named will be based on one manufacturer, as carried by the Contractor or, in the case that no specific manufacturer is carried, based on the Consultant's choice.

.2 Approved alternative manufacturers will be acceptable only as indicated in the specifications. However, approved alternate products submitted must match the products named in the Specification to the Consultant's selection. Alternate products other than those named in the specifications will not be allowed unless previously approved by the Consultant.

.3 Consult Consultant prior to painting any surface not included in the formulae as listed.

.4 Final colour for exterior painted surfaces and prominent interior areas shall be approved on the job site by the Consultant.

.5 Paint samples: Contractor to submit paint samples for all areas required to "Match Adjacent Finish".

.6 All similar paint formulations are to be identical when dry. Variations in tone, texture or sheen shall not be accepted.

.7 Submit two 300 mm x 300 mm paint samples of each colour required for approval by the Architect.

.8 Exact locations of accent paint called for in the Material and Colour Schedule, to be issued after Contract award, not specifically identified on the drawings are to be verified on site with the Consultant.

1.2 EXTERIOR FINISH NOTES

.1 All exposed metal (doors, frames, lintels, stairs, handrails, mechanical equipment, etc.) to be painted except for prefinished metal louvres, stainless steel, and aluminum. Mechanical equipment is to be painted whether delivered to the site prepainted or not (exhaust fans, goosenecks, exhaust stacks, supports, HVAC units, HRU units, etc.). Colours to match adjacent material-generally either to match brick or tan to match flashing or siding material. Do not paint exposed white PVC pipe covers on interior. Architect will advise on jobsite which other items mentioned above, if any, do not require painting.

.2 All unfinished metal work provided by landscaping is to be painted by Section 099122-Painting.

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1.3 INTERIOR FINISH NOTES

.1 All heating units, recessed convectors, grilles, pipes, access panels, hangers and miscellaneous exposed metal work (except stainless steel or anodized aluminum) to be painted to match the surfaces on which they occur unless noted otherwise on the colour schedule, prefinished in suitable colour or directed by the Consultant. If prefinished equipment is damaged, it shall be re-painted. Painting to be by formulations specified in Section 09 91 12- Painting.

.2 All interior fitments, casework, millwork, etc. to be melamine unless otherwise noted. Refer to Sections for specific requirements regarding materials, construction, finishes and hardware. Note that drawer and cupboard interiors are to be considered as exposed surfaces and will therefore be finished.

.3 Do not paint over nameplates, identification tags, etc.

.4 Make good all existing surfaces and finishes that are damaged during construction.

END OF SECTION

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PART 1 - GENERAL

1.1 General Notes

1. Find the **Room Finish Schedule** on the following pages

2. **This schedule MUST be read in conjunction with a complete set of drawings** to ascertain all details and finished surfaces that may not be listed on the schedule.

3. Refer to interior elevations, plans sections and reflected ceiling plans to coordinate finish notes and extents of materials.

4. Refer to various specifications sections for different types of materials including, but not limited to:
   .1 flooring materials such as resilient tile
   .2 ceiling materials such as Lay-In Acoustical panel (LAP)
   .3 Acoustical wall treatment

5. Abbreviations Legend:

Code	Reference
ASD	Acoustic Steel Deck
CMT	Porcelain Mosaic Floor Tile
CPT	Carpet Tile
CW	Curtain Wall
CWT	Ceramic Wall Tile
CB	Concrete Block
EWPM	Exposed Waterproof Membrane (refer to Section 09 97 24)
GWB	Gypsum Board
HAP	Hanging Acoustic Panels
LAP	Lay-in Acoustic Panel
P.GF	Paint - Gloss Finish
POR	Porcelain Tile
P	Paint
RR	Resilient Rubber
RSTR	Rubber Stair Tread & Riser
S.CONC	Sealed Concrete (refer to Section 03 35 05)
VCT	Vinyl Composite Tile
WRGB	Water-Resistant Gypsum Board

END OF SECTION

ROOM FINISH SCHEDULE		FLOOR		WALL		CEILING			REMARKS
NO.	NAME	FIN.	BASE	MAT'L	FIN.	MAT'L	FIN.	HEIGHT(mm)	
GROUND FLOOR									
X180	EX. CORRIDOR	NEW/EX TER	NEW/EX TER	NEW/EX CB	P	LAP 2	-	2500	FOR NEW TERRAZZO PATCH, REFER TO ROOM FINISH SCHEDULE FOR EXACT AREA. REFER TO PLANS FOR NEW PAINT FINISH AREA.
X1	EX.LIBRARY	EX CPT	NEW/EX RR	NEW/EX CB	P	LAP 2	-	3000	EXISTING CARPET TO REMAIN. REMOVE THE CARPET UP TO THE NEW WALL LOCATION. INSTALL NEW RUBBER BASE AT NEW BLOCK WALL. PROVIDE NEW PAINT FINISH TO NEW BLOCK WALL.
X104	EX.CLASSROOM	VCT	RR	NEW/EX CB	P	LAP 2	-	3000	PROVIDE NEW ACOUSTIC CEILING TILES ON EXISTING GRID. PROVIDE NEW GRID AND ASSOCIATED COMPONENTS AS REQUIRED.
A101	ELEVATOR	POR	-	-	-	-	-	-	REFER TO SPECIFICATIONS FOR FINISHES BY MANUFACTURER
A102	ELEV. MACHINE CLOSET	EPWM	RR	NEW/EX CB	P	LAP 2	-	2500	
A103	EXTERIOR STORAGE	EPWM	RR	NEW/EX CB	P	LAP 2	-	2500	
A104	PRINCIPAL OFFICE	LVT	RR	NEW/EX CB	P	LAP 2	-	2500	
A105	HEALTH ROOM	LVT	RR	NEW/EX CB	P	LAP 2	-	2500	
A106	GENERAL OFFICE	LVT	RR	NEW/EX CB	P	LAP 2	-	2500	
A107	MAIL ROOM	LVT	RR	NEW/EX CB	P	LAP 2	-	2500	
A108	HALLWAY	LVT	RR	NEW/EX CB	P	LAP 2	-	2500	
A109	V.P.OFFICE	LVT	RR	NEW/EX CB	P	LAP 2	-	2500	

ROOM FINISH SCHEDULE		FLOOR		WALL		CEILING			REMARKS
NO.	NAME	FIN.	BASE	MAT'L	FIN.	MAT'L	FIN.	HEIGHT(mm)	
A110	SEMINAR ROOM	LVT	RR	NEW/EX CB/GB	P	LAP 2	-	2500	
A111	ORTHO WASHROOM	POR	POR	NEW/EX CB/GB	CWT	GYP	P	2600	CWT FLOOR TO CEILING. REFER TO INTERIOR ELEVATION FOR LOCATION OF CWT.
SECOND FLOOR									
X280	EX.CORRIDOR	NEW/EX TER	NEW/EX TER	NEW/EX CB	P	LAP 2	-	2500	FOR NEW POR PATCH, REFER TO ROOM FINISH SCHEDULE FOR EXACT AREA. REFER TO PLANS FOR NEW PAINT FINISH AREA.
X205	EX.CLASSROOM	EX/NEW VCT	RR	EX CB	P	EX	-	EX	PATCH EXISTING VCT FLOORING TO ACCOMMODATE NEW DOOR.
A202	STORAGE	VCT	RR	NEW/EX CB	P	LAP 2	-	2500	
A203	UTR	POR	POR	NEW/EX CB/GB	CWT	GYP	P	2600	CWT FLOOR TO CEILING. REFER TO INTERIOR ELEVATION FOR LOCATION OF CWT.
A204	SEMINAR ROOM	VCT	RR	NEW/EX CB	P	LAP 2	-	3000	PAINT OVER EXISTING MURALS AS PART OF PAINTING THE ENTIRE ROOM.

ABBREVIATIONS:

	LVT - Luxury Vinyl Tile	RR - Resilient Rubber base		P - Paint		CWT - Ceramic Wall Tile
	CPT Carpet Tile	S.CONC - Sealed Concrete		EXP - Exposed		LAP - Lay-In Acoustic Ceiling Tile
	SF - Resilient Sheet Flooring	GYP - Gypsum Wall Board		EPWM- Epoxy Flooring		ACT - Acoustic Ceiling Tile
	POR - Porcelain Tile	CB - Concrete Block		TER - Terrazzo		

1 General

1. SUMMARY

.1 Section Includes:
- .1 Compliance with requirements of the sections of Division 1 of the specifications.
- .2 Requirements for providing the concrete floor sealer parts of the Work.

2. SUBMITTALS

.1 Product Data:
- .1 Submit manufacturer's technical data, installation instructions, maintenance instructions and general recommendations for concrete floor sealer.

.2 Samples:
- .1 Provide samples as specified in section 01 33 00 Samples, supplemented as follows:
  - .1 Submit 300 mm x 300 mm square sample of concrete floor sealer applied to a smooth trowel finish concrete paver.
  - .2 Submit each type of sample in triplicate.
  - .3 Modify and resubmit samples as many times as may be necessary to obtain Consultant’s approval.

.3 Closeout Documents:
- .1 Provide manuals that contain the floor sealer manufacturer's maintenance and repair manual. The maintenance and repair manuals shall give specific warning of maintenance practices, Products and materials which may cause damage and disfigurement.

3. QUALITY ASSURANCE

.1 Single Source Responsibility:
- .1 Obtain concrete floor sealer Products from the same manufacturer with not less than ten (10) years of successful experience in manufacturing and installing principal materials described in this section. Contractor must have completed at least five projects of similar size and complexity. Provide secondary materials only of type and from source recommended by manufacturer of primary materials.

.2 Pre-installation Meeting:
- .1 Hold a pre-installation meeting at the Place of the Work.

.3 Mock-up:
- .1 At site, under manufacturer's supervision, apply for approval 9 m2 of each type of complete floor finish in area designated, to match submitted samples. When approved, site applied sample to be standard for appearance, texture, workmanship, etc. All Work to conform to this sample.

4. DELIVERY, STORAGE AND HANDLING

.1 Deliver Products to the Place of the Work. Check material for completeness and shipping damage prior to job start.

.2 All materials must be factory pre-weighed and pre-packaged in single, easy to manage batches to eliminate on site mixing errors. No on site weighing or volumetric measurements allowed.

.3 Store Products in a dry, enclosed area protected from exposure to moisture. Temperature of storage area shall be maintained between 16° and 32°C.

5. PROJECT CONDITIONS

.1 Environmental Requirements:
- .1 Concrete substrate must be properly cured for a minimum of 30 days.

.2 Temperature:
- .1 Maintain ambient temperature of not less than 18 deg.C/65 deg.F and a floor temperature of not less than 16 deg.C/60 deg.F from 7 days before installation to at least 48 hours after completion of work and maintain relative humidity not higher than 40% during same period.

.3 Moisture:
- .1 Ensure substrate is within moisture limits prescribed by concrete floor sealer manufacturer.

.4 Protection:
- .1 Areas to accept concrete floor sealer shall be free of other trades during, and for a period of 24 hours, after floor installation.

.5 Manufacturer’s Representative:
- .1 Manufacturer's representative must be on job site at start of installation.

6. WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate packaging material for recycling in accordance with the Waste Management Plan.

.2 Remove from the Place of the Work and dispose of packaging materials at appropriate recycling facilities.

.3 Dispose of unused finish and adhesive materials at official hazardous material collections site.

7. WARRANTY

.1 Furnish a single, written warranty covering both material and workmanship for a period of three (3) full years from date of Substantial Performance of the Work. The Warranty shall cover defects such as cracking, delamination under impact and under heavy loaded carts and under thermal shock, and excessive wear.

2 Products

1. MATERIALS

.1 Manufacturers:
- .1 The specifications are based on Products manufactured by Sika Canada Inc. Products by Duochem Inc, division of Corrosion Services, CPD Construction Products, Niagara Protective Coatings, Selby/Ucrete,. Stonhard Ltd. Euclid or other approved manufacture may be approved on condition of being able to furnish evidence of equivalency or better to the specified Products.

.2 Concrete Floor Sealer System (EWPM)
- .1 General:
  - .1 Two-component, clear, water based mat epoxy coating, Sika MRW roller applied two coat system on a sealed/primed substrate.
- .2 Characteristics
  - .1 Seamless and very easy to clean.
  - .2 Abrasion and chemical resistant.
  - .3 No odour typical of solvent based coatings
- .3 Minimum Technical requirements
  - .1 Solids content: 100% by weight, 100% by volume.
  - .2 Pot life90 mins.
  - .3 Application method: Brush, or roller.
  - .4 Number of coats: Two.
  - .5 Dry film thickness per coat: as per manufacturer's instructions
  - .6 Cleaning solvent: Warm water.
  - .7 Cure time: Touch dry: 4-5 hours.
    - .1 Hard dry: 16-18 hours.
    - .2 Complete cure: 7 days.
  - .8 Recoat time: 16 hours.
- .4 Minimum Physical properties
  - .1 Abrasion resistance: 175 mg loss per ASTM D 4060 CS-17 wheels 1000 revolutions 1000 gr/wheel.
  - .2 Tensile strength 2.1 MPa per ASTM D 2370 (2.8 mils D.F.T.)
- .5 Primer: as recommended by manufacturer.

3 Execution

1. WORKMANSHIP

.1 General
- .1 Handle, mix and apply Products as per the Product manufacturer's printed surface preparation and application specifications, and as specified in this specification section 09 97 24.
- .2 Application tools and equipment shall be as per the Product manufacturer's printed requirements.

2. PREPARATION

.1 Prepare concrete by sanding smooth and for removal of bond inhibiting substances.

.2 Apply as per manufacturer's instructions.

3. **APPLICATION**

.1 Apply concrete sealer as indicated.
.2 Rolling direction of each coat shall be the same.

4. **FIELD QUALITY CONTROL**

.1 The Owner reserves the right to invoke the following material testing procedure at any time, and any number of times during period of flooring application.

.2 The Owner may engage service of an independent testing laboratory to sample materials being used on the jobsite. Samples of material will be taken, identified and sealed, and certified in presence of Contractor.

.3 Testing laboratory will perform tests for any of characteristics specified, using applicable testing procedures referenced herein, or if none referenced, in manufacturer's product data.

.4 If test results show materials being used do not comply with specified requirements, the Contractor may be directed by Owner to stop work; remove non-complying materials; pay for testing; reapply flooring materials to properly prepared surfaces which had previously been coated with unacceptable materials.

5. **CURING, PROTECTION AND CLEANING**

.1 Cure concrete floor sealing materials in compliance with manufacturer's directions, taking care to prevent contamination during stages of application and prior to completion of curing process. Close area of application for a minimum of 24 hours.

.2 Protect concrete floor sealing from damage and wear during construction operation. Where temporary covering is required for this purpose, comply with manufacturer's recommendations for protective materials and method of application. Contractor is responsible for protection and cleaning of surfaces after final coats.

.3 Cleaning: Remove temporary covering and clean flooring just prior to final inspection. Use cleaning materials and procedures recommended by the concrete floor sealer manufacturer.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures.

1.2 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Shop Drawings:

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

.3 Samples:

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

.4 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site packaging materials at appropriate recycling facilities.

.2 Dispose of recyclable packaging material in appropriate on-site bin for recycling.

Part 2 Products

2.1 MATERIALS

.1 Tackboard (TB) - natural coloured cork tackboard:

.1 Single layer cork sheet 6 mm thick; natural color, on 6 mm particle board to CAN 3.188.1-M78, Grade R.

.2 Extruded aluminum trim No. 205, 1.5 mm wall thickness, mitered, clear anodized finish

.3 Concealed steel fastenings (1 coat CGSB 1-GP-81e baked primer) to toggle bolts. Do not fasten to wall with adhesive.

.4 Size: 1200 H x 3600 Long. Due to oversize dimension, construct with single centre seam in materials using No. 207 divider bar.

.5 Acceptable manufacturer: Architectural School Products, Global, Claridge Products Inc., Martack Specialties Limited or approved alternates meeting or exceeding these specifications.

.2 White Board (WB) - "Vit-Rite: Rite on, Wipe off" model as manufactured by Architectural School Products, Mississauga.

.1 Wall mounted whiteboard; porcelain enameled 22 ga. steel on 11 mm fiberboard core on 28 ga. zinc coated steel back up sheet.

.2 Color: White. Flush trim No. 205, marker tray No. 212, 89 mm deep, minimum, Display Rail.

.3 Provide all hardware and fasteners suitable for secure recessed mounting.

.4 Size, as per drawings.

.5 Acceptable manufacturer: Architectural School Products, Global, Claridge Products Inc., Martack Specialties Limited or approved alternates meeting or exceeding these specifications.

.3 Safety Release Coat Hook:

.1 High strength polycarbonate coat hook with safety release weight under downward pressure to not exceed 12 kg (26 lbs.)

.2 Supply all suitable mounting hardware for a vandal proof, secure installation using stainless steel sleeve bolts on partition doors or panels. Do not supply standard Robertson or Phillips head screws.

.3 Colours: Allow for three (3) colours from Manufacturers standard line

.4 Acceptable Materials: "HenkelHook" as manufactured/distributed by Henkel Diversified Inc, London ON, tel (519) 641-5872.

.5 Alternate Acceptable product by "Frost" distributed by Architectural School Products.

.6 Locations:

.1 Coat hooks to be mounted in ALL barrier free washrooms and shall be safety release style and mounted on the side wall

.2 Refer to drawings for quantity and locations.

.7 Samples: submit test data and samples for review as specified in Section 013330 – Submittal Procedures.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

.1 Install where indicated on drawings and as per manufacturer's instructions.

3.3 DEMONSTRATION AND TRAINING

.1 Provide demonstration of operation to the Owner and his representatives.

.2 Provide training for operation, maintenance and repairs.

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3.4 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Clean surfaces after installation using manufacturer's recommended cleaning procedures.

.3 Clean aluminum with damp rag and approved non-abrasive cleaner.

.4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

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Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 08 80 50 - Glazing: Mirrors.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.1 ASTM A167-[99], Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

.2 ASTM B456-[95], Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.

.3 ASTM A653/A653M-[99], Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.4 ASTM A924/A924M-[99], Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.81-[M90], Air Drying and Baking Alkyd Primer for Vehicles and Equipment.

.2 CAN/CGSB-1.88-[92], Gloss Alkyd Enamel, Air Drying and Baking.

.3 CAN/CGSB-12.5-[M86], Mirrors, Silvered.

.4 CGSB 31-GP-107Ma-[90], Non-inhibited Phosphoric Acid Base Metal Conditioner and Rust Remover.

.3 Canadian Standards Association (CSA)

.1 CAN/CSA-B651-[95], Barrier-Free Design.

.2 CAN/CSA-G164-[M92], Hot Dip Galvanizing of Irregularly Shaped Articles.

1.3 SHOP DRAWINGS

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

.2 Shop drawings of units for use by the handicapped shall be distinctly marked and cross-referenced to the corresponding article in the specifications.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

Part 2 Products

2.1 MATERIALS

.1 Ferrous Steel: Sheet, cold-rolled furniture steel, double annealed, mill stretched and leveled, and fully pickled. Otherwise, steel shall be hot-rolled or cold-rolled of alloy to suit needs of fabrication, use, and appearance.

.2 Galvanized Steel: For sheet, Z275 zinc coating designation in accordance with ASTM Specification A525. For irregular sections, hot dip galvanized to comply with CSA G164.

.3 Stainless steel sheet metal: to ASTM A167, Type 304, with No. 4 finish.

.4 Anchors and Fastenings: Where exposed, use stainless steel and otherwise to match metal anchored. Where non-exposed, use the same as that specified for exposed, or use galvanized steel. Anchors and fastenings shall be of the type appropriate for the substrate to which accessory unit is secured.

2.2 COMPONENTS

.1 Towel Bars (TWB): Model B530 (peened finish) by Bobrick or ASI 3800-Series by ASI Group Canada:

.1 16 ga., 32 mm O.D. by 750 mm long with concealed mounting hardware.

.2 Install at 1000 mm above finish floor level.

.3 Location: refer to drawings

.4 Acceptable Alternatives: Watrous

.2 Folding Shower Seats (FSS): Model B5181 by Bobrick or F974-P by Frost or ASI 8206 by ASI Group Canada:

.1 One in the handicapped shower stall, with s.s. retaining clips.

.2 Location: refer to drawings

.3 Handicapped Grab Bars (GB, GBL & GBV): Model 1001-24”, 1001-42” and 1003-30”x30” by Frost or ASI 3801-24P, ASI 3801-36P, and ASI 3807-4P by ASI Group Canada or alternates by Bobrick:

.1 Two (2) bars per water closet stall: one 600 mm long bar behind water closet and one 750 mm x 750 mm L shaped grab bar beside water closet 1050mm mounted as per O.B.C. requirements.

.2 One in each shower stall: model FP (peened finish) 900 mm long L shaped grab bar, mounted as per O.B.C. requirements. Refer to interior elevation drawings.

.3 all bars to have concealed mounting hardware

.4 Location: refer to drawings.

.5 all bars to withstand horizontal and vertical pull of 2.2 kN

.4 Handicapped Grab Bars - Flip-Up (GBF):

.1 18 gauge stainless steel, 38 mm diameter, 800 mm long flip-up grab bar with white wall mounting bracket, automatic locking system.

.2 Model: Flip-up by Dunleavy Cordun Associates (Tel: 905-470-6685)

.3 If locking grab bar not required, provide ASI 3513P & ASI 3513-25P, by ASI Group Canada (with toilet paper holder) or Frost F-1055-FTS (with toilet paper holder).

.4 Location: refer to drawings

.5 Hand Dryers (HD): refer to Electrical specifications.

.6 Purse/Convenience Shelves (CS): Model B298x18 by Bobrick or Frost F-950-18 or ASI 0692-818 by ASI Group Canada:

.1 Location: refer to drawings

.7 Shower Rod and Curtain (SR+C):

.1 Rod: No. B6047 extra heavy duty, by Bobrick or Frost F-1145-S or ASI 1204 by ASI Group Canada, 18 gauge stainless steel

.2 Curtain: 8 gauge vinyl fabric No. B204-3 (1780mm width) B204-1 shower curtain hook by Bobrick or ASI 1200-V and 1200-SHU by ASI Group Canada; 1830 mm high, 300 mm wider than opening.

.3 Location: refer to drawings

.8 Paper Towel Dispensers (PTD): Model B2860 by Bobrick or Frost Model 109-605 or ASI 8523A by ASI Group Canada:

.1 Location: refer to drawings

.2 Confirm final positioning in room with Consultant.

.9 Sanitary Napkin Disposal (SN): Model Bobrick B-254 or Frost F-622 or ASI 0473-1A by ASI Group Canada:

.1 Quantity & Location: Washrooms: Refer to drawings

.10 Toilet Tissue Dispenser (TD): Model Frost F-159

.1 Quantity: 1 per toilet fixture.

.11 Mirrors:

.1 Fixed Mirrors (designation Type M):

.1 Best quality, 6 mm thick float glass, with concealed tamperproof clip fasteners.

.2 24 ga., Type 302 or 304 No 4 finish stainless steel frames on all edges and galvanized iron backing with concealed mounts.

.3 Sizes: each unit 457 mm x 610 mm.

.4 Locations: as shown on Drawings.

.5 Acceptable Materials: Frost ‘Stock series’ model 941TG Tempered Glass; 18” x 24” each.

.6 Acceptable alternate: Model 5440 by Twin Cee; or "Tamperproof" model by Pilkington Ford or ASI 0620 by ASI Group Canada.

.2 Fixed Mirrors (designation Type ML):

.1 Best quality, 6 mm thick float glass complete with concealed, tamperproof clip fasteners

.2 24 ga., Type 302 or 304 No 4 finish stainless steel frames on all edges and galvanized iron backing with concealed mounts.

.3 Sizes: each unit 610 mm x 1520 mm.

.4 Location: refer to drawings

.5 Acceptable Materials: Bobrick Model B-290 2460; 24" x 60" each.

.6 Acceptable alternate: equivalent size and details by Bobrick or Twin Cee or ASI 0600 by ASI Group Canada.

.3 Handicapped Mirrors (designation Type TM):

.1 Tilt mirror

.2 Acceptable Materials: Frost 'Stock series' model 941FG Tempered Glass; Bobrick 290 series or Frost F974FT series or ASI 0535 by ASI Group Canada.

.3 18" x 24" each.

.4 Location: refer to drawings

.5 Frames: Type 302 or 304 No. 4 finish stainless steel.

.6 Mirror Cushioning: PVC pressure-sensitive foamed tape, 6 mm thick with adhesive on one side.

.12 Soap Dispensers (SD): Supplied and installed by Owner.

.13 Soap Dispensers (Recessed): Model B-4063 by Bobrick or ASI 9326 by ASI Group Canada.

.1 Location: refer to drawings

.14 Acceptable Alternates to those items 2.2.1 – 2.2.15 listed above as manufactured by Bradley Corp. & Supplied by Wentworth Assoc. Ltd 905 627-7070 or Frost Products Ltd. meeting or exceeding these specifications.

2.3 FABRICATION

.1 Construction**:** Fabricate with materials, component sizes, metal gauges, reinforcing, anchors and fasteners of adequate strength to withstand intended use.

.2 Where specified as frameless, provide stainless steel accessories with one-piece fronts having 90 degree formed returns at their edges and openings.

.3 Where accessory fronts are framed, frame edges, both inside and outside, with 90 degree formed returns continuously welded and ground smooth at the corners. Doors shall also have 90 degree formed returns as specified.

.4 Unless otherwise specified, hinges shall be semi-concealed stainless steel piano hinges extending full-length of hinged element. Provide hinged elements with concealed, mechanically-retained rubber bumpers for silent closing, and shall close flush with faces of fronts or frames.

.5 Ensure that work will remain free of warping, buckling, opening of joints and seams, distortion and permanent deformation.

.6 No exposed fixings permitted. Cut edges and openings square and smooth. Chamfer corners of edges and cut-outs 1.6 mm.

.7 Assembly: Accurately cut, machine and fit joints, corners, copes and mitres so that junctions between components fit together tightly and in true planes.

.8 Fasten work with concealed methods, unless otherwise indicated on Drawings.

.9 Weld all connections where possible, bolt where not possible and cut off bolts flush with nuts. Countersunk bolt heads, and provide method to prevent loosening of nuts. Ream holes drilled for fastening.

.10 Welded joints shall be tight, flush, and in true planes with base metals. Make welds continuous at joints where entry of water into voids of members or assemblies is possible.

.11 Provide for differential movements within assemblies and at junctions of assemblies with surrounding work.

.12 Welds in exposed locations shall be ground and polished smooth.

.13 Finish Work**:** Provide holes and connections for related work installed under other Sections of this specification, if applicable.

.14 Cleanly and smoothly finish exposed edges of materials, including holes.

Part 3 Execution

3.1 INSPECTION OF SECTION

.1 Take site measurements to ensure that work is fabricated to fit surrounding construction around obstructions and projects in place, or as shown on drawings, and to suit service locations.

3.2 INSTALLATION

.1 Install all accessories in accordance with manufacturers' instructions at their recommended mounting heights unless noted otherwise on drawings.

.2 Securely fasten accessories plumb, true, square, straight, level, and accurately and tightly fitted together and to surrounding work. Install in locations shown and specified herein. Mounting heights as shown or in accordance with the OBC in the case of barrier-free accessories.

.3 Work shall include anchor bolts, bolts, washers and nuts, lag screws, expansion shields, toggles, straps, sleeve brackets, clips, and other items necessary for secure installation, as required by loading and by Jurisdictional Authorities.

.4 Attach work at wood by screws through countersunk holes in metal.

.5 Attach work to masonry with lead plugs and non-corrosive fastenings, to support load with a safety factor of 3. Perform all drilling necessary to install the work.

.6 Insulate between dissimilar metals or between metals and masonry or concrete with bituminous paint, to prevent electrolysis.

.7 Coordinate installation with the work of other trades adjacent to accessories to achieve the reveals or other edge conditions shown, where their front faces are flush with the finished wall surfaces.

.8 Owner to supply and install remainder of washroom accessories not specified here (toilet paper dispensers, etc.). Cooperate with Owner as required.

3.3 CLEANING UP AND ADJUSTMENT

.1 Upon completion of work, or when directed, remove all traces of protective coatings or paper.

.2 Test mechanisms, hinges, locks and latches, and where necessary, adjust and lubricate and ensure that accessories are in perfect working order.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 11 00 – Summary of Work: Protection of openings; temporary power and lighting.

.2 Section 01 52 00 – Construction Facilities: Protection of openings; temporary power and lighting.

.3 Section 03 30 00 - Cast-in-Place Concrete: Elevator pit, elevator motor and pump foundation, and grouting thresholds

.4 Section 05 50 00 - Metal Fabrications: Divider beams, support for entrances and rails, hoisting beam at top of hoistway.

.5 Section 04 21 13 – Masonry: Masonry hoistway enclosure, building-in and grouting hoistway door frames, grouting thresholds.

.6 Section 05 50 00 – Metal Fabrications: Divider beams, support for entrances and rails, hoisting beam at top of hoistway.

.7 Division 26: Electrical service to main disconnect in elevator machine room; machine room; machine room and pit receptacles with ground-fault current protection; lighting in machine room and pit; wiring for telephone service to machine room, cab telephone wiring.

1.2 SUMMARY

.1 This specification is based on a Model 3500 Deep Front hydraulic elevator

.2 Acceptable Products: Elevators meeting or exceeding these base specifications by Otis, Thyssen Krupp, Kone, Delta Elevator, Federal Elevator Systems and Southwestern Elevators.

.3 Alternatives: Others meeting or exceeding these requirements of this specification and complete data is submitted to the Architect's office during the addendum period prior to close of Tender and approved and formally accepted in writing by the Consultant during the tender period.

1.3 REFERENCES

.1 ADAAG, Americans with Disabilities Act Accessibility Guidelines.

.2 ANSI/NFPA 70, National Electrical Code.

.3 ANSI/NFPA 80, Fire Doors and Windows.

.4 ANSI/UL 10B, Fire Tests of Door Assemblies.

.5 CAN/CSA C22.1, Canadian Electrical Code.

.6 CAN/CSA-B44, Safety Code for Elevators and Escalators.

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.7 Ontario Building Code and all other local applicable codes.

.8 American National Standards Institute (ANSI)

.1 ANSI/NEMA MG1-[1993], Motors and Generators.

.9 Canadian Standards Association (CSA)

.1 CAN/CSA-B44-[M94], Safety Code for Elevators.

.2 CAN/CSA-B651-[95], Barrier-Free Design - Public Safety.

.10 National Building Code (NBC)

1.4 SYSTEM DESCRIPTION

.1 Performance Requirements for Elevators:

.1 Quantity & Elevator Numbers: 1 Elevator

.2 Type: Twin telescopic hydraulic cylinders without well holes

.3 Number of Stops: 2 Front Only

.4 Number of Openings: 2 at front

.5 Rise: As per drawings

.6 Rated Capacity/Speed: 3500 pounds, 150/ fpm

.7 Minimum Car Inside: Front Opening: Model 3500 Deep Front: 6’ 8” deep x 5’ 8 1/2” wide (2032 mm x 1740 mm)

.8 Inside Cab Height: 8’0”(2438 mm); Height Under Ceiling: 7’ 9” (2362mm)

.9 Entrance Width & Type: Model 3500: Single-Slide Door 3’ 6” x 7’ 0” (1067 mm x 2135 mm)

.10 Main Power Supply: 600 Volts + or - 5% of normal, 3 Phase, with a separate equipment grounding conductor.

.11 Lighting Power Supply: 120 Volts, 1 Phase, 15 Amp, 60 Hz.

.12 Stopping Accuracy: ±1/4" (6.4 mm) under any loading condition or direction of travel.

.13 Door Opening Time for 7ft. painted hoist way and car doors: Model 3500: 4.0 seconds – Single Slide 42” door.

.14 Minimum 80 Starts per hour

.2 Simplex Collective Operation: Using a microprocessor-based controller, operation shall be automatic by means of the car and hall buttons. If all calls in the system have been answered, the car shall park at the last landing served.

.3 Provide microprocessor-based control system, which utilizes on-board diagnostics for servicing, trouble-shooting, and adjusting without requiring the use of an outside service tool. If an on-board diagnostic system is not provided, a handheld service tool (or laptop), owner’s license, operation manual, and tool instructions must be provided in addition to the control system.

.4 Car Operating Features

.1 Full Collective Operation.
.2 Single Speed Fan.
.3 On/Off Light Switch.
.4 Solid State Starting
.5 Remote elevator monitoring REM® ready.
.6 Car-Stall Protection.
.7 Top of Car Inspection.

.5 Door Control Features:

.1 Closed Loop Door Operator is a closed loop, microprocessor based door operator system. The door operator will facilitate smooth operation under varying environmental influences such as, temperature, wind, friction, and component variation. The processor will monitor the door's actual position and velocity compared to its desired position and velocity. If variations are detected in the profile the command will be automatically corrected. The Closed Loop Door Operator control system shall not require machine room door control equipment.

.2 Door noise not to exceed 58dBA.

.3 Door control to open doors automatically when car arrives at a landing in response to a normal hall or car call.

.4 Door control to open doors automatically when car arrives at a landing in response to a normal hall or car call.

.5 Elevator doors shall be provided with a reopening device that will stop and reopen the car door(s) and hoistway door(s) automatically should the door(s) become obstructed by an object or person.

.6 Primary door protection shall consist of a two dimensional, multi-beam array projecting across the car door opening. Under normal operation and for any door position, the system shall detect as a blockage an opaque object that is equal to or greater than 1.3 inches (33 mm) in diameter when inserted between the car doors at vertical positions from within 1 inch (25 mm) above the sill to 71 inches (1800 mm) above the sill. Under degraded conditions (one or more blocked or failed beams), the primary protection shall detect opaque objects that are equal to or greater than 4" (100 mm) in diameter for the same vertical coverage. If the system performance is degraded to the point that the 4" object cannot be detected, the system shall maintain the doors open or permit closing only under nudging force conditions.

.7 The door reopening device shall also include a secondary, three dimensional, triangular infrared multi-beam array projecting across the door opening and extending into the hoistway door zone. The door opening device will cause the doors to reopen when it detects a person(s) or object(s) entering or exiting the car in the area between the hoistway doors or the entryway area adjacent to the hoistway doors.

.8 The size of the secondary protection zone shall vary as the door positions vary during opening and closing. The width of the zone shall be approximately one-third the size of the separation between the doors (or door and strike plate for single-slide doors) and shall be approximately centered in the door separation. In

order to minimize detection of hallway passers-by who are not entering the elevator, the maximum zone penetration into the entryway shall not exceed 20" for any door separation. Normal penetration depth into the entryway from the car doors shall be ~14" for a door separation of 42". The penetration shall reduce proportionally as the doors close. At door separations of 18" or less the secondary protection system may cease its normal operation since the depth of the zone recedes to where it is inside the hoistway doors. The vertical coverage of the secondary protection shall be ~19" (480 mm) above the sill to ~55" (1400 mm) above the sill (mid-thigh to shoulder of a typical adult).

.9 The secondary protection shall have an anti-nuisance feature which will ignore detection in the secondary zone after continual detection occurs for a significant time period in the secondary zone without corresponding detection in the primary protection zone; i.e. a person/object is in the entryway but does not enter. Normal secondary protection shall be re-enabled whenever detection occurs in the primary zone.

.10 The reaction time of the door detector sub-system shall not exceed 60 milliseconds when both primary and secondary protection capabilities are active; nor 40 milliseconds when the secondary protection is disabled.

.11 Door nudging operation to occur if doors are prevented from closing for an adjustable period of time.

.6 Controller:

.1 Type: electronic solid state type as required to accomplish operation specified and the following:

.1 The controller unit will be microprocessor based (GAL, Smartise or MCE) meeting all of the current CSA/B44 Safety Code for Elevators requirements and providing fully automatic operation.

.2 The controller microprocessor shall include on-board diagnostics for trouble-shooting purposes, as well as a means to determine the position of the elevator cabin in the hoistway.

.3 The controller shall provide on elevator emergency battery operated lowering device that will return the elevator to the lowest landing and open the doors during a building power failure.

.2 Motor starter must be a Variable Frequency Drive.

.3 Controller must be assembled with non proprietary components. Acceptable manufacturers are: Siemens, Allan Bradley, Spectre Shaw

.7 Voice Communication and Video Monitoring

.1 Fully Code compliant as required by ASME A171-2019/CSAB445.19 TSSA Code For Elevators.

.2 Flush Button operation – no handset

.3 No monthly Recurring fees

.4 Work with Internet and Ethernet Modules (Barrey Back-up required)

.5 Open selection of Elevator Monitoring Service Redundancy

.6 Acceptable Products: WUR-COM , EMERCOM,TBA

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.8 Non-proprietary controls:

.1 Elevator control equipment shall be non-proprietary, or a site specific service tool which renders the control equipment non-proprietary must be provided with the elevator (i.e. map unit type, diagnostic service tool).

.2 The controller interface/service tool shall allow full access to fault codes and maintenance service to be performed by any property licensed and qualified elevator service company.

.3 The controller and/or site specific service tool shall come with a user's manual that effectively communicates to a qualified mechanic how to use the controller and/or tool, and defines and explains all respective error codes, including required fixes. The service tool shall remain the property of the building owner.

.4 No supplied and or installed equipment shall require a monthly service charge to function as intended.

.9 Provide equipment according to Seismic zone noted on structural drawings

.10 Design and construct elevator in accordance with CAN/CSA-B44, local codes and regulations.

1.5 SUBMITTALS

.1 Product Data: Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.1 Signal and operating fixtures, operating panels and indicators.

.2 Cab design, dimensions and layout.

.3 Hoistway-door and frame details.

.4 Electrical characteristics and connection requirements.

.5 Expected heat dissipation of elevator equipment in machine room (BTU).

.2 Shop Drawings: Submit in accordance with Section 01 33 00 - Submittal Procedures.

.1 Submit shop drawings to indicate project layout, including details and the following information:

.1 Car, guide rails, buffers and other components in hoistway.

.2 Maximum rail bracket spacing.

.3 Maximum loads imposed on guide rails requiring load transfer to building structure.

.4 Loads on hoisting beams.

.5 Clearances and travel of car.

.6 Clear inside hoistway and pit dimensions.

.7 Location and sizes of access doors, hoistway entrances and frames.

.2 Operation and Maintenance Data

.1 Provide 4 copies manufacturer's standard operations and maintenance manual.

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1.6 QUALITY ASSURANCE

.1 Manufacturer: Provide elevators manufactured by a firm with a minimum of 10 years experience in fabrication of elevators equivalent to those specified. Elevator manufacturer shall be ISO9002 certified.

.2 Installer: Elevators shall be installed by the manufacturer.

.3 Regulatory Requirements: Elevator system design and installation shall comply with the latest versions of CAN/CSA-B44 -00.

.1 Elevator shall be designed to meet to Americans with Disabilities Act Accessibility Guidelines (ADAAG)

.4 Permits and Inspections: Provide licenses and permits and perform required inspections and tests.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Manufacturer shall issue delivery schedule within 7 days of issuance of purchase order. Manufacturer shall maintain regular contact with the contractor and Consultant regarding expediting shop drawings and delivery.

.2 At least 3 weeks in advance of delivery, manufacturer's representative shall visit the site to discuss site preparedness. Manufacturer's rep. shall make a second visit one week in advance of the delivery and again liaise with General Contractor and Consultant to ensure site preparation.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Deposit packaging materials in appropriate container on site for recycling or reuse.

.2 Avoid using landfill waste disposal procedures when recycling facilities are available.

.3 Collect and separate plastic, paper packaging and corrugated cardboard.

.4 Dispose of corrugated cardboard, polystyrene and plastic packaging material in appropriate on-site bin.

1.9 WARRANTY

.1 The elevator warranty shall cover defective functionality, programming, materials and workmanship for a period of One Year from the date of Substantial Completion of the contract. The guarantee includes ordinary wear but excludes improper use, vandalism, abuse, and misuse by the owner.

1.10 MAINTENANCE SERVICE

.1 Included in the Tender price is the maintenance service consisting of regular examinations, adjustments and lubrication of the elevator equipment shall be provided by the elevator contractor for a period of three (3) years after the elevator has been turned over for the customer's use. This service shall not be subcontracted but shall be

performed by the elevator contractor. All work shall be performed by competent employees during regular working hours of regular working days and shall include emergency 24-hour callback service. This service shall not cover adjustments, repairs or replacement of parts due to negligence, misuse, abuse or accidents caused by persons other than the elevator contractor. Only genuine parts and supplies as used in the manufacture and installation of the original equipment shall be provided.

.2 No supplied and or installed equipment shall require a monthly service charge to function as intended.

Part 2 Products

2.1 MATERIALS

.1 Materials: As required to achieve specified performance criteria; functionally compatible with adjacent materials and components.

2.2 EQUIPMENT: MACHINE ROOM COMPONENTS

.1 The hydraulic system shall be of compact design suitable for operation under the required pressure. The power component shall be mounted in the hydraulic-fluid storage tank. The control valve shall control flow for up and down directions hydraulically and shall include an integral check valve. A control section including control solenoids shall direct the main valve and control: up and down starting, acceleration, transition from full speed to leveling speed, up and down stops, pressure relief and manual lowering. All functions shall be fully adjustable for maximum smoothness and to meet contract conditions. System to be provided with a muffler, low-pressure switch and a shut-off valve.

.2 A microprocessor-based controller shall be provided, including necessary starting switches together with all relays, switches, solid-state components and hardware required for operation, including door operation, as described herein. A three (3) phase overload device shall be provided to protect the motor against overloading.

.3 A manual lowering feature shall permit lowering the elevator at slow speed in the event of power failure or for adjusting purposes.

.4 Pressure Switch

2.3 EQUIPMENT: HOISTWAY COMPONENTS

.1 Plunger(s) and Cylinder(s): Each cylinder shall be constructed of steel pipe of sufficient thickness and suitable for the operating pressure. The top of each cylinder shall be equipped with a cylinder head with a drip ring to collect any oil seepage as well as an internal guide ring and self-adjusting packing. Each plunger shall be constructed of selected steel tubing or pipe of proper diameter machined true and smooth with a fine polished finish. Each plunger shall be provided with a stop ring electrically welded to it to prevent the plunger from leaving the cylinder. Each plunger and cylinder shall be installed plumb and shall operate freely with minimum friction.

.2 Car Guide Rails: Tee-section steel rails with brackets and fasteners.

.3 Spring Buffer: Helical coil spring type.

.4 Wiring: Wiring for hoistway electrical devices included in scope of the elevator system, hall panels, pit emergency stop switch, and the traveling cable for the elevator car, operating telephone handset call system in Cab.

.5 Hoistway Entrances

.1 Frames: Entrance frames shall be of bolted construction for complete one-piece unit assembly. All frames shall be securely fastened to fixing angles mounted in the hoistway and shall be of 14-gauge (2 mm) sheet steel. Additional sill angle support will be provided with 4'0" and 4'6" two speed opening door arrangements. Sills shall be extruded aluminum.

.2 Doors: Entrance doors shall be of hollow metal construction with vertical internal channel reinforcements.

.3 Fire Rating: Entrance and doors shall be UL fire rated for 1-1/2 hour.

.4 Entrance Finish: All doors & frames to be satin Stainless steel

.5 Entrance Markings: Entrance jambs shall be marked with 4" x 4" (102 mm x 102 mm) plates having raised floor markings with Braille adjacent. Markings shall be provided on both sides of the entrance.

.6 Sight Guards: Black sight guards will be furnished with any metal finish door. Powder paint matching sight guards will be furnished with powder paint doors.

2.4 EQUIPMENT: CAR COMPONENTS

.1 Car Frame: A suitable car frame shall be provided with adequate bracing to support the platform and car enclosure. The buffer striking plate on the underside of the car-frame platform assembly must fully compress the spring buffer mounted in the pit before the plunger reaches its lower limit of travel.

.2 Platform, Heavy Loading Type: The car platform shall be arranged to accommodate one-piece loads weighing up to 25% of the rated capacity, such as wheeled food carts, stretchers, x-ray equipment, etc. The platform shall be recessed 5/16" for flooring by others.

.3 Cab walls to have attached vertical non-removable panels, laminated front and back with plastic laminate.

.4 Car Door Finish: Car fronts and door finish can be independent elevators. Satin stainless steel

.5 Car top to be of wood material clad on both sides with a natural finish aluminum panel.

.6 Ceiling Type:

.1 Aluminum Eggcrate suspended ceiling shall consist of aluminum eggcrate diffusers set in frame of extruded aluminum with fluorescent lighting fixtures.

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.7 Emergency Car Lighting: An emergency power unit employing a 6 volt, sealed rechargeable battery and totally static circuits shall be provided to illuminate the elevator car and provide current to the emergency siren in the event of building power failure.

.8 Emergency Pulsating Siren: Siren mounted on top of the car that is activated when the Alarm button in the car operating panel is engaged. Siren shall have a rated sound pressure level of 80 dba at a distance of 3.0 m from the device. Siren shall respond with a delay of not more than 1 second after the switch or push button has been pressed

.9 Exhaust Fan: An exhaust fan shall be mounted on the car top.

.10 Utility Outlet: A 125V 15 amperes utility outlet with ground-fault circuit-interrupter protection shall be furnished on top of the cab.

.11 Handrail:

.1 Rectangular Tubular Metal Bar DH50 Handrails 1/2" (13 mm) x 1-1/2" (38 mm) in stainless steel.

.12 Threshold: aluminum.

2.5 EQUIPMENT: SIGNAL DEVICES AND FIXTURES

.1 Car-Operating Panel: A panel shall be provided which contains all push buttons, key switches, and message indicators for elevator operation. Raised markings **Braille** markings shall be provided for each push-button.

.2 Car Fixture Finish: satin stainless steel.

.1 Applied car operating panel shall be furnished. It shall contain a bank of round mechanical illuminated buttons marked to correspond to the landings served, an emergency call button, door open and door close buttons, and switches for lights, inspection and the exhaust fan. The emergency call button shall be connected to a bell that serves as an emergency signal. All buttons to have both raised and Braille markings. LED (red) button illumination with 1/8" projecting target. All buttons to be stain stainless steel.

.3 Car Position Indicator: A 16-segment, digital, vacuum fluorescent car position indicator shall be integral to the car operating panel.

.4 An ADA compliant communication device shall be provided which has been designed in response to ADAAG requirements integral with the car operating panel.

.5 Car Lantern and Chime: A directional lantern visible from the corridor shall be provided in the car entrance. When the car stops and the doors are opening, the lantern shall indicate the direction in which the car is to travel and a chime will sound.

.6 Hall Fixtures: Hall fixtures shall be provided with necessary push buttons and key switches for elevator operation. Raised markings shall be provided for each push-button.

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.7 Fixture Finish**: satin stainless steel.**

.8 Landing Passing Signal: A chime bell shall sound in the car to tell a passenger that the car is either stopping at or passing a floor served by the elevator.

.9 Security Lockout Key switches to disable activation of hall buttons.

Part 3 Execution

3.1 MANUFACTURERS INSTRUCTIONS

.1 Compliance: Comply with manufacturer=s written data, including product technical bulletins, product catalog installation instructions, product carton installation instructions, and data sheet.

3.2 PREPARARTION

.1 Take field dimensions and examine conditions of substrates, supports, and other conditions under which this work is to be performed. Do not proceed with work until unsatisfactory conditions are corrected.

3.3 INSTALLATION

.1 Installation of all elevator components except as specifically provided for elsewhere by others.

3.4 SITE TESTS

.1 Perform and meet tests required by CAN/CSA-B44.

.2 Supply instruments and execute specific tests.

.3 Furnish test and approval certificates issued by jurisdictional authorities.

3.5 CLEANING

.1 Remove protective coverings from finished surfaces and components.

.2 Clean surfaces and components ready for inspection.

3.6 ADJUSTMENTS

.1 The elevator contractor shall make a final check of each elevator operation with the Owner or Owner’s representative present prior to turning each elevator over for use. The elevator contractor shall determine that control systems and operating devices are functioning properly.

.2 Adjust door opening and closing times to suit handicapped users in accordance with Engineer's instructions.

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.3 Adjust control system to cause elevators to answer hall calls during working day within performance criteria specified.

.4 Adjust for smooth acceleration and deceleration of car as so not to cause passenger discomfort.

.5 Adjust automatic floor levelling feature at each floor.

END OF SECTION

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Part 1 General

1.1 RELATED WORK

.1	Summary of Work – Phasing and Sequencing	Section 00 22 00
.2	Site Grading	Section 31 23 13
.3	Excavating, Trenching and Backfilling	Section 31 23 10

1.2 SCOPE

.1 Refer to survey, site layout, site servicing, landscape and grading drawings and Geotechnical Report.

.2 Work to this section is anticipated to be carried out under a Site Alteration Permit (Fill Permit).

1.3 EXAMINATION

.1 Examine the Drawings, Specifications, and Geotechnical Report which summarize site soil conditions. Visit the site and determine the work extent and nature of the existing conditions. In no circumstances will any claims against the Owner be allowed resulting from failure to ascertain the work herein described or implied.

.2 Report to the Consultant in writing any conditions which will prejudice the proper completion of the work of this Section. Commencement of work constitutes acceptance of existing conditions.

1.4 BURIED SERVICES

.1 Before commencing work confirm no buried services remain on the site and locate all services adjacent to the site. Engage private locate firm for underground scan for all areas of work outside the property lines.

.2 Arrange with appropriate authority for relocation of buried services that interfere with execution of work. Pay costs of relocating services.

1.5 PROTECTION

.1 Establish locations of all electrical, telephone, or other service installations existing in the areas of site preparation by contacting the service owners and obtaining their approval to work in such areas. Contact the Municipality, the Region of Peel and local utilities to review proposed scheduling, work activities and regulations pertaining to all work beyond the limits of the property including but not limited to parking areas, storm water outlet and headwall and asphalt driveway entrances. Provide adequate markers or take protective measures to ensure that no damage will be caused under this Section. Repair or replace damaged work as required without cost to the Owner.

.2 Electronically locate, map and record location of services prior to doing any excavation.

1.6 DUST CONTROL

.1 Provide and maintain to the Consultant's satisfaction, adequate system to avoid any nuisance caused by dust and dirt rising throughout the area of operations.

1.7 SILT CONTROL

.1 Refer to site Plans and any approved Plans issued with the Site Alteration Permit.

.2 Provide and maintain to the Consultant's and to the Authorities' satisfaction, control systems to prevent silt from entering any storm drainage system.

Part 2 Products

2.1 NOT APPLICABLE

Part 3 Execution

3.1 DISPOSAL OF WASTE AND SURPLUS MATERIALS

.1 Except where specified or indicated on Drawings to be retained on site, or to be reused, remove from the site, all waste and surplus materials resulting from site preparation work on a daily basis. Dispose of as required in accordance with local or provincial regulations. Under no circumstances shall the burning of rubbish be permitted on the site. Where items are to be reused, store on site where designated and provide temporary protection to same to prevent damage by construction operations.

END OF SECTION

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Part 1 General

1.1 RELATED SECTIONS

.1 Section 00 22 00 – Summary of Work – Phasing and Sequencing

.2 Section 01 33 00 - Submittal Procedures.

.3 Section 01 56 00 - Temporary Barriers and Enclosures.

.4 Section 01 35 43 - Environmental Procedures.

.5 Section 31 23 13 - Rough Grading.

.6 Section 32 91 21 – Top soil and Finish Grading.

.7 Section 31 05 17 - Aggregate Materials.

.8 Section 32 93 10 - Landscaping and Plant Maintenance.

.9 Section 33 46 20 – Foundation and Underslab Drainage.

.10 Section 32 12 17 – Asphalt Paving.

1.2 REQUIREMENTS OF REGULATORY AGENCIES

.1 Work of this Section shall include protection measures, consisting of materials, constructions, and methods required by the Occupational Health and Safety Act, 1987, of the Province of Ontario, and as otherwise imposed by Jurisdictional Authorities to save persons and property from harm.

.2 Submit shop drawings required by authorities.

1.3 REFERENCES

.1 American Society for Testing and Materials (ASTM)

- .1 ASTM C117-95, Standard Test Method for Material Finer Than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.
- .2 ASTM C136-96a, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- .3 ASTM D422-98, Standard Test Method for Particle-Size Analysis of Soils.
- .4 ASTM D698-00a, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft ^{3}) (600 kN-m/m ^{3}).
- .5 ASTM D1557-00, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft ^{3}) (2,700 kN-m/m ^{3}).
- .6 ASTM D4318-00, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

.2 Canadian General Standards Board (CGSB)

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.1 CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.

.2 CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.

.3 Canadian Standards Association (CSA)

.1 CAN/CSA-A3000-98-A5-98, Portland Cement.

.2 CAN/CSA-A23.1-00, Concrete Materials and Methods of Concrete Construction.

1.4 DEFINITIONS

.1 Excavation classes: two classes of excavation will be recognized; common excavation and rock excavation.

.1 Rock : any solid material in excess of 0.25 m^3 and which cannot be removed by means of heavy duty mechanical excavating equipment with 0.95 to 1.15 m^3 bucket. Frozen material not classified as rock.

.2 Common excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation.

.2 Unclassified excavation: excavation of deposits of whatever character encountered in Work.

.3 Topsoil: material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.

.4 Waste material: excavated material unsuitable for use in Work or surplus to requirements.

.5 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.

.6 Unsuitable materials:

.1 Weak and compressible materials under excavated areas.

.2 Frost susceptible materials under excavated areas.

.3 Frost susceptible materials:

.1 Fine grained soils with plasticity index less than 10 when tested to ASTM D4318, and gradation within limits specified when tested to ASTM D422 and ASTM C136 : Sieve sizes to CAN/CGSB-8.1 CAN/CGSB-8.2.

.2 Coarse grained soils containing more than 20 % by mass passing 0.075 mm sieve.

.7 Unshrinkable fill: very weak mixture of Portland cement, concrete aggregates and water that resists settlement when placed in utility trenches, and capable of being readily excavated.

1.5 SUBMITTALS

.1 Samples:

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

.2 Inform Consultant at least 2 weeks prior to commencing Work, of proposed source of fill materials and provide access for sampling.

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.3 Submit 25 kg samples of type of fill specified including representative samples of excavated material.

.4 Ship samples prepaid to Inspection firm, in tightly closed containers to prevent contamination.

1.6 QUALITY ASSURANCE

.1 Qualification Statement: submit proof of insurance coverage for professional liability.

.2 Where Consultant/Engineer is employee of Contractor, submit proof that Work by Consultant/Engineer is included in Contractor's insurance coverage.

.3 Submit design and supporting data at least 2 weeks prior to commencing Work.

.4 Design and supporting data submitted to bear stamp and signature of qualified professional engineer registered or licensed in Province of Ontario, Canada.

.5 Keep design and supporting data on site.

.6 Engage services of qualified professional Engineer who is registered or licensed in Province of Ontario, Canada in which Work is to be carried out to design and inspect cofferdams, shoring, bracing and underpinning required for Work.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Collect and separate plastic, paper packaging and corrugated cardboard and place in designated containers.

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

.3 Ensure emptied containers are sealed and stored safely.

1.8 PROTECTION OF EXISTING FEATURES

.1 Refer to *Section 01 11 00 – 'Summary of Work – article 1.5 Existing Conditions'* and *Section 31 23 13 – 'Rough Grading'* for requirements to provide underground scan in addition to service locates for all areas of work beyond the property lines.

.2 Protect existing features in accordance with Section 01 56 00 - Temporary Barriers and Enclosures and applicable local regulations.

.3 Existing buried utilities and structures:

.1 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.

.2 Prior to commencing excavation Work, notify applicable Owner or authorities having jurisdiction, establish location and state of use of buried utilities and structures. Owners or authorities having jurisdiction to clearly mark such locations to prevent disturbance during Work.

.3 Confirm locations of buried utilities by careful test excavations.

.4 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered as indicated.

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.5 Ensure that adjacent property is not damaged in any way by excavating and grading work; by the removing, stockpiling and transporting of materials; by blown sand and dust or by spillage during the removing, stockpiling and transporting of materials; by the collapse or movement of excavated banks and stockpiles; or by storm water from altered drainage course.

.6 Ensure that no damage is caused by earthwork to existing structures, trees, buried and above-ground services, bench marks, and survey monuments on the site, or adjacent property. Arrange or ensure that all damage which occurs is repaired completely and immediately.

.7 Protect newly-graded areas from the action of the elements. Repair settlement and washouts that occurs before acceptance of the work, and re-establish grades to the required elevations and slopes. Fill to required subgrade levels any area where settlement occurs.

.8 Bail or pump all water out of excavation, from whatever cause, as it accumulates. Take all necessary measures to prevent flow of water and earth fines into the excavation.

.9 Support existing buildings, walks, roads, and services, and prevent cave-ins of excavated banks. A Professional Engineer specializing in this work shall design all protection. Provide shop drawings for authorities as required.

.10 Temporarily cover all existing catchbasins and manholes to prevent entry of earth or debris.

.11 Electronically locate underground services such as electrical and telephone lines, gas and water and sewer lines. Mark line of services with yellow ribbons or stakes with tip fluorescent painted, and indicating both plan location and depth.

.12 Protect the bottom and sides of the excavated pits and trenches from exposure to sun and rain to prevent cave-ins and softening of the bed upon which concrete and drains rest.

1.9 DUST CONTROL

.1 Provide and maintain adequate system to avoid any nuisance caused by dust and dirt rising throughout the area of operations. The use of calcium chloride is prohibited.

1.10 UNIT PRICES REQUESTED IN TENDER FORM

.1 For excavation, prices shall include excavation and disposal and units shall represent material measured in its original position by cross-sectioning of the area excavated. Volumes will be computed from the cross-section measurements by average end area method.

.2 For fill, prices shall include material, compacted to specified degree and measured in place.

Part 2 Products

2.1 MATERIALS

.1 NOTE: No recycled material is permitted.

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.2 Fill "A": Granular material meeting OPSS Material Specification for Aggregates, Form 1010, Granular "A". Minimum compaction density 98% Standard Proctor. For use primarily as bedding material.

.3 Fill "B": Granular material meeting OPSS Material Specification for Aggregates, Form 1010, Granular "B"-Type 2. Minimum compaction density 98% Standard Proctor. For use primarily as fill under building slab on grade areas..

.4 Fill "C": Site (native) material, containing no organic or foreign matter, and which the Contractor can demonstrate is compactable to a density of 98% to 100% Standard Proctor. Minimum compaction density: 95% Standard Proctor under landscaped areas, 100% under paved areas. For use primarily as fill under playfields areas and under paved areas up to underside of sub-base elevation.

.5 Fill "D": Refer to Section 32 12 17 –'Asphalt Paving' for 50 mm Crushed limestone sub-base and 19 mm crushed limestone base course used under paved areas.

.6 "Fill E": Imported fill for general site areas. Imported fill shall be clean, free of organic material and rocks, shale and cobbles, and Contractor to supply environmental documents, including results of sufficient number of chemical tests, to ensure that the fill meets Reg 153/04 (2011)-Table 1 Residential/Industrial. Approval to proceed with importing the fill to the Site will only be issued following review and acceptance by our Consultant.

.7 Crushed Stone Fill Under Slabs on Grade: Clean, Graded 20mm angular, natural clear crushed stone from approved source, free from shale, clay and friable materials and organic matter and containing no more than 10% passing the No.4 sieve

.8 Impervious Fill: Fine grain material such as clay, which is relatively impervious to the flow of water.

.9 Granular Bedding: OPSS Granular "A", concrete sand (CAN/CSA A23.1-M90) or crusher-run limestone. Minimum compaction 100% Standard Proctor density.

Part 3 Execution

3.1 SITE PREPARATION

.1 Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.

.2 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.

3.2 EXAMINATION

.1 Ensure in examination of the site that all possible factors concerning earthwork are investigated, and that the following are known in particular:

.1 Methods and means available for material handling, disposal, storage, and transportation.

.2 Physical conditions of site, including ground water table and drainage courses.

.3 Conformation and condition of ground surfaces.

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.4 Character, quality, and quantity of surface and subsurface materials.

3.3 SOIL INVESTIGATION

.1 Soil investigation of the site was carried out by other consultants engaged by the Owner for the purpose of guidance in design and construction. A report and bore hole log on this investigation were prepared and are provided for information purposes. No responsibility is assumed by the Owner or Architects for the scope, accuracy, or interpretation of the soil investigation report. Be responsible for adjusting estimates to incorporate conditions identified or reasonably inferred in the report, as documented in the Geotechnical Data.

3.4 STOCKPILING

.1 Stockpile fill materials in areas designated by Engineer Stockpile granular materials in manner to prevent segregation.

.2 Protect fill materials from contamination.

.3 If there is an access of clean topsoil, the contractor may stockpile it on the adjacent cemetery site if material is deemed suitable by the adjacent landowner (cemetery). Contractor to consult with Architect regarding details.

3.5 COFFERDAMS, SHORING, BRACING AND UNDERPINNING

.1 Obtain permit from authority having jurisdiction for temporary diversion of water course.

.2 Construct temporary Works to depths, heights and locations as directed by Engineer.

.3 During backfill operation:

.1 Unless otherwise as indicated or as directed by Engineer, remove sheeting and shoring from excavations.

.2 Do not remove bracing until backfilling has reached respective levels of such bracing.

.3 Pull sheeting in increments that will ensure compacted backfill is maintained at an elevation at least 500 mm above toe of sheeting.

.4 When sheeting is required to remain in place, cut off tops at elevations as indicated.

.5 Upon completion of substructure construction:

.1 Remove cofferdams, shoring and bracing.

.2 Remove excess materials from site and restore water courses as indicated and as directed by Engineer.

3.6 DEWATERING AND HEAVE PREVENTION

.1 Keep excavations free of water while Work is in progress.

.2 Dewater the site as necessary for the installation of the work, by providing a series of temporary trenches/pits and pumping as necessary. Backfill temporary trenches/pits and restore area when dewatering is no longer required.

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.3 At no additional cost to the Owner, dewater the site as necessary to maintain the schedule and protect the work. Ensure the water pumped from site does not contaminate sewers municipal or on site sewer system. If required, arrange and pay for the cost of flushing sewers used for dewatering drainage routes.

.4 Submit for Engineer's approval details of proposed dewatering or heave prevention methods, such as dikes, well points, and sheet pile cut-offs.

.5 Avoid excavation below groundwater table if quick condition or heave is likely to occur. Prevent piping or bottom heave of excavations by groundwater lowering, sheet pile cut-offs, or other means.

.6 Protect open excavations against flooding and damage due to surface run-off.

.7 Dispose of water in accordance with Section 01 35 43 - Environmental Procedures and in manner not detrimental to public and private property, or any portion of Work completed or under construction.

.8 Provide flocculation tanks, settling basins, or other treatment facilities to remove suspended solids or other materials before discharging to storm sewers, water courses or drainage areas.

3.7 EXCAVATION

.1 Advise Engineer at least 7 days in advance of excavation operations for initial cross sections to be taken.

.2 Perform bulk excavation and detailed excavation for construction of building (and for installation of mechanical and electrical services). Excavate beyond wall faces sufficiently to allow removal of forms, if applicable, but generally no more than 900 mm beyond centre of wall. Do not re-fill over excavated areas with materials removed, nor any other material without the approval of the Consultant. Excavation and disposal of boulders is part of this section.

.3 Remove disturbed earth displaced by adjacent construction.

.4 Notify the Consultant of completion of excavation work and before any concrete or fill is placed on the bearing strata, in order that he may inspect the exposed bearing surfaces.

.5 If the Consultant requires additional excavation below the elevation indicated or specified, such additional excavation and disposal will be paid for on the basis of unit prices quoted in the Bid Form. Units of measurements will be those given for the unit prices, and shall be measured in their original position and computed by the method of average end areas.

.6 Remove excess and unsuitable excavated materials from the site. Comply with the MOE regulations and those of other regulating bodies, regarding disposal of contaminated soil.

.7 Blasting is prohibited, except upon written permission of Consultant. Rock removal, if required, shall be by means of Ram Splitting equipment only.

.8 Keep all surfaces against which concrete, unit masonry or fill is to be placed free from frost. Thaw out frozen surfaces against which concrete or fill is to be placed to unfrozen depth.

.9 Excavation must not interfere with bearing capacity of adjacent foundations.

.10 Do not disturb soil within branch spread of trees or shrubs that are to remain. If excavating through roots, excavate by hand and cut roots with sharp axe or saw.

.11 Keep excavated and stockpilled materials a safe distance away from edge of trench as directed by Engineer.

.12 Restrict vehicle operations directly adjacent to open trenches.

.13 Do not obstruct flow of surface drainage or natural watercourses.

.14 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.

.15 Notify Engineer when bottom of excavation is reached.

.16 Obtain Engineer approval of completed excavation.

.17 Hand trim, make firm and remove loose material and debris from excavations. Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil. Clean out rock seams and fill with concrete mortar or grout to approval of Engineer.

.18 Surplus Excavated Material and Removals: The Contractor is to make his own arrangements for the disposal of all excavated materials, removals, grindings and all other debris not suitable for re-use in the construction. If the Contractor enters into an agreement with an individual for the use of land for the disposal of excavated materials or for any other reason, a copy of the said Agreement clearly stating the obligation of all concerned and signed by all parties shall be submitted to the Consultant. The Contractor shall comply with the requirements of all Federal, Provincial and Municipal Laws, Acts, Ordinances, Regulations, Orders-in-Council and By-Laws, which could in any way pertain to the work outlined in the Contract. The items in the Form of Tender include all costs for disposal of unsuitable material off the site and the Contractor shall make the arrangements for the disposal of the materials removed in accordance with MOE Reg. 558.

3.8 COMPACTION

.1 Provide, operate and maintain compacting equipment necessary to achieve the compaction densities specified.

.2 Compact fill until the required density is achieved. Do not compact material containing frost.

.3 Fill hollows and depressions which develop under compaction with matching backfill material. If the base becomes rutted or displaced due to any cause, regrade the surface.

□

.4 Compact backfill by means of vibratory type equipment capable of achieving the desired degree of compaction. Use manually operated vibratory tampers in the proximity of foundations and in areas not readily accessible to roller equipment. Make good damage to the structure due to compaction and settlement of fill. Report damage to foundations promptly to the Consultant. Obtain approval of remedial procedures.

3.9 BACKFILLING

.1 Plug unused services such as drains, sewers, field tile, and service pipes uncovered by excavation.

.2 Backfill at foundation walls only after they have been approved by Consultant.

.3 Backfill with 200 mm deep layers of fill or as specified, each consolidated before the next is placed.

.4 Backfill to mechanical and electrical service trenches as specified in the electrical and mechanical specifications.

.5 When backfilling both sides of walls, place fill simultaneously on both inner and outer faces to balance pressure on wall.

.6 Where walls are to be backfilled on one side only, commence backfilling only when the ground floor structural members are in place, if applicable, or adequate bracing is provided for top and bottom of foundation walls.

.7 Compact fill to densities specified for material requirements.

.8 Do not proceed with backfilling operations until [Engineer] [Consultant] has inspected and approved installations.

.9 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.

.10 Do not use backfill material which is frozen or contains ice, snow or debris.

.11 Place backfill material in uniform layers not exceeding 150 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.

.12 Backfilling around installations.

- .1 Place bedding and surround material as specified elsewhere.
- .2 Do not backfill around or over cast-in-place concrete within 24 hours after placing of concrete.
- .3 Place layers simultaneously on both sides of installed Work to equalize loading.
- .4 Where temporary unbalanced earth pressures are liable to develop on walls or other structures:
  - .1 Permit concrete to cure for minimum 14 days or until it has sufficient strength to withstand earth and compaction pressure and approval obtained from Engineer.
  - .2 If approved by Engineer erect bracing or shoring to counteract unbalance, and leave in place until removal is approved by Engineer.

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.13 Install drainage system in backfill as directed by Consultant.

3.10 FILL UNDER FLOOR SLABS

.1 Prior to filling, proof-roll existing earth subgrade in order to identify inconsistencies or soft areas. Proceed with filling operations only after inconsistencies or soft areas have been reworked and compacted or excavated, backfilled and compacted as required to eliminate such conditions.

.2 Avoid proof-rolling close to caissons, columns, walls and other structures within the confines of the proof rolling operations.

.3 Prior to placing fill, ensure existing ground is compacted to 98% Standard Proctor density.

.4 Place approved fill under floor slabs as soon as foundation walls are completed to floor level and mechanical and electrical services are installed in trenches.

.5 Place fill in layers of 150mm maximum, and consolidate each before placing next layer.

.6 Compact fill to density specified for material requirements with a heavy vibrating roller. Compact fill adjacent to walls, piers, or wherever else heavy roller equipment cannot approach, with mechanical tampers to equivalent density. Dig out soft spots and re-fill and compact to specified density.

.7 Where undisturbed soil surface is low below areas of slab-on-grade, bring level up to within 200 mm of underside of slab fill with Fill "B". Do not use fill “C” within building area.

.8 Backfill trenches to within 200 mm of underside of slab fill with Fill "B".

.9 The final 200 mm layer under slabs shall be clear crushed stone, as specified. Place crushed stone in maximum 100 mm layers and compact to 100% Standard Proctor Density.

3.11 FILL UNDER PAVED AREAS

.1 Prior to filling, proof-roll existing earth subgrade in order to identify inconsistencies or soft areas. Proceed with filling operations only after inconsistencies or soft areas have been reworked and compacted or excavated, backfilled and compacted as required to eliminate such conditions.

.2 Avoid proof-rolling close to caissons, columns, walls and other structures within the confines of the proof rolling operations.

.3 Prior to placing fill, ensure existing ground is compacted to 98% Standard Proctor density.

.4 Place specified granular fill in layers of 150mm maximum, and consolidate each before placing next layer, up to underside of pavement sub-base elevation.

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.5 Compact fill to density specified for material requirements with a heavy vibrating roller. Compact fill adjacent to walls, piers, or wherever else heavy roller equipment cannot approach, with mechanical tampers to equivalent density. Dig out soft spots and re-fill and compact to specified density.

3.12 FILL UNDER PLAYFIELDS AND LANDSCAPED AREAS

.1 Construction access, contractor parking areas and Portables Area are intended to be reinstated in time for sod to have a minimum of 6 weeks to "take" prior to Fit for Occupancy. Identify this target date on the project schedule. Conduct site work and schedule accordingly to complete work related to sodding these areas as early as possible prior to contract completion.

.2 Use Fill "C" native site material for fill under the landscaped areas as indicated on drawings. Fill Type "E" may be considered for use, subject to all of the conditions being met as outlined above.

.3 Prior to placing fill, ensure existing ground is compacted to 95% Standard Proctor Density.

.4 Place fill in layers of 300 mm maximum and consolidate each before placing next layer.

.5 Compact Fill "C" to minimum 95% Standard Proctor Density under playfields.

3.13 RESTORATION

.1 Upon completion of Work, remove waste materials and, trim slopes, and correct defects as directed by Consultant.

.2 Place topsoil as directed by Consultant.

.3 Reinstate lawns to elevation which existed before excavation.

.4 Reinstate pavements and sidewalks disturbed by excavation to thickness, structure and elevation which existed before excavation.

.5 Clean and reinstate areas affected by Work as directed by Consultant.

.6 Use temporary plating to support traffic loads over unshrinkable fill for initial 24 hours.

.7 The Owner will engage the services of an Inspection and Testing Company to verify that work conforms to the requirements of the specifications.

.8 The Contractor shall cooperate fully with the testing and inspection company.

.9 The Contractor shall maintain its own quality control program to ensure that its work conforms to the drawings and specifications.

.10 Submit 4 kg. samples of the fill materials to the inspection and testing company at least 10 days prior to commencement of backfill operations. Materials tested and approved shall constitute a standard for the acceptance of material delivered to the site.

.11 The inspection and testing company shall be responsible for the following work:

.12 Determine the depth of unsatisfactory material, if any, to be removed.

.13 Inspect and approve the sub-grade prior to commencement of backfill operations.

.14 Test and approve the proposed backfill materials.

.15 Be present full time during operations in order to inspect and approve the methods of placing and compacting and to carry out the necessary tests to determine the Proctor Density of the backfill and the actual field densities being obtained. Take sufficient tests to ensure that adequate information is obtained to judge the uniformity of compaction. Inspect all piping and conduit in place in trenches prior to backfilling to ensure correct slope and placement as designed.

.16 Check the quality of backfill being delivered to the site.

.17 Check the depth of granular fill.

.18 Confirm bearing elevations. Confirm and record spot elevations of all piping at critical locations to confirm design depths and slopes.

.19 Check installation of weeping tile.

.20 Issue reports to the Consultant tabulating test results and giving final approval and suggestions as to the backfilling and compaction operation.

.21 The cost of such inspection and testing shall be paid for under the Fill and Compaction Testing Allowance specified in Section 01 11 00- Summary of Work. The cost of retesting unacceptable compaction shall be borne by this Section.

3.14 INSPECTION AND TESTING

.1 Refer to Section 01 11 00- Summary of Work, Section 1.29.

END OF SECTION

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Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 11 00 – Summary of Work-*Phasing and Sequencing*

.2 Section 013543 – Environmental Protection.

.3 Section 329121 – Topsoil and Finish Grading.

.4 Section 329310 – Planting of Trees, Shrubs and Ground Covers.

.5 Section 31 23 10 - Excavation, Trenching and Backfilling.

.6 Section 33 46 20 – Foundation and Underslab Drainage .

.7 Section 033000 – Cast-in-Place Concrete.

.8 Section 32 12 17 – Asphalt Paving.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.1 ASTM D698-[91(1998)], Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m ^{3}).

1.3 EXISTING CONDITIONS

.1 Contractor shall coordinate and obtain required separate Temporary Road Occupancy Permit and Fill Permits for all work.

.2 For work to public boulevard areas outside the property line. Refer to *Section 00 11 00 – 'Summary of Work, article 1.5 Existing Conditions*' for permit requirements prior to construction.

.3 Contractor is responsible to coordinate with Site Plans, Structural Drawings and Specifications to determine depths of foundations and grade levels to be reached as Part of Phase 1 operations, prior to issuance of Building Permit. Refer to Geotechnical Report and all site plans.

.4 Contractor is responsible to quantify all on-site material to achieve design grades and is responsible for the importation or exportation of material from the site as required.

.5 Any known underground and surface utility lines and buried objects are indicated on site plan. Confirm exact locations of utility lines and buried objects prior to machine excavation or grading. In addition to all utility locates, contractor shall conduct engage a private locate company to conduct an underground scan for all areas of grading and excavation outside the property lines.

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1.4 PROTECTION

.1 Protect and/or transplant existing trees, landscaping, natural features, bench marks, pavement, surface or underground utility lines which are to remain as directed by Consultant. If damaged, restore to original or better condition unless directed otherwise.

.2 Maintain access roads to prevent accumulation of construction related debris on roads.

Part 2 Products

2.1 MATERIALS

.1 Fill material to all parking and driveway areas, asphalt and concrete paving areas and building pad: OPSS Granular B-Type 2 in accordance with of Section 31 23 10 - Excavating, Trenching and Backfilling.

.2 Excavated or graded material existing on site may be suitable to use as fill for grading work if approved by Consultant and uncontaminated type of existing materials meets the requirements herein for stated locations.

Part 3 Execution

3.1 STRIPPING OF TOPSOIL

.1 Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected as determined by Consultant

.2 Examine the site and determine the extent of areas previously stripped and approximate depth of remaining topsoil, if any.

.3 Strip the topsoil from the site as part of the work in this Section.

.4 Remove top soil from areas to be excavated, paved and regraded.

.5 Strip top soil when dry enough to prevent contamination of subgrade.

.6 Contractor is responsible to quantify all on-site material to achieve design grades and is responsible for the importation or exportation of material from the site as required. Existing excess topsoil, if any, must be quantified before tender and may be re-used for general sodded areas as described in Section 32 91 21 Topsoil Placement and Grading.

.7 Remove from site existing grass and vegetation and surplus top soil, if any.

3.2 BULK FILL & ROUGH GRADING

.1 Refer to site plans (SP1, SC1, SG1, and L1) and related details and specification sections and note the initial permit will include rough grading only and not site servicing or foundation or building work.

.2 Begin rough grading operation only after all sedimentation measures have been established and inspected.

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.3 The Contractor shall use the information shown on the site plan, the grading plan, the Geotechnical Report, as well as the information observed during visits to the site during the Tender Period, as the basis for the "Existing Conditions" of the site and to determine the extent of engineered fill in the building area to be completed as part of Phase 1, based on his approach to foundation construction.

.4 Rough grade to levels, profiles, and contours allowing for surface treatment as indicated. Ensure that rough grading operations to not promote water ponding in construction areas. Level depressions outside the building area with Type “D” for paved areas. Fill “E” or Type “C” may only be used fill if suitable moisture content and compaction can be demonstrated.

.5 Perform construction grading to allow proper construction access to the work.

.6 Grade to prevent water ponding on site during construction period. Create additional ditches, swales, slopes, ponds, etc. as required by Contract Documents and Municipal Authorities for control of drainage, sedimentation and topsoil retention.

.7 Unless suitable uncontaminated fill or cut has been completed by previous contract, rough grade to following depths below finish grades:

.1 200 mm for grassed areas.
.2 400 mm for flowerbeds.
.3 450 mm for shrub beds.
.4 600 mm for heavy asphalt paving.
.5 540 mm for medium duty asphalt paving.
.6 275 mm for concrete walks.
.7 Maximum tolerance for rough grade elevation : .+- 25 mm

.8 Slope rough grade away from building 1:50 2 % minimum.

.9 Grade swales and ditches to depths as indicated.

.10 Prior to placing fill over existing ground, scarify surface to depth of 150 mm. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.

.11 Compact filled and disturbed areas to maximum dry density to ASTM D698, as follows:

.1 95% under landscaped areas.
.2 98 % under paved and walk areas.

.12 Do not disturb soil within branch spread of trees or shrubs to remain.

3.3 TESTING

.1 Inspection and testing of soil compaction will be carried out by testing agency hired by the owner.

.2 Tests to be conducted on imported soils and provided by a ULC designated laboratory prior to bringing to and placing on the site.

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.3 Costs of tests will be paid under a Cash Allowance. Refer to Section 01 11 00 – Summary of Work.

.4 Submit testing procedure, frequency of tests, [testing laboratory as designated by ULC or certified testing personnel to Consultant for approval and review.

3.4 SURPLUS MATERIAL

.1 Refer also to Section 32 91 21 – Topsoil for re-use of on-site topsoil.

.2 Remove surplus material and material unsuitable for fill, grading or landscaping as directed by Consultant and Municipal Authorities.

.3 Include for removal and disposal of asphalt driveways, excess fill, rubble, etc. beyond property lines within work areas shown on site plans

.4 Confirm locations on site prior to tender.

END OF SECTION

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Part 1 General

1.1 RELATED WORK

.1 Section 31 23 13 - Rough Grading

1.2 QUALITY ASSURANCE

.1 Contractor

.1 The Contractor shall carry out all works in a true horticultural manner.

.2 The Contractor shall ensure that the hoarding is erected beyond the drip line of the trees and root systems of the trees to be protected.

.3 The Contractor shall supervise all work in this section including implementation and maintenance until final acceptance.

.4 The Contractor shall obtain approvals for suppliers, sub- contractors and all materials to be used in this section of Work.

.5 Comply with the City of Mississauga Guidelines, details and requirements for tree protection. Refer to detail on drawing.

.2 Maintenance

.1 Maintain all hoarding and accessories until final acceptance of Work. Maintenance includes all measures necessary to protect the existing trees.

1.3 PRODUCT DELIVERY. STORAGE. HANDLING

.1 Deliver hoarding in a timely manner prior to commencement of construction.

.2 The Contractor shall not be responsible for the cost of replacements resulting from theft, vandalism, carelessness or neglect on the part of others or any other causes due to circumstances beyond his control.

Part 2 Products

2.1 MATERIALS

.1 Hoarding: 4' x 8' sheets of ½ “ plywood or particle board or approved equal.

.2 Fencing: paige wire 1.2 m high.

.3 Stakes and braces: 4" x 4" spruce and metal ‘T’ bars.

.4 Siltation fence: woven geotextile with minimum equivalent opening size of 0.15mm and a maximum opening equivalent opening size of 0.25mm by Terrafix, Terrafence or

approved equal.

.5 Conform to Municipal details and requirements.

Part 3 Execution

3.1 INSPECTION

.1 Verify areas to receive work in this section and report any conditions or defects encountered to the Consultant. before Work commences.

.2 Do not commence Work until hoarding has been approved.

3.2. PROTECTION AND PRESERVATION OF EXISTING VEGETATION

.1 All existing trees which are to remain shall be fully protected with hoarding to height 1.2 m high or as indicated, i.e. erected beyond their "dripline" or as indicated on the drawings prior to the issuance of the Building Permit, to the satisfaction of the Consultant.. Groups of trees and other existing plantings to be protected, shall be treated in a like manner with hoarding around the entire clump(s). Areas within the protective fencing shall remain undisturbed and shall not be used for the storage of building materials or equipment.

.2 On city road allowance or where visibility must be maintained erect 1.2 m high orange plastic web snow fencing on 2" x 4" wood frames.

.3 No rigging cables shall be wrapped around or installed in trees and surplus soil, equipment, debris or materials shall not be placed over root systems of the trees within the protective fencing. No contaminants will be dumped or flushed where feeder roots of trees exist.

.4 The contractor shall take every precaution necessary to prevent damage to trees or shrubs to be retained.

.5 Where limbs or portions of trees are removed to accommodate construction work, they will be removed carefully in accordance with accepted arbor cultural practice.

.6 Where root systems of trees are exposed directly adjacent to or damaged by construction work, they shall be trimmed neatly and the area backfilled with appropriate material to prevent desiccation. Prune tree(s) to restore the balance between roots and top growth or to restore the appearance of the tree(s).

.7 Trees that have died due to improper protection and maintenance or have been damaged beyond repair, shall be removed and replaced by the Contractor at this own expense with trees of a size and species as approved by the Consultant.

.8 If grades around trees to be protected are likely to change, the Contractor shall be required to take such precautions as dry welling, retaining walls and root feeding, as approved by the Consultant.

3.3 HOARDING/SILTATION CONTROL FENCE

.1 Install fence as located on drawings and as per details.

.2 Install fabric and paige wire fence in uphill side of posts.

.3 Overlap geotextile 1.0 m at joints.

.4 Bury geotextile 150 mm into grade at bottom of fence and backfill.

3.3 FINAL ACCEPTANCE

.1 Remove tree protection and hoarding/siltation prior to final acceptance.

END

1. GENERAL

1.1. General Requirements

1. Conform to the requirements stated in the General Conditions, Supplementary General Conditions of this Specification and all addenda.

1.2. Related Work

1.	Aggregates	Section 31 05 17
2.	Site Grading	Section 31 23 13

1.3. References

1. ASTM D4791-89, Test Method for Flat or Elongated Particles in Coarse Aggregate.
2. Ontario Provincial Standard Specification 1001.

1.4. Samples

1. Submit samples in accordance with Section 01300.
2. Allow continual sampling by Consultant during production.
3. Provide Consultant with access to source and processed material for sampling.
4. Install sampling facilities at discharge end of production conveyor, to allow Consultant to obtain representative samples of items being produced. Stop conveyor belt when requested by Consultant to permit full cross section sampling.

2. PRODUCTS

2.1. Materials

1. Aggregate quality: sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, or other substances that would act in deleterious manner for use intended.
2. Clear stone for mud mat and along bottom of silt control fencing: 50 mm clear stone in accordance with OPSS 1001.
3. Geotextile for siltation control fence shall be Class I non-woven geotextile fabric in accordance with OPSS 1860.

2.2. Source Quality Control

1. Inform Consultant of proposed source of aggregates and provide access for sampling at least four weeks prior to commencing production.
2. If, in opinion of Consultant, materials from proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, locate an alternative source or demonstrate that material from source in question can be processed to meet specified requirements.
3. Advise Consultant four weeks in advance of proposed change of material source.
4. Acceptance of material at source does not preclude future rejection if it fails to conform to requirements specified, lacks uniformity, or if its field performance is found to be

unsatisfactory.

3. EXECUTION

3.1. Installation

1. Mud Mat Installation
    1. Place clear stone to the dimensions indicated on the contract drawings to a depth of 300 mm.
    2. Remove and replace top layers of clear stone when they become ladened with mud and the mud mat becomes ineffective in removing mud from equipment exiting the site.
    3. The mud mat installation does not alleviate the contractor's responsibility to clean mud from adjacent roadways as a result of the construction.
2. Silt Control Fence
    1. Install silt control fence along construction site perimeter including tee bars, geotextile filter fabric, clear stone along the upstream side of the fence in the instance the ground is frozen.

3.2. Maintenance

1. Maintain the mud mat and replace clear stone as required during the construction period as required to maintain the function of the mud mat.
2. Maintain silt control fencing for the duration of the construction and replace as required until the site is stabilized.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 31 23 13 - Rough Grading.

.3 Section 31 23 10 – Excavation, Trenching and Backfilling.

.4 Section 03 30 00 – Cast-in-Place Concrete.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)

.1 ASTM D698-[00a], Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3)).

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.5- [M91 (March 1999)], Low Flash Petroleum Spirits Thinner (Reaffirmation of December 1991).

.2 CAN/CGSB-1.74- [2001], Alkyd Traffic Paint.

.3 Government of Québec, Minister of Transport

.1 Cahier des charges et devis généraux (CCDG)-[97].

.4 Ontario Provincial Standard Specifications (OPSS)

.1 OPSS 302-[April 1999], Construction Specification for Primary Granular Base.

.2 OPSS 310-[March 1993], Construction Specification for Hot Mixed, Hot Laid Asphaltic Concrete Paving and Hot Mix Patching.

.3 OPSS 314-[December 1993], Construction Specification for Untreated Granular, Subbase, Base, Surface Shoulder and Stockpiling.

.4 OPSS 1010-[March 1993], Material Specification for Aggregates, Granular A, B, M and Select Subgrade Material.

.5 OPSS 1103-[February 1996], Material Specification for Emulsified Asphalt.

.6 OPSS 1150-[May 1994], Material Specification for Hot Mixed, Hot Laid Asphalt Concrete.

1.3 SAMPLES

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

.2 Submit to Consultant, samples of material for sieve analysis at least 2 weeks before beginning Work.

1.4 WASTE MANAGEMENT AND DISPOSAL

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

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

.3 Divert unused aggregate materials from landfill to facility for reuse as approved by Consultant.

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.4 Dispose of unused paint and paint thinner materials at official hazardous material collections site as approved by Consultant.

.5 Fold up metal banding, flatten and place in designated area for recycling.

.6 Do not dispose of unused paint and paint thinner material into sewer system, into streams, lakes, onto ground or in other location where it will pose health environmental hazard.

.7 Divert unused asphalt from landfill to facility capable of recycling materials.

1.5 EXTENDED WARRANTY

.1 Submit a warranty for asphalt paving installation, covering materials and labour and the repair or replacement of defective work in accordance with the Contract, but for two (2) years total.

Part 2 Products

2.1 MATERIALS

.1 Sub-Base**:** Suitably compacted native material only where approved density and drainage is achieved**.** Otherwise in upfill locations use Fill type"B" where required to reach design elevations.

.2 Base: 50 mm and 19 mm graded, crusher run limestone to depths indicated on AD details.

.3 Heavy Duty Pavement for Parking and Driveways**:** Hot mix, hot laid asphaltic concrete HL8 and HL3, mixture conforming to O.P.S.S. #1150.05.

.4 Medium Duty Pavement for Play Areas, Parking (where indicated on Site Plan) and Walkways**:** Hot mix, hot laid asphaltic concrete HL8 and HL3, mixtures conforming to O.P.S.S. #1150.05.

.5 Light Duty Pavement for Walkway**:** Hot mix, hot laid asphaltic concrete HL3, mixtures conforming to O.P.S.S. #1150.05.

.6 Joint Painting Material**:** SS-1 emulsion in accordance with O.P.S.S. #1103.05.

Part 3 Execution

3.1 PREPARATION

.1 Regard locations and instructions on drawings. Report any discrepancies or questions to the Consultant prior to proceeding with the work. In particular pay attention to the exact delineation of all edges of pavement and types of pavement;

.2 Set out work in accordance with lines and levels shown on Drawings. Maintain such lines and levels through duration of work. Ensure positive drainage toward catch basins is maintained in all areas.

.3 Compact sub-grade to a minimum of 98% Standard Proctor density.

.4 Paint exposed edge of asphaltic joints, edge of manhole and catchbasin frames, curbs and similar items with SS-1 emulsion.

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3.2 INSTALLATION

.1 Inspect site grades prior to installation. Review the precise grade requirements required on the grading plan. Review with the Consultant prior to installation if any conditions exist that may cause deviations from grades shown on Drawings. Coordinate catchbasin elevations with those shown on Mechanical site plan.

.2 **Pavement Section:**

.1 Heavy Duty: at all parking and driveway areas (refer also to AD 200)

.1 minimum 300 mm compacted thickness of 50 mm crusher run limestone compacted to 100% Standard Proctor Maximum Dry Density (SPMDD), ASTM-D698 .

.2 150 mm compacted thickness Base course of 19 mm crusher run limestone compacted to 100% SPMDD.

.3 65 mm compacted thickness of granular asphalt HL8.

.4 40 mm compacted thickness of granular asphalt HL3.

.2 Medium Duty: at rear and side yard play and walkway areas noted on Site Plans.(refer also to AD 200)

.1 200 mm compacted thickness of 50 mm crusher run limestone Sub-Base compacted to 100% Standard Proctor Maximum Dry Density (SPMDD), ASTM-D698.

.2 150 mm compacted thickness Base course of 19 mm crusher run limestone compacted to 100% SPMDD..

.3 50 mm compacted thickness of granular asphalt HL8.

.4 40 mm compacted thickness of granular asphalt HL3.

.3 Light Duty: at walkway noted on Site Plans.(refer also to AD 200)

.1 200 mm compacted thickness Base course of 19 mm crusher run limestone compacted to 100% SPMDD..

.2 50 mm compacted thickness of granular asphalt HL3.

.3 Placing Granular Materials:

.1 Exercise due care at all times to prevent granular materials from being contaminated by clay or other types of deleterious materials.

.2 Place materials immediately after sub-grade is inspected by the Architect and as follows:

.1 To required width and thickness indicated on Drawings in layers not exceeding 100 mm compacted thickness crusher run limestone?

.2 Grade each layer and compact to a minimum 100% standard Proctor density to a smoother surface conforming to required cross-section.

.4 Finished surface of granular material must not deviate more than 10 mm from designed grade.

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.5 Placing Asphaltic Pavement:

.1 Obtain Consultant's inspection of compacted granular base before commencing asphalt paving.

.2 Air temperature during placing of mixture must be minimum 7 deg. C and rising. Temperature of mixture when spread must be not less than 120 deg. C nor more than 150 deg. C. Do not increase temperature of mixture to offset long distance hauling.

.3 Compact asphaltic mixture as soon as it can bear roller without undue displacement and hairline cracking and continue until all roller marks are eliminated. Speed of roller must at all times be slow enough to avoid displacement of mixture. Keep roller wheels slightly moistened by water to prevent adhesion of mixture. Excess water will not be permitted. Compact mixture with hot tampers in locations that are not easily accessible to machine roller.

.4 Rolling Procedure:

.1 Initial and final rolling must be accomplished using self-propelled Class "B" roller.

.2 Intermediate rolling must be carried out using self-propelled Class "C" roller or "D" roller. Intermediate roller must follow breakdown roller as closely as possible.

.5 Upon completion of compaction each pavement course must be:

.1 Smooth and true to crown and grade with variation not more than 6 mm from thickness shown on Drawing. Do not place any asphaltic course less than 25 mm thick nor more than 75 mm thick.

.2 Free from depressions exceeding 3 mm as measured with 3 m straight edge paralleling centre line of driveways/aisles.

.3 Compacted to a density not less than 97% Marshall.

.6 Joints:

.1 Cut back bituminous course to its full depth in straight or curved lines as required to expose fresh, straight, vertical surface. Remove broken and loose material.

.2 Asphalt must be placed in such a manner that joint must not be allowed to cool before adjacent asphalt course is applied.

.3 Where paving is comprised of two or more courses, joints must overlap by not less than 600 mm.

.4 Carefully place and compact hot asphaltic material against joints. Correct any unsatisfactory joint before proceeding with work.

.5 Feathering of joints will not be permitted.

.7 Inspection and Testing:

.1 Refer to Section 01 11 00 – Summary of Work, section 1.29.

.2 Field inspections during installation, and core samples of all asphalt areas will be taken as part of Inspection and Testing. **If tests show asphalt to be substandard to that specified, all asphalt shall be removed and replaced at the Contractor's expense. Cash credits will not be accepted for work which does not fully comply with drawings and specifications.**

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3.3 CERTIFICATION OF GRADES

.1 The Contractor is required to provide as-constructed elevations of the parking area to verify that the parking lot has been constructed in accordance with the contract drawings.

END OF SECTION

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Part 1 General

1.1 RELATED SECTIONS

.1 Section 32 92 23 - Sodding.

.2 Section 32 93 10 – Landscape Planting and Maintenance.

.3 Section 31 23 13 - Rough Grading.

1.2 DEFINITIONS

.1 COMPOST: A mixture of soil and decomposing organic matter used as a fertilizer, mulch, or soil conditioner. Compost is processed organic matter containing 40% or more organic matter as determined by the Walkley-Black or LOI test. Product must be sufficiently decomposed (i.e. stable) so that any further decomposition does not adversely affect plant growth (C:N ratio below (25) (50)), and contain no toxic or growth inhibiting contaminates. Composed bio-solids must meet the requirements of the Guidelines for Compost Quality, Category (A) (B) produced by the Canadian Council of the Ministers of the Environment (CCME), January 1996.

.2 "Topsoiling" consists of placing and spreading topsoil to the depths specified, for areas to be sodded or seeded.

.3 "Fine Grading" consists of shaping and smoothing the topsoil surface to the finished grades, eliminating surface irregularities, to achieve a smooth even surface and consistent depth.

.4 "Fertilizing" consists of applying and working into the soil surface, the specified fertilizer.

.5 "Raking Out" consists of hand raking areas to remove minor surface irregularities.

.6 **Imported Topsoil**: Submit nutrient analysis, acidity analysis, and herbicide residue (known as "Garden Package") analysis for topsoil obtained off site. Testing should be carried out by the topsoil supplier. The contractor is to warrant that the topsoil supplied to the site is that from which representative samples were taken.

.7 Topsoil shall be tested by an approved prior to delivery to site or spread from stockpile as case may be. All topsoil must conform to the sample provided.

1.3 QUALITY ASSURANCE

.1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Topsoil shall be tested for N.P.K, minor elements, acidity (pH), herbicide, atrazine, organic matter content, clay / silt / sand / gravel composition or texture, and fertilizer requirements.

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

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.4 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements.

1.4 SITE CONDITIONS

.1 Do not proceed with any work under this section without the consultant's prior approval of the rough grading.

.2 Do not proceed with spreading or fine grading of topsoil when the site or material is saturated and clodding or rutting would occur.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Do not dispose of unused soil amendments into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

Part 2 Products

2.1 TOPSOIL

.1 There is no existing topsoil stock piled on site following a PreGrading contract by others. As part of the base bid tender, Contractor shall assume all specified topsoil shall be imported.

.2 Should existing topsoil or organics be found on site as part of final excavation or grading under this contract, it shall be removed from the site as part of excess material unless approved by Consultant.

.3 Topsoil for sodded or seeded areas is to be imported sandy loam, screened and shredded, and uncontaminated with subsoil, roots, stones, and any organic matter which is not decomposed.

.4 All imported topsoil shall be **shredded and screened**, fertile, friable neither heavy clay nor of a light sandy nature, consisting of 60% sand, 30% silt, 10% clay, a minimum 4% organic matter content prior to mixing, with acidity value between pH 6.0 and 7.5, free from admixtures of subsoil, clay lumps, stones and roots over 50 mm, free of toxic substances or any other foreign matter which would inhibit growth.

.5 Topsoil/sand mix shall be augmented with nutrients, fertilizers and additives as recommended by the topsoil report.

.6 Imported topsoil required to meet specified depths, in the case of a deficit in quantity of existing topsoil, is subject to rejection based on the results of the testing for nutrients, acidity and herbicide residue.

7 For depths of planting beds refer to Section 32 93 10.

2.2 SOIL AMENDMENTS

.1 Fertilizer:

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.1 Fertilizer is to be commercial grade, granular fertilizer, in originally packaged containers, marked as to contents, analysis and weight.

.2 Analysis ratio and rate of fertilizer application shall be subject to the nutrient testing results but, otherwise, shall be as recommended by manufacturer for newly seeded/sodded areas.

2.3 SOURCE QUALITY CONTROL

.1 Advise Consultant of sources of imported topsoil proposed to be utilized with sufficient lead time for testing.

.2 Contractor is responsible for amendments to supply topsoil as specified.

Part 3 Execution

3.1 SURFACE PREPARATION

.1 Scarify the rough grade, to a depth of 100mm prior to placement of topsoil.

.2 Grade soil, eliminating uneven areas and low spots, ensuring positive drainage.

3.2 PLACING AND SPREADING OF TOPSOIL/PLANTING SOIL

.1 Place topsoil on areas to be sodded or seeded in sufficient quantity to allow for a finished and compacted depth of 150mm.

.2 Compaction for sodded or seeded areas is to be 85% S.P.D. (topsoil layer only), consistent throughout the areas.

3.3 FINISH GRADING

.1 Finish grading is to be done to create the slopes and levels indicated by the contours and spot elevations on the drawings, and as directed and approved by the consultant.

.2 The finished surface is to be smooth and even, with no ruts, clods or contaminants.

.3 Grade to eliminate rough spots and low areas and ensure positive drainage. Prepare loose friable bed by means of cultivation and subsequent raking.

.4 Coordinate the scheduling of hand raking with the consultant to ensure that sodding can occur as soon as possible after hand raking.

3.4 FERTILIZING

.1 Apply fertilizer of the specified ratio and rate and work into the top 50mm.

3.5 CLEANING

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

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Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 32 91 21 - Topsoil Placement and Grading.

.3 Section 32 93 10 – Landscape Planting and Maintenance.

.4 Section 01 56 00 – Temporary Barriers and Enclosures.

.5 Areas to be sodded are indicated on plans.

1.2 DELIVERY AND STORAGE

.1 Schedule deliveries in order to keep storage at job site to minimum without causing delays.

.2 Deliver sod to site within 24 hours of being lifted and lay sod within 36 hours of being lifted.

.3 Do not deliver small, irregular or broken pieces of sod.

.4 During wet weather protect sod from drying and water sod as necessary to ensure its vitality and prevent dropping of soil in handling. Dry sod will be rejected.

1.3 SUBMITTALS

.1 Samples.

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

.2 Submit:

.1 Sod for each type specified.

.1 Install approved samples in one square metre mock-ups and maintain in accordance with maintenance requirements during establishment period.

.3 Obtain approval of samples by Consultant.

1.4 QUALITY ASSURANCE

.1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

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

.3 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements.

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1.5 SCHEDULING

.1 Schedule sod laying to coincide with topsoil operations. **Schedule sodding as early as possible to allow minimum 6 weeks for sod to establish, prior to owner take over**. In any case, sod shall be placed not later than June 30, 2017 to allow for this period.

.2 **Cautionary Note**: Refer to also to Section 01 56 00 and 01 11 00 for temporary fence conditions. When sod is installed in the following spring, the contractor shall be responsible for the erection and maintenance of a temporary, leased, perimeter "Mod-U-Lock" fence around the sodded areas to remain until the consultant at no additional cost to the owner.

.3 Schedule sod installation when frost is not present in ground.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Divert unused fertilizer from landfill to official hazardous material collections site.

.2 Do not dispose of unused fertilizer into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

Part 2 Products

2.1 MATERIALS

.1 Nursery Sod: Quality and source to comply with standards outline in Metric Guide Specifications for Nursery Stock, Section 17, 1984 Edition, published by Canadian Nursery Trades Association. Number One Kentucky Bluegrass sod grown from minimum mixture of Kentucky Bluegrass cultivars.

.2 Water: Potable.

.3 Fertilizer: Time release commercial fertilizer 20:20:20 or as per topsoil test recommendations.

2.2 SOURCE QUALITY CONTROL

.1 Obtain approval from Consultant of sod at source.

.2 When proposed source of sod is approved, use no other source without written authorization from Consultant.

Part 3 Execution

3.1 PREPARATION

.1 Do not perform work under adverse field conditions such as frozen soil, excessively wet soil or soil covered with snow, ice, or standing water.

.2 Fine grade surface free of humps and hollows to smooth, even grade, elevations indicated, to tolerance of plus or minus 8 mm, for Turf Grass Nursery Sod and plus or minus 15 mm for Commercial Grade Turf Grass Nursery, surface to drain naturally.

.3 Remove and dispose of weeds; debris; stones 50mm in diameter and larger; soil contaminated by oil, gasoline and other deleterious materials; off site.

3.2 SOD PLACEMENT

.1 Obtain approval of topsoil grade and depth before starting sodding.

.2 Lay sod during growing season.

.3 Lay sod in rows, perpendicular to slope, smooth and even with adjoining areas, and with joints staggered. Butt sections closely without overlapping or leaving gaps between sections. Cut out irregular or thin sections with a sharp knife.

.4 Sod is to be pegged on slopes in excess of three horizontal to one vertical.

.5 Provide close contact between sod and soil by means of light roller. Heavy rolling to correct irregularities in grade is not permitted.

.6 Water immediately after sod laying to obtain moisture penetration through sod into 100 mm of topsoil.

.7 Provide adequate protection of sodded areas against erosion and mechanical damage. Remove protection after lawn areas have been accepted.

.8 Apply fertilizer immediately following sodding (prior to watering) at a rate of 2 lbs/1000 sq.ft.

3.3 MAINTENANCE BEFORE ACCEPTANCE

.1 Maintain all sodded areas from time of installation until acceptance. This period shall not be less than **48** days after installation.

.2 Check sodded areas for evidence of weeds and disease. Take immediate measures to remedy.

.3 Be responsible for protection of sodded areas until end of maintenance period. Perform following operations from time of installation until acceptance.

.4 Water sodded areas in sufficient quantities and at frequency required to maintain optimum soil moisture condition to depth of 75 to 100 mm.

.5 Regularly cut grass to 60 mm when it reaches height of 80 mm. Remove clippings which will smother grassed areas.

.6 Install protective barriers and signs where necessary. Remove at end of maintenance period.

.7 Maintain sodded areas weed free. Eliminate weeds and disease by chemical means in strict accordance with manufacturer's recommendations, the Pesticides Act, and federal, provincial and municipal regulations. Be fully responsible for the use of such chemicals, including the repair or replacement of all damage as a result of the use of such chemicals. Obtain all necessary permits.

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.8 Fertilize areas in accordance with soil test report recommendations. Spread half of required amount of fertilizer in one direction and remainder at right angles and water in well.

.9 Repair all damages, erosion and wash-outs resulting from weather, faulty installation or other causes.

.10 Notify Architect in writing of all damages arising from vandalism or other causes beyond the Contractor's control.

3.4 MAINTENANCE DURING ESTABLISHMENT PERIOD

.1 Notwithstanding Maintenance before acceptance, this maintenance period to be minimum 6 weeks prior to occupancy in September 2011 or later if sod not installed 6 weeks prior to occupancy.

.2 Perform following operations from time of installation until acceptance.

.3 Water sodded areas in sufficient quantities and at frequency required to maintain optimum soil moisture condition to depth of 100 mm.

.4 Cut grass to 60mm when or prior to it reaching height of 80 mm. Remove clippings which will smother grassed areas.

.5 Maintain sodded areas weed free 95%.

3.5 ACCEPTANCE

.1 Sodded areas will be accepted no sooner than the date at which the project is declared fit for occupancy provided that the following criteria are meet:

.1 Sodded areas are properly established. (6 weeks minimum).

.2 Sod is free of bare and dead spots and without weeds.

.3 No surface soil is visible when grass has been cut to a height of 60 mm.

.4 Sodded areas have been cut a minimum of 2 times and within 24 h prior to acceptance. Cut height to be 60 mm.

.5 Fertilizing in accordance with soil test report recommendations has been carried out at least once.

3.6 PROTECTION/TEMPORARY FENCING

.1 For requirements of Temporary Fence refer to Section 01 56 00 – Temporary Barriers and Enclosures, Section 1.13.

.2 Following installation of sod to the playfield areas, supply & install a temp. leased 1800 high "Mod U Lok" fence. Stake w/iron "T" at min. 2400 o.c. and maintain for min. 6 weeks while sod is maintained as part of this contract and is deemed established.

3.7 CLEANING

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

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Part 1 General

1.1 SECTION INCLUDES

.1 Materials and installation for foundation and underslab drainage.

1.2 RELATED SECTIONS

.1 Section 31 23 10 - Excavating, Trenching and Backfilling.

.2 Section 03 30 00 – Cast-in-Place Concrete.

1.3 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)

.1 ASTM D698-[00a], Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3)).

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-34.22-[94], Asbestos-Cement Drain Pipe.

.3 Canadian Standards Association (CSA International)

.1 CSA-A23.1/A23.2-[00(June 2001)], Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.

.2 CSA B1800-[02], Plastic Non-pressure Pipe Compendium - B1800 Series (Consists of B181.1, B181.2, B181.3, B181.5, B182.1, B182.2, B182.4, B182.6, B182.7, B182.8 and B182.11).

.1 CSA B182.2-[02], PVC Sewer Pipe and Fittings (PSM Type).

.3 CSA-G401-[01], Corrugated Steel Pipe Products.

.4 Department of Justice Canada (Jus)

.1 Canadian Environmental Protection Act, 1999 (CEPA)

.5 Transport Canada (TC)

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

1.4 WASTE MANAGEMENT AND DISPOSAL

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

.2 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material in appropriate on-site bins for recycling.

.3 Divert unused concrete materials from landfill to local facility as approved by Consultant.

.4 Divert unused aggregate materials from landfill to facility for reuse.

.5 Divert unused metal materials from landfill to metal recycling facility for disposal.

.6 Divert unused geotextiles from landfill to plastic recycling facility for disposal.

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.7 Place materials defined as hazardous or toxic in designated containers.

.8 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.

.9 Dispose of unused asbestos cement pipe in accordance with regulations governing the disposal of hazardous materials.

1.5 SITE CONDITIONS

.1 Examine sub-surface investigation report which is bound into specifications.

.2 Known underground utility lines and buried objects are as indicated on plans.

Part 2 Products

2.1 BEDDING AND SURROUND MATERIALS

.1 Coarse filter aggregate: to CSA-A23.1/A23.2, Group 1, 15 mm.

.2 Fine filter aggregate: to CSA-A23.1/A23.2.

.3 Flexible plastic tubing and fittings. Corrugated, Non-perforated, nominal inside diameter 100 and 150 mm. Type 1 for discharge lines, Type 2 perforated and wrapped with filter fabric for collector lines.

.4 Geodrains: “Terradrain” 600 by Terrafix or approved equal.

.5 Filter Fabric: “Terrafix” 270R or Mirafi 140.

2.2 BACKFILL MATERIAL

.1 In accordance with Section 31 23 10 - Excavating, Trenching and Backfilling.

.2 Excavated or graded material existing on site may be suitable to use if approved by Consultant.

Part 3 Execution

3.1 EXAMINATION

.1 Ensure graded subgrade conforms with required drainage pattern before placing bedding material.

.2 Ensure improper slopes, unstable areas, areas requiring additional compaction or other unsatisfactory conditions are corrected to approval of Consultant.

.3 Ensure foundation wall damp proofing and rigid insulation have been installed and approved by Consultant before placing bedding material.

3.2 BEDDING PREPARATION

.1 Cut trenches in subgrade and place bedding material in uniform layers not exceeding 150 mm compacted thickness to depth as indicated.

.2 Shape bed true to grade and to provide continuous, uniform bearing surface for tubing.

.3 Shape transverse depressions, as required, to suit joints.

.4 Compact each layer full width of bed to at least 95% of corrected maximum dry density.

.5 Fill excavation below design elevation of bottom of specified bedding with compacted bedding material.

3.3 INSTALLATION AT PERIMETER OF BUILDING AND AREAS WITHIN FOUNDATION PERIMETER

.1 Place a min. 100 mm of coarse filter material.

.2 At planter locations, install geodrain against wall from finish grade to weeping tile invert elevation – temporary hold it in place until backfilled.

.3 Lay wrapped perforated pipe directly on coarse filter material. Invert of pipe to be minimum of 250 mm below underside of floor slab. Provide pipes sloping to drains as shown on drawings. Minimum slope 1%.

.4 Install minimum 150 mm of coarse filter material to sides and top of perforated pipe for perimeter drainage.

.5 Install minimum 300 mm Granular "B" all around coarse filter material (sides and top).

.6 Install minimum 150 mm coarse filter material cover on all sides of non-perforated pipe.

.7 Ensure pipe interior and coupling surfaces are clean before laying.

.8 Do not use concrete, masonry, stones, wood or any type of shim to establish pipe slope.

.9 Connect pipes using manufacturer's recommended fittings and seal joints with sewer compound.

.10 Piping to be connected to nearby catchbasin/storm sewer. Confirm location with Consultant.

.11 Protect pipe ends from damage and ingress of foreign material at each end of each day's work or work stoppage.

.12 Place filter material after pipe installation has been inspected.

.13 Place filter material by hand in 150 mm lifts. Consolidate by tamping lightly. Prevent displacement of pipe.

.14 Backfill trench (1 m wide minimum) with Granular "B" lightly compacted to 95% standard density (except under paved and slab on grade areas: 98%) up to 700 mm below finished grade.

.15 In landscaped areas place 600 mm of impermeable backfill seal compacted clay prior to the placing of top soil.

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3.4 INSTALLATION UNDER PAVED AREAS

.1 Trench for weeping tile will be 300 mm wide and extend to a depth of 350 mm minimum in the subgrade below granular base.

.2 Line trench with filter cloth. Filter cloth shall be wide enough to overlap 150 mm minimum after backfilling.

.3 Place 40 mm of clear crushed aggregate and compact to 98% standard proctor maximum dry density.

.4 Lay 150 mm diameter perforated pipe directly on compacted granular material. Minimum slope 0.5%.

.5 Where weeping tile pipe joins into other piping or material at storm drains or catch basins and at all direction changes, use specifically designed fittings and seal joints with sewer compound in accordance with manufacturer's instructions.

.6 Fold filter cloth over compacted granular. Overlap 150 mm minimum.

.7 Backfill trench up to subgrade elevation with clear crushed aggregate compacted to 98% standard proctor maximum dry density.

.8 Weepers to be installed under pavement at edge of perimeter concrete curbing in parking area.

3.5 BACKFILL MATERIAL

.1 Place backfill material above [pipe] [tubing] surround in uniform layers not exceeding 150 mm compacted thickness up to grades as indicated.

.2 Under paving and walks, compact backfill to at least 95% corrected maximum dry density. In other areas, compact to at least 90% corrected maximum dry density.

END OF SECTION

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