EXHIBIT SPECIFICATIONS

Prince Albert National Park

WASKESIU LAKE BEACH HOUSE BUILDING – EXHIBITS

PARKS CANADA AGENCY

SASKATCHEWAN



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IN ASSOCIATION WITH:

1x1 architecture inc.
As prime consultant for
The Waskesiu Lake Beach House Building Project

Reich + Petch Design International Project No.: 18015
DATE: March 27, 2019

Issued For Tender

PROJECT SPECIFICATIONS

LIST OF SPECIFICATIONS

OTHER CONTRACT DOCUMENTS IDENTIFICATION LIST

Title	(11x17 Drawing Sheets) Pages
EXA – Exhibits Drawing Package (Building 1)	17
EXA – Exhibits Drawing Package (Building 2)	4
EXB – Graphics Package (Building 1)	40
EXB – Graphics Package (Building 2)	12

END OF SECTION

PART 1 – GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

A. The project work consists of the Exhibit and Graphic components for two separate buildings outlined in the contract documents EXA Exhibit Drawings Package (Building 1 and Building 2), and EXB Graphics Package (Building 1 and Building 2) and Exhibit Specifications herein.

B. The project work is located in Prince Albert National Park, Saskatchewan.

C. The project work is in coordination with the construction of The Waskesiu Lake Beach House Building(s) Project (Prince Albert National Park), scheduled for a construction start of September 2019 and an expected completion of May 2020.

D. It is intended that Work supplied under these Contract Documents shall be complete and fully operational in every detail for the purpose required. Provide all items, articles, materials, services and incidentals, whether or not expressly specified or shown on the Drawings, to make finished Work complete and fully operational, consistent with the intent of the Contract Documents

E. Mention in the specifications or indication on the Drawings of materials, products, operations, or methods, requires that the Contractor provide each item mentioned or indicated of the quality or subject to the qualifications noted: perform according to the conditions stated in each operation prescribed; and provide labour, materials, products, equipment and services to complete the Work.

F. Work designated as ‘N.I.C’ is not included in this Contract

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

A. This Section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:

1. Coordination.
2. Administrative submittals
3. General installation provisions.
4. Cleaning and protection.

1.02 COORDINATION

A. Coordination: Coordinate Fabrication and Installation activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate Fabrication and Installation operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.

1. Coordinate the work of this Contract with the Waskesiu Lake Beach House Building project General Contractor, regarding issues of the integration and installation of the exhibit work.
2. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule Fabrication and Installation activities in the sequence required to obtain the best results.
3. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.
4. Make adequate provisions to accommodate items scheduled for later installation.

B. Where necessary, prepare memorandum for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance of meetings.
1. Prepare similar memorandum for Parks Canada (Owner) and separate Contractors where coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of schedules.
2. Installation and removal of temporary facilities.
3. Delivery and processing of submittals.
4. Progress meetings.
5. Project Close-out activities.

1.03 ADMINISTRATIVE SUBMITTALS

A. Exhibit Fabricator Staff Names: Within fifteen (15) days of Notice to Proceed, submit to Parks Canada (Owner) and Consultants a list of the Exhibit Fabricator's principal staff assignments, including the Superintendent and other personnel in attendance at the site; identify individuals, their duties and responsibilities; list their addresses, email addresses and telephone numbers.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 GENERAL INSTALLATION PROVISIONS

A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and overall conditions and context under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.

C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.

D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.

E. Visual Effects: In exposed work provide uniform joint widths, clean assemblies according to the design detailing criteria. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Consultants for final decision.

F. Recheck measurements and dimensions, before starting each installation.

G. Install each component according to the ideal installation sequence conditions and the base building schedule, and project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.

H. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

I. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Consultants for final decision.

3.02 CLEANING AND PROTECTION

A. During handling and installation, clean and protect work in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

C. Limiting Exposures: Supervise fabrication and installation activities to ensure that no part of the work completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the fabrication or installation period.

END OF SECTION

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. This Section specifies requirements necessary for Quality Control including, but not necessarily limited to:

1. Testing Agencies
2. Shop Drawing
3. Product Data
4. Samples
5. Specialty Samples
6. Mock-ups

1.02 TESTING AGENCY

A. Parks Canada (Owner) may retain and pay the expense of a Testing Agency to perform and report on Work specified in the Contract Documents. The Testing Agency may be a commercial testing organization, the testing laboratory of a trade association, the certified laboratory of a supplier, or other organization. Testing Agency shall have been in business for five (5) years.

1. Tests shall be as specified in individual specification sections.

B. Parks Canada (Owner) may retain and pay the expense of a specialty Testing Agency services for specialty products services or features, as determined by the Parks Canada (Owner)

1.03 QUALIFICATION OF TESTING AGENCY

A. Meet "Recommended Requirements for Independent Laboratory Qualification," published by American Council of Independent Laboratories.

B. Meet basic requirements of ASTM E329, "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction."

C. Authorized to operate in the Province of Saskatchewan.

1.04 TEST REPORTS

A. Testing Agency shall distribute copies of all reports as follows:
1. Parks Canada (Owner): One (1) copy.
2. Consultants: One (1) copy.
3. Contractor: One (1) copy.
4. Others: as may be determined by Parks Canada (Owner)

1.05 MULTIPLE TESTS AND INSPECTIONS

A. Certain portions of the Work will be tested or inspected at various stages, sometimes off Site, between their inception and final positioning in the completed Work. Nothing in any prior acceptance or satisfactory test result shall govern if at any subsequent time the Work or portion thereof, is found not to conform to Contract Documents.

1.06 ADDITIONAL TESTING AND INSPECTION

A. If initial tests or inspections made by the Testing Agency reveal that materials do not comply with Contract Documents, or if Parks Canada (Owner) or Consultants have reasonable doubt that materials comply with Contract Documents, additional tests and inspections shall be made as directed.

1. If additional tests and inspections establish that materials comply with Contract Documents, all costs for such tests and inspections shall be paid by Parks Canada (Owner).

2. If additional tests and inspections establish that materials do not comply with Contract Documents, all costs of such tests and inspections shall be deducted from Contract Amount.

1.07 SHOP DRAWINGS

A. Shop drawings shall be drawn to scale and shall be completely dimensioned, providing plans, sections, elevations, details as necessary to clearly show construction detail and methods.

B. Shop drawings and supporting data, shall be prepared by Exhibit Fabricator or his/her suppliers, but shall be submitted as the instruments of the Exhibit Fabricator.

1. Exhibit Fabricator shall check the drawings of suppliers as well as his/her own drawings before submitting them to the Owner and Consultant.
2. Exhibit Fabricator shall ascertain that shop drawings meet requirements of the Contract Documents and also conform to the structural (where applicable) and space conditions.

a. If shop drawings show variations from Contract Documents, whether because of standard shop practice or other reasons, the Exhibit Fabricator must make special mention thereof in his letter of transmittal.

3. Contractor shall be fully responsible for observing the need for and making any changes in connections and/or manner of installation, etc., which may be required by equipment he proposes to supply, both as pertains to his/her own work and work affected under other parts of the Contract Documents.

1.08 PRODUCT DATA

A. Preparation:

1. Clearly mark each copy to identify pertinent products or models.
2. Show performance characteristics, capacities, dimensions, and required clearances.

B. Modify manufacturer's standard drawings and diagrams to delete information which is not applicable to the Work.

1. Supplement standard information to provide information specifically applicable to the Work.

1.09 SAMPLES

A. Deliver a minimum of five (5) samples to locations described below with expenses, including carrying costs, prepaid, unless otherwise instructed:

1. Two (2) samples to the Consultant’s office
2. Two (2) samples to the Owner’s office (Parks Canada)
3. One (1) sample to be kept in the site office

B. Samples to be submitted to Consultant’s and Owner’s offices:
1. Sample of sufficient size and quality to clearly illustrate:

a. Functional characteristics of product, with integrally related parts and attachment devices (Where applicable).
b. Full range of colour, texture, and pattern.

2. No review of a sample shall be taken in itself to change or modify the Contract Document requirements.
3. Finishes, materials, and workmanship in the completed Exhibit Installation shall match accepted samples.
4. Samples of value will be returned to Exhibit Fabricator, when requested in writing at time of submittal, for his/her use in the Project after review, analysis, comparison, or testing as may be required by the Consultants.

C. Identify samples by Project number and name, name of Consultant, Exhibit Fabricator and Subcontractor, and date of submission. Identify location, specified material reference and any other pertinent information. Show construction by layered method if necessary, clearly displaying textures and patterns.

D. Resubmit samples until written acceptance is obtained from Consultant and Owner.

E. Exhibit Metal Samples:
1. Submit samples, 200mm X 200mm of finished (powder coated) metal material to be used for all exterior exhibit support frames, for the Consultant's and Owner`s approval of material, finish and workmanship.

F. Sealant Samples:
1. Submit samples of sealant/caulking, for colour selection

G. Etched Graphic on Base Building Mirror Glass Samples:
1. Submit samples, 300mm X 300mm complete with specified etched technique.
2. Coordinate with The Waskesiu Lake House Building Project`s General Contractor to obtain a piece of the Mirror Glass product to be used in their Base Building project for the purpose of preparing an Etched Mirror Glass Sample under the exhibit scope of work.

H. Stencil – Applied Animal Silhouette Samples:
1. Submit samples, prior to commencement of work of this section.
2. Submit samples, 300 mm x 300 mm of applied painted animal silhouette animal (Use specified automotive paint product onto a pre-painted metal surface).

I. Printed Graphic on Base Building Porcelain Tile Samples:
1. Submit samples, 300mm X 300mm complete with specified tile print technique.
2. Coordinate with The Waskesiu Lake House Building Project`s General Contractor to obtain a unit of the Porcelain tile product to be used in their Base Building project for the purpose of preparing a Printed Graphic tile Sample under the exhibit scope of work.

J. Paint Samples:
1. Submit samples, 200mm X 200mm samples on suitable surfaces painted with specified paint and powder coating in colours, gloss/sheen as noted on finishes schedule for review and approval. When approved, samples shall become acceptable standard of quality for appropriate on-site surface with one of each sample retained on-site.

K. Graphics Samples:
1. Submit samples, 300mm X 300mm of each Graphic Type, including type, finish, colour, and material indicated. Indicate production type and output format (e.g. "Direct Print Digital Output on Sintra").
    a. Submit the following samples; 13mm thick HPL graphic panel, aluminum animal silhouette (finished), Direct print on Sintra.
    b. Pantone colour sample of Graphic samples types indicating all colours used in the project for printing techniques that are not set up for pantone, CMYK, RGB, or other conversions must be provided to best match pantone colour specified.
    c. Pantone matched paint samples (where applicable).

L. Casts Samples:
1. Submit photographic samples of work in progress prior to submitting physical samples.
2. Provide photo samples to represent progress for major visual element for each section. Unless otherwise indicated, provide three (3) 8.5" x 11" photos and digital picture files, to fully illustrate materials, details, colour, visual and textural qualities.
3. Submit Bison Footprint physical cast for final review and approval. Physical cast review location to be coordinated by Exhibit fabricator.

1.07 SPECIALTY SAMPLES

A. Submit sample for pre-manufactured top slide-in (8.5" x 11") frame as specified.
B. Decorative Coat hook (complete with finished aluminum animal contour cut graphic)

1.08 MOCK-UPS

A. Provide all mock-ups as specified. Mock-ups may form part of the finished Work unless otherwise specified.

B. Exhibit fabricator to coordinate with Consultant and Parks Canada (Owner) review locations for Mock-ups. Mock-ups will be review both on site or/and at fabricator's shop.

C. Notify Parks Canada (Owner) and Consultant upon completion of mock-ups and allow time for review and approval. Approval time for mock-ups shall not be reason to affect the project schedule.

D. Once approved mock-ups shall become the minimum benchmark for quality of work and materials.

E. If rejected, remove mock-up materials and re-construct, or amend mock-up as directed by the Consultant and request additional review.

F. List of Mock-Ups

1. HPL Graphic Panel
2. Inforail frame with integrated HPL graphic panel
3. Etched Mirror
4. Bison Footprint Cast
5. Complete Aluminum Animal Contour Cut Silhouette (Finished)

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

PART 1 – GENERAL

1.01 SECTION INCLUDES:

A. Design, labour, products, equipment and services necessary for the miscellaneous and metal fabrication Work in accordance with the Contract Documents.

1.02 REFERENCES

A. ANSI, H35.1M Alloy and Temper Designation Systems for Aluminum (Metric).

B. ASTM A123, Specification for Zinc (Hot Dip Galvanized) Coatings on Iron & Steel Products.

C. ASTM A153, Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

D. ASTM A307, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.

E. ASTM A653/A653M, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy- Coated (Galvanealed) by the Hot-Dip Process.

F. ASTM B209, Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

G. ASTM B211, Specification for Aluminum and Aluminum-Alloy Bar, Rod, and Wire.

H. CAN/CSA-G40.20/G40.21-M, General Requirements for Rolled or Welded Structural Quality Steel/ Structural Quality Steels.

I. CAN/CSA S16.1-M, Limit States Design of Steel Structures.

J. CSA S136.1-M, Commentary on CAN/CSA S136-M, Cold Formed Steel Structural

K. CSA W47.1, Certification of Companies for Fusion Welding of Steel Structures.

L. CSA W48, Filler Metal and Allied Materials for Metal Arc Welding.

M. CSA W59-M, Welded Steel Construction (Metal Arc Welding).

N. CAN/CSA W117.2-M, Safety in Welding, Cutting and Allied Processes.

O. CGSB 85-GP-16M, Painting Galvanized Steel.

1.03 DESIGN REQUIREMENTS

A. Design details and connections, where not shown on Drawings, in accordance with CAN/CSA- S16.1 and CSA S136.1.

B. Design miscellaneous, additional structural framing members as required to complete the

Work where not indicated on Contract Drawings.

C. Coordinate with all other aspects of exhibit and graphic fabrication to ensure that the Work is properly interfaced with other exhibit structures. Ensure that structures are detailed to accommodate the installation of all aspects of the Work.

D. Design metal fabrications exposed to or within reach of Exhibit visitors without sharp edges that could pose harmful to visitors.

E. Anchor metal fabrications to provide a stable and rigid installation. Detail all anchoring to show hardware.

1.04 SUBMITTALS

A. Shop drawings: Submit shop drawings in accordance to Section 01 45 00 for fabrication and erection of miscellaneous and metal items in accordance with the Conditions of the Contract Documents indicating:
   1. Materials, core thicknesses, class of finish, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

B. Samples:
   1. Submit samples in accordance with Section 01 45 00.

1.05 QUALITY ASSURANCE

A. Retain a Professional Engineer, licensed in the Province of Saskatchewan, with experience in Work of comparable complexity and scope, to perform the following services as part of the Work of this Section:
   1. Design structural framing for the metal fabrication items that are required to resist live, dead, lateral, or seismic loads.

B. Workmanship: Fabricate Work of this Section to meet the required class of workmanship indicated below in accordance with AMP 555, Section 8.
   1. Class 1: for use on direct exposed to view fabricated items:
      a. Surfaces are finished smooth, with pitts, mill marks, nicks, burrs, sharp edges and scratches filled or ground off. Defects should not show when painted, polished, or finished.
      b. Welds should be concealed where possible. Exposed welds are ground to small radius with uniform sized cove unless otherwise noted.
      c. Distortions should not be visible to the eye.
      d. Exposed joints are fitted to a hairline finish.

C. Execute welding by firms certified in accordance with CSA W47.1 Division 1 or 2.1. Ensure welding operators are licensed per CSA W47.1 for types of welding required by Work.

PART 2 – PRODUCTS

2.01 MATERIALS

A. General:
1. All materials under Work of this Section, including but not limited to, adhesives, primers and paints are to have low VOC content limits.
2. Unless detailed or specified herein, standard products will be acceptable if construction details and installation meet intent of Drawings and Specifications.
3. Include all materials, products, accessories, and supplementary parts necessary to complete assembly and installation of Work of this Section.
4. Incorporate only metals that are free from defects which impair strength or durability, or which are visible. Install only new metals of best quality, and free from rust or waves and buckles, and that are clean, straight, and with sharp defined profiles.

B. Structural shapes, plates, and similar items: CAN/CSA-G40.20/G40.21-M, Grade 350W. Hollow structural sections: CAN/CSA-G40.20/G40.21-M, Grade 350W, Class H.

C. Galvanized sheet steel: ASTM A653/A653M Grade A, Z275 Commercial Quality zinc coating, size and shape as shown

D. Aluminum materials:
1. Aluminum extrusions and channels: ASTM B211 and ANSI H35.1 AA6063 alloy, T6 temper.
2. Aluminum sheet: ASTM B209 and ANSI H35.1 AA1100 aluminum alloy, H38 temper, minimum 1.29mm for sheets less than 610mm wide and minimum 2.05mm for sheets of a greater dimension.
3. Provide all aluminum items required by this Project including but not limited to miscellaneous extrusions, edgings, trims, caps, angles and animal cut-out panesl (interior and exterior) where indicated.
4. Aluminum finish: Powder coat finish as specified in this Section in colour as selected by the Consultant. Provide samples for the Consultant's approval

D. Welding materials: CSA W48 and CSA W59-M.

E. Fasteners: Conforming to ASTM A307, Grade A, in areas not exposed to view, use unfinished bolts with hexagon heads and nuts. In areas exposed to view, use bolts, nuts, washers, rivets, lock washers, anchor bolts, machine screws and machine bolts Z275 zinc coated in accordance with ASTM A653/A653M. Supply bolts of lengths required to suit thickness of material being joined, but not projecting more than 6mm beyond nut, without the use of washers.

F. Powder coating (PT-1) and (PT-2):
1. 'Series 38' Super Durable Polyester resin-based thermosetting powder – High performance Architectural Coating' by Tiger Drylac or approved alternative. (Exterior grade). Refer to Finishes Schedule and Contract Documents for PT types, locations and colours. Provide samples and mock-ups in accordance to Section 01 45 00.

2. For use on steel and/or aluminum metal fabricated items, such as edge trims, misc. metal profiles, brackets, inforails, wingspan and be like a bison exhibit components, and additional items as indicated.

3. Finishes shall be fully cured and inert at Exhibit fabricator's shop.

G. Primer paint: CPMA 1.73a. or approved alternative

H. Galvanized primer paint: Inorganic zinc rich primer. For use on galvanized fabrications where touch up is to remain unpainted in finished work; Carbozinc 11WB by Carboline Company, Catha-Coat 305 by Devoe Coatings or Zinc Clad XI by Sherwin Williams.

I. Drilled inserts: Mega by ITW Construction Products or HSL by Hilti Inc. heavy-duty anchors, sizes as shown.

J. Security fasteners: Corrosion resistant, anti-tamper or tamper-resistant, stainless steel screws to suit intended application.

2.02 FABRICATION

A. Coordinate the metal work assemblies with the Bison Footprint cast producers to integrate anchor points between the exterior inforail elements and associated steel and/or aluminum support framework.

B. Verify dimensions of existing Work (where applicable) before commencing fabrications and report any discrepancies to the Consultant.

C. Fit and assemble Work in shop where possible. Execute Work in accordance with details and reviewed shop drawings.

D. Use self-tapping shake-proof screws on items requiring assembly by screws or as indicated. Use screws for interior metal work.

E. Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush. Seal steel fabrications against corrosion in accordance with CAN/CSA S16.1-M.

F. Execute shop welding to requirements specified.

G. Carefully make and fit details. Take special care with exposed finished Work to produce a neat and correct appearance to the Consultant's acceptance.

H. Assemble members without twists or open joints.

I. Correctly size holes for connecting Work of other trades where such can be determined prior to fabrication. Where possible, show holes on shop drawings. Place holes not to cause appreciable reduction in strength of member.

J. Draw mechanical joints to hairline tightness and seal countersunk screw and access holes for locking screws with metal filler where these occur on exposed surfaces.

2.03 FABRICATED ITEMS

A. Metal fabrications required by this Section is to include but not be limited to the following items:
1. Metal edgings, trims and framing for all exhibit components.
2. Inforail metal components and edges
3. Wingspan and Dress Like a Bison components
4. Animal cut-out panels
5. Miscellaneous brackets, supports, angles and channels

B. Refer to Drawings for details of metal fabrication work and related items not specifically listed in this Section.

C. Where work is required to be built into work of other Sections supply such members to respective Sections.

D. Provide metal fabrication items indicated below and items not indicated to be supplied under other Sections. The following items include miscellaneous and metal fabrication including but not limited to the items listed below.

E. Metal edgings, trims, and framing.
1. Provide metal edgings, trims and framing for all exhibits as required by Section 06 20 00 – Finish Carpentry. Coordinate with noted Section as required for sizing of metal edgings, trims and framing.
2. Finish: Powder coat finish (Exterior Grade, where applicable), unless otherwise indicated, in colour as selected by the Consultant.

F. Inforail metal components:
1. Provide metal components as required for inforails for all exhibit components, including but not limited to steel tube framing, aluminum channel framing, and aluminum angles. Sizes as shown.
2. Provide all fasteners, bolts, and additional components as required for complete and secure installation.
3. Coordinate with applicable Sections as required for sizing and installation such as but not limited to Section 06 20 00 for wood components such as plywood (Interior and Exterior grades) and Section 10 44 00 for graphics.

G. Wingspan and Dress Like a Bison metal components:
4. Provide metal components as required for all exhibit components, including but not limited to steel tube framing, aluminum channel framing, and aluminum angles. Sizes as shown.
5. Provide all fasteners, bolts, and additional components as required for complete and secure installation.
6. Coordinate with applicable Sections as required for sizing and installation such as but not limited to Section 10 44 00 for graphics.

H. Miscellaneous brackets, supports, angles and channels:
1. Supply and install or supply for installation by trades responsible, all loose steel brackets, supports and angles where indicated, except where such brackets, supports and angles are specified under work of other Sections. Drill for countersunk screws, expansion anchors and anchor bolts.
2. Provide miscellaneous aluminum channels and supports where shown

2.04 ANCHORS AND FASTENING

A. Use self-drilling expansion type concrete anchors for attaching to masonry and concrete.

B. Coordinate anchoring hardware between Bison Footprint cast and the structural mounting frame to ensure correct fit and attachment, to provide secure fit and tamper-proof assembly.

C. Provide low profile aluminum cleats and anchors on structural frame to accommodate the millwork/graphic installations.

D. Provide slotted holes and adjustable anchor plates where required to accommodate for site fitting and adjustment of casts and millwork/graphic features.

2.05 WELDING

A. Perform welding by electric arc process.

B. Execute welding to avoid damage or distortion to Work. Execute welding in accordance with following standards:
1. CSA W48– for Electrodes. If rods are used, only coated rods are allowed.
2. CSA W59-M and CSA W59S1-M– for design of connections and workmanship.
3. CAN/CSA W117.2-M – for safety.

C. Thoroughly clean welded joints and expose steel for a sufficient distance to perform welding operations. Finish welds smooth. Supply continuous and ground welds which will be exposed to view and finish powder coat paint.

D. Test welds for conformance and remove Work not meeting specified standards and replace to Consultant's acceptance.

2.06 SHOP PAINTING

A. Clean steel to SSPC SP6 and remove loose mill scale, weld flux and splatter.

B. Shop prime steel with one coat of primer paint to dry film thickness of 0.07mm. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7°C. Paint items under cover and leave under cover until primer is dry. Follow paint manufacturer's recommendations regarding application methods, equipment, temperature, and humidity conditions.

C. Shop prime galvanized steel in accordance with CGSB 85-GP-16M.

D. Clean but do not paint surfaces being welded in field.

E. Do not paint surfaces embedded in concrete, but clean as if they were to be primed.

F. Do not prime machine finished surfaces, but apply an effective anti-rust compound.

G. Take precautions to avoid damage to adjacent surfaces.

2.07 POWDER COAT FINISH

A. Shop apply powder coating to items as indicated in accordance with manufacturer's instructions. (Exterior Grade)

B. Clean assemblies as indicated free of rust and grease. Pretreat as recommended by Powder Coating manufacturer.

2.08 HOT DIP GALVANIZING

A. After fabrication, hot dip galvanize specific miscellaneous aluminum items as indicated. Plug relief vents air tight. After galvanizing, remove plugs, ream holes to proper size and re-tap threads.

B. Straighten shapes and assemblies true to line and plane after galvanizing. Repair damaged galvanized surfaces with zinc rich primer in accordance with manufacturer's printed directions.

C. Hot-dip galvanize members in accordance with requirements of the following ASTM, with minimum coating weights or thicknesses as follows:
1. Rolled, pressed and forged steel shapes, plates, bars and strips: ASTM A123; average weight of zinc coating per square/metre of actual surface, for 4.8mm and less thickness members 600 g/m^2 for 6mm, and heavier members 640 g/m^2.
2. Iron and steel hardware: ASTM A153; minimum weight of zinc coating, in ounces per square foot of surface, in accordance with ASTM A153, Table 1 for the various classes of materials used in the Work.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine previously installed Work, upon which this Section depends, verify dimensions and condition of existing Work, and coordinate repairs, alterations, and rectification if necessary. Commencement of Work of this Section is deemed to signify acceptance of existing, prior conditions.

B. Obtain Consultant's written approval prior to field cutting or altering of structural and/or support framing members.

3.02 ERECTION

A. Install metal fabrications in accordance with reviewed shop drawings and manufacturer's written instructions.

B. Coordinate with applicable trades as required for Work of this Section.

C. Fit joints and intersecting members accurately. Make Work in true planes with adequate fastenings. Build and erect Work plumb, true, square, straight, level and accurate to sizes detailed, free from distortion or defects detrimental to appearance or performance.

D. Perform drilling of concrete and steel as required to fasten Work of this Section.

E. Coordinate all interior blocking to provide rigid and secure attachment.

F. Coordinate installation with the work of related disciplines, Bison Footprint cast, millwork, graphics, etc.

3.03 TOUCH-UPS

A. Paint bolt heads, washers, nuts, field welds and previously unpainted items. Touch up shop primer damaged during transit and installation, with primer to match shop primer

END OF SECTION

PART 1 – GENERAL

1.01 SECTION INCLUDES:

A. Labour, Products, equipment, and services necessary for the Finish Carpentry Work in accordance with the Contract Documents.

1.02 REFERENCES

A. ANSI/NEMA LD 3, High-Pressure Decorative Laminates.

B. ANSI A208.2, Medium Density Fibreboard for Interior Use.

C. ASTM A123, Specification for Zinc (Hot Dip Galvanized) Coatings on Iron & Steel Products.

D. ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials.

E. Architectural Woodwork Manufacturers Association of Canada (AWMAC).

F. Architectural Woodwork Standards (AWS) – Quality Standards for Architectural Woodwork.

G. CSA O115-M, Hardwood and Decorative Plywood.

H. CSA O121-M, Douglas Fir Plywood.

I. CAN/CSA O141, Softwood Lumber.

J. CSA O151-M, Canadian Softwood Plywood.

K. National Lumber Grades Authority (NLGA) Standard Grading Rules for Canadian Lumber.

1.03 DESIGN REQUIREMENTS

A. Coordinate with all other aspects of exhibit fabrication to ensure that the Work is properly interfaced with other exhibit structures. Ensure that millwork fabrications and structures are detailed to accommodate the installation of all aspects of the Work.

1.04 SUBMITTALS

A. Shop drawings: Submit shop drawings of finish carpentry Work in accordance with Section 01 45 00 and the Conditions of the Contract Documents indicating materials, thicknesses, sizes, finishes, wood species, grades, profiles, connection attachments, shop jointing, field jointing, reinforcing, anchorage, fastener types and sizes, location of exposed fastenings, mechanical and electrical service routes, service outlets, cutout locations, and sizes. Include erection drawings, plans, elevations, sections, and details (where applicable).

1.05 QUALITY ASSURANCE

A. Special experience requirements:
1. Manufacturer/Fabricator: Architectural woodwork shall be manufactured by a firm having a minimum of five (5) years' experience on work of similar size and quality to that indicated and specified.
2. Installer Qualifications: Engage an installer who is a member of AWMAC and who has successfully completed two (2) architectural woodwork fabrications projects similar in scope, materials and design to this Project within the last ten (10) years. Submit proof of experience upon Consultant's request.

B. Each piece of fire retardant treated lumber and plywood shall be shop marked with the ULC monogram respectively.

C. Fabricate finish carpentry Work in accordance with AWS Quality Standards, Premium Quality materials and installation unless otherwise indicated. Perform Work in accordance with the definition of Good Workmanship as defined in the AWS Quality Standards.

D. Remove and replace finish carpentry Work which does not conform to the AWS Quality standards or as amended by these Specifications.

E. Samples and Mock-ups:
1. Submit Samples and Mock-ups in accordance with Section 01 45 00.
2. Coordinate with related Base Building Contractor and/or trades as required for preparation of samples and mock-ups.

1.06 SITE CONDITIONS

A. Environmental conditions during installation: Obtain and comply with woodwork manufacturer's advice for optimum temperature and humidity conditions for woodwork during its storage and installation. Do not install woodwork until these conditions have been attained.

B. Environmental conditions during service life of woodwork: Obtain and comply with Woodwork Manufacturer's advice for optimum temperature and humidity conditions for woodwork during its storage and installation. Do not install woodwork until these conditions have' been attained.

C. Field Measurements: Where woodwork is indicated to be fitted to other construction, check actual dimension of other construction by accurate field measurements before manufacturing woodwork; show recorded measurements on final shop drawings. Coordinate manufacturing schedule with construction progress to avoid delays in the Work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle finish carpentry in accordance with the AWS Quality Standards. Control the temperature and humidity in accordance with the AWS recommendations, before, during, and after finish carpentry delivery, and also during storage and installation.

1.08 EXTENDED WARRANTY

A . Submit an extended warranty for Work of this Section in accordance with General Conditions, except that warranty period is extended to five (5) years from date of Substantial Performance of the Work.

1. Promptly remove, replace and reinstall defective Products materials and workmanship.
2. Warrant against defects in material and workmanship including but not limited to opening of joints, cracking, shrinkage, warpage, and delamination of facing or defective materials, telegraphing core construction and installation and include replacement labour and finishing.
3. Coverage: Complete replacement including affected adjacent Work.

PART 2 – PRODUCTS

2.01 MATERIALS

A. General: All materials under Work of this Section, including but not limited to, adhesives and mastics, are to have low VOC content limits.

B. Concealed framing lumber: Eastern Spruce, Balsam Fir, or Jack Pine, to CAN/CSA O141, NLGA, and AWMAC Custom Grade, S4S, average moisture content 7% +/- 2% at installation.

C. Hardwood plywood: Conforming to CSA O115-M, stain grade and fire retardant decorative hardwood plywood, in wood species as selected by the Consultant, low VOC type. Thickness as indicated.

D. Standard Plywood:

1. Softwood plywood: CSA O151-M; 19mm unless indicated otherwise, (G2S)
2. Fire Retardant Plywood; concealed locations: 19mm thick, flame retardant softwood plywood, urea-formaldehyde free, with no added formaldehyde used in composition.
3. Preservative treated Plywood; Douglas Fir to CSA 0121 (G1S), pressure treated with CSA to CAN/CSA O80.9, minimum retention 4.0 kg/m3 by assay
4. Field applied wood preservative: copper napthenate to AWPA P8, green colour.

E. Medium Density Fibreboard (MDF): ANSI A208.2; SCS and FSC certified, formaldehyde-free adhesive, fabricated from pre-consumer recycled wood fibre, ‘Medite II’ by SierraPine or Goodfellow Inc. Provide thicknesses of 19mm, 13mm and 6mm where indicated.

MDF to meet the following minimum criteria:

1. Density: 753 kg/m^3.
2. Internal bond: 1.17 N/mm^2
3. Modulus of rupture: 34.45 N/mm^2
4. Modulus of elasticity: 3, 790 N/mm^2
5. Moisture content: 4-6%.

F. Draw bolts and splines: Type as recommended by fabricator.

G. Nails: Size and type to suit application, galvanized to ASTM A123 for interior humid areas and for treated lumber; plain finish elsewhere.

H. Bolts, nuts, washers, blind fasteners, lags and screws: Size and type to suit application. Stapling is not acceptable.

I. Security fasteners: Corrosion resistant, tamperproof, stainless steel screws to suit intended application:

J. Adhesive and bituminous mastic: Selected by the millwork fabricator with low VOC content.

K. Miscellaneous metals: In accordance with Section 05 50 50 including but not limited to channel and support framing

L. Etched Glass (Mirror) materials: In accordance with Section 08 80 00

M. Paint finishes: In accordance with Section 09 90 00

N. Graphics: In accordance with Section 10 44 00

2.02 FABRICATION, GENERAL

A. Be responsible for methods of construction and for ensuring that materials are rigidly and securely attached and will not be loosened by the work of other sections.

B. Coordinate Work of this Section as required for integration of exhibit graphics into millwork where shown.

C. Fabricate work in a manner which will permit expansion and contraction of the materials without visible open joints. Conceal joints and connections in wherever possible.

D. Set nails and countersink screws, apply wood filler to indentations, sand smooth and leave ready to receive finish.

E. Mitre exposed corners; no end grain shall be visible in completed installation.

F. Finished millwork shall be free from bruises, blemishes, mineral marks, knots, shakes and other defects and shall be selected for uniformity of colour, grain, and texture.

G. Shop-assemble finish carpentry and millwork to accommodate delivery and handling and to ensure passage through building openings.

H. Inforail unit:
   a. Construct inforail units from components such as but not limited to preservative treated plywood, powder coated metal work (including miscellaneous support framing and trims) and graphic materials as shown on Contract Drawings.
   b. Coordinate with Sections 05 50 50 and 10 44 00 for items such as but not limited to angles and framing and graphic materials.

I. HPL Graphic Panels: Provide plywood backer paneling where shown on Contract Drawings

PART 3 – EXECUTION

3.01 EXAMINATION

A. 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.

3.02 INSTALLATION

A. Install Work in accordance with AWS Quality Standards and tolerances for Architectural Woodwork. Set and secure finish carpentry and millwork in place, rigid, plumb, square, and level.

B. Scribe and cut as required, fit to abutting walls, and surfaces, fit properly into recesses and to accommodate columns, fixtures, outlets, or other projecting, intersecting or penetrating objects leaving a 0.8mm gap maximum.

C. Coordinate with applicable Sections as required for Work by this Section, such as, but not limited to Section 05 50 50 for miscellaneous metal supports and framing and Section 10 44 00 for graphics work.

D. Form joints to conceal shrinkage.

E. Install finishing hardware accurately and securely in accordance with manufacturer's directions, adjust and clean.

F. Install pre-finished items at locations shown on drawings. Position accurately, level, plumb straight.

G. Apply bituminous coating over wood framing members in contact with masonry or cementitious construction.

H. Panels: Install paneling in locations indicated on drawings. Ensure that panels are securely fastened in true vertical and horizontal manner.

I. Wood blocking:
1. Fit and install wood furring, strapping, grounds and blocking. Adequately size, correctly place and conceal members for finishes, fitments and for Work under other Sections. Do not assume that Drawings show required work exactly or completely. Anchor wood members securely in place.

J. Fastening:
1. Coordinate wall securement, anchorage, and blocking for finish carpentry items.
2. Position items of finished carpentry work accurately, level, plumb, true and fasten or anchor securely.
3. Design and select fasteners to suit size and nature of components being joined. Use proprietary devices as recommended by manufacturer.
4. Set finishing nails to receive filler. Where screws are used to secure members, counter-sink screw in round cleanly cut hole and plug with wood plug to match material being secured.

K. Remove and replace damaged, marked, or stained finish carpentry

END OF SECTION

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Labour, Products, equipment, and services necessary for Sealant s Work in accordance with the Contract Documents.

1.02 REFERENCES

A. ASTM C834, Specification for Latex Sealants.

B. ASTM C1330, Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.

1.03 SUBMITTALS

A. Product data:
   1. Submit copies of Product data in accordance with Section 01 45 00.

B. Samples:
   1. Submit samples in accordance with Section 01 45 00.

1.04 QUALITY ASSURANCE

A. Qualifications: Work of this Section shall be executed by trained applicators approved by sealant manufacturer and having a minimum of five (5) years' proven experience.

1.05 SITE CONDITIONS

A. Do not install materials when ambient air temperature is less than 5°C, when recesses are wet, or damp, or to manufacturer's recommendations.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Arrange delivery of materials in original, unopened packages with labels intact, including batch number, and ensure that on-site storage is kept to a minimum. Do not store materials on site where there exists any danger of damage from moisture, direct sunlight, freezing, and other contaminants.

1.07 EXTENDED WARRANTY

A. Submit an extended warranty for Sealant Work in accordance with General Conditions, except that warranty period is extended to two (2) years from date of Substantial Performance of the Work.
   1. Warrant against leakage, cracking, crumbling, melting, shrinkage, running, loss of adhesion, and staining adjacent surfaces.
   2. Coverage: Complete replacement including affected adjacent/Work.

PART 2 – PRODUCTS

2.01 MATERIALS

A. General:
1. All materials under Work of this Section, including but not limited to, primers and sealants are to have low VOC content limits.
2. Use materials as received from manufacturers, without additives or adulterations. Use one manufacturer's Product for each kind of Product specified.

B. Sealant: ASTM C834; Pure acrylic siliconized sealant; in custom colour to match adjacent work (paintable). Provide samples for the Consultant's approval of colour.
1. Tremflex 834 Silconized Sealant by Tremco Ltd. Or approved alternative

2.02 ACCESSORIES

A. Primers: Low VOC primers, type recommended by material manufacturers for various substrates, primers to prevent staining of adjacent surfaces encountered on project.

B. Joint backing: ASTM C1330; Round, solid section, closed cell, skinned surface, soft polyethylene foam gasket stock, compatible with primer and sealant materials, 30 to 50% oversized, Shore A hardness of 20, tensile strength 140 to 200 kPa. Bond breaker type surface.

C. Bond breaker: Type recommended by material manufacturers.

D. Void filler around the frames to be one part expanding polyurethane foam.

E. Cleaning agents: As recommended by material manufacturer, non-staining, harmless to substrates and adjacent finished surfaces.

2.03 MIXING

A. Follow manufacturer's instructions on mixing, and shelf life.

PART 3 – EXECUTION

3.01 EXAMINATION

A. 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.

3.02 PREPARATION

A. Prepare joints to receive sealants to manufacturer's instructions. Ensure that joints are clean and dry and ferrous surfaces are free from rust and oil.

B. Clean recesses to receive sealant, to be free of dirt, dust, loose material, oil, grease, form release agents and other substances detrimental to sealant's performance.
   1. Remove lacquer or other protective coatings from metal surfaces, without damaging metal finish, using oil-free solvents. Remove rust, mill scale and coatings from ferrous metals by wire brush, grinding or sand blasting.
   2. Ensure recess is dry.
   3. Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings. Remove incompatible coatings as required.

C. Ensure that all materials in contact with sealant are compatible. Test substrate for adhesion.

D. Depth of recess: Maintain depth to half-joint width up to a maximum of 13mm and not less than 6mm at center of joint. For greater depth, use joint backing under. Where recess is less than specified depth, cut back surface of recess to specified recess depth.

E. Install polyethylene backing rod in joints 6mm or more in width. Roll backing rod into joint. Do not stretch or bend backing rod. Install bond breaker to back of recess.

F. Prime sides of recess, in accordance with sealant manufacturer's instructions.

G. Condition products for use in accordance with manufacturer's recommendations

3.03 INSTALLATION

A. Apply sealant immediately after adjoining Work is in condition to receive such Work. Apply sealant in continuous bead using gun with correctly sized nozzle. Use sufficient pressure to evenly fill joint. Use masking tape/painter's tape to ensure clean edges at adjacent surfaces.

B. Ensure sealant has full uniform contact with, and adhesion to, side surfaces of recess. Superficial painting with skin bead is not acceptable. Tool sealant to smooth surface, free from ridges, wrinkles, sags, air pockets, embedded impurities, dirt, stains or other defects.
   1. At recesses in angular surfaces, finish sealant with flat profile, flush with face of material at each side.
   2. At recesses in flush surfaces, finish compound with concave face, flush with face of material at each side.

C. Make sealant bead uniform in colour and match adjacent work.

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

E. Immediately remove excess compound or droppings which would set up or become difficult to remove from adjacent finished surfaces, using recommended cleaners, as work progresses. Do not use scrapers, chemicals, or other tools which could damage finished surfaces. Remove defective sealant.

F. Clean recesses and re-apply sealant.

G. Remove masking tape immediately after joints have been sealed and tooled.

3.04 CLEANING

A. Clean surfaces adjacent to joints, remove sealant smears or other soiling resulting from application of sealants. At metal surfaces, remove residue. Do not mar or damage finishes on materials adjacent to joints. Repair or replace marred or damaged materials.

END OF SECTION

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Labour, Products, equipment, and services necessary for miscellaneous specialties Work as listed below in accordance with the Contract Documents.

1. Acid Etched Glass Mirror – Graphic

1.02 SUBMITTALS

A. Submit samples in accordance with Section 01 45 00

B. Submit product data in accordance with Section 01 45 00.

1.03 CLOSE-OUT SUBMITTALS

A. Submit close-out submittals in accordance with Section 01 78 00.

B. Submit maintenance and cleaning instructions for etched mirror glass for incorporation into the operating and maintenance manuals.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials during delivery, storage and handling to comply with manufacturer's directions and as required to prevent edge damage to glass, and damage to glazing materials from effects of moisture including condensation, of temperature changes, of direct exposure to sun, and from other causes.

PART 2 – PRODUCTS

2.01 GLASS MATERIALS

A. Mirror Glass: Supplied under Base Building Contract – Exhibit Fabricator to coordinate with base building general contractor execution of work related to etched mirror graphic provided by Exhibit Fabricator

B. Acid Etched Glass only: To CAN/CGSB12-13, 6mm thick

1. Surface treatment: Satin acid etched surface treatment on one side (refer to EXB graphic package for graphics to be etched onto mirror glass). Factory applied clear protective coating on acid etched surface to prevent contamination

.

PART 3 – EXECUTION

3.01 INSPECTION

A. Report to the Consultant in writing any defects in existing Mirror Glass and/or work in unsatisfactory conditions at the Place of the Work. Do not begin to installation of etched glass mirror until all conditions are satisfactory. Starting of the installation of the work of this section shall imply acceptance of existing conditions and mirror surfaces as provided by Base Building Contractor.

3.02 PREPARATION

A. Handle and Store glass product in accordance to manufacturer's recommendations.

3.03 PROTECTION

A. Provide safety markings to installed glass by attaching streamers or tape to face of sash. Do not apply tape directly to the glass. Do not mark the glass with paint or any other substance that is hard to remove or could leave permanent stains.

B. Install protective cover to glass where there is a high risk of damage. Use plywood, heavy kraft paper, or non-staining transparent plastic sheet. Do not let protective materials contact surface of glass.

C. Do not rely on use of adhesive plastic films to protect installed glass. When plastic sheeting is used, it must be transparent, suspended away from the surface of the glass, and be provided with adequate ventilation holes to prevent heat build-up.

3.04 FINISHING

A. Immediately remove sealant and compound droppings from finished surfaces. Remove labels after work is completed.

B. Remove and replace glass that is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents, and vandalism.

END OF SECTION

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Labour, Products, equipment, and services necessary for Paint and Finish ‘paintable ‘ surfaces of the Work in accordance with the Contract Documents.

1.02 QUALITY ASSURANCE

A. Applicator shall have a minimum of five (5) years proven satisfactory experience and shall show proof before commencement of work that he/she will maintain a qualified crew of painters throughout the duration of the work. When requested, Exhibit Fabricator shall provide a list of the last three comparable jobs including, name and location, specifying authority/project manager, start and completion dates and cost amount of the painting work.

B. Conform to the standards contained in the Master Painters Institute Architectural Painting Specification Manual, latest edition (hereafter referred to as MPI Painting Specification Manual) for painting products, including preparation and application of materials. MPI Painting Specification Manual as issued by the local MPI Accredited Quality Assurance Association having jurisdiction.

C. Paint manufacturers and products used shall be as listed under the “Approved Products” section of the MPI Architectural Painting Specification Manual.

1.03 REGULATORY REQUIREMENTS

A. Conform to safety precautions in accordance with the latest requirements to Industrial Health and Safety Regulations, latest edition, of authorities having jurisdiction.

1.04 SUBMITTALS

A. Submit Product Data and Samples in accordance to Section 01 45 00.

B. When requested, submit invoice list of paint materials ordered for project work to indicating manufacturer, types and quantities for verification and compliance with specification and design requirements.

C. Close-out Submittals:
   1. Maintenance Materials; Provide one (1) gallon of each type and colour of paint from same production run (batch mix) used in unopened cans, properly labeled and identified for Parks Canada (Owner) later use in maintenance. Store where directed.
   2. Provide an itemized list complete with manufacturer, paint type and colour coding for all colours used for Parks Canada (Owner) later use in maintenance.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver all painting materials in sealed, original labeled containers bearing manufacturer's name, brand name, type of paint or coating and colour designation, standard compliance, materials content, as well as mixing and/or reducing and application requirements. Only approved paint products as listed in the MPI Architectural Painting Specification Manual, latest edition, shall be delivered to the site.

B. Store all paint materials in original labeled containers in a secure (lockable), dry, heated and well ventilated single designated area meeting the minimum requirements of both paint manufacturer and authorities having jurisdiction and at a minimum ambient temperature of 45°F. Only those material used on this *Project* are to be stored on site.

C. Where toxic and/or volatile/explosive/flammable materials are being used, provide adequate fireproof storage lockers and take all necessary precautions and post adequate warnings (e.g. no smoking) as required. Take adequate measures to prevent the release of volatile organic compounds (VOC) into the atmosphere.

D. Take all necessary precautionary and safety measures to prevent fire hazards and spontaneous combustion and to protect the environment from hazard spills. Materials that constitute a fire hazard (paints, solvents, drop clothes, and the like) shall be stored in suitable closed and rated containers and removed from the site on a daily basis.

D. Comply with requirements of authorities having jurisdiction, in regard to the use, handling, storage and disposal of hazardous materials.

E. Fully protect all finished work, millwork, graphics, etc., during the painting, including possible exposure to spray or splatter.

1.06 PROJECT SITE REQUIREMENTS

A. Perform no painting or decorating work when the ambient air and substrate temperatures are below 50°F.

B. Perform no painting or decorating work when the relative humidity is above 85% or when the dew point is less than 37°F variance between the air and surface temperature.

C. Conduct all moisture tests using a properly calibrated electronic Moisture Meter, except test concrete floors for moisture using a simple "cover patch test".

D. Apply paint only to dry, clean, properly cured, and adequately prepared surfaces in areas where dust is no longer generated by construction activities such that airborne particles will not affect the quality of finished surfaces.

1.07 WARRANTY

A. Warranty period with regard to the work of this section is Five (5) years.

B. Throughout the warranty period, painting systems shall remain free from failure due to causes including: material failure; surface preparation less than that specified; and paint and paint coating thickness less than that specified, or when not specified, less than that coverage recommended by manufacturer.

C. Presence of any of following during the warranty period shall constitute failure: visible corrosion; film peeling, blistering, checking, scaling, embrittling, or general film disintegration and poor adhesion as determined by tape “peel-off’ test procedures.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Paint Materials shall be in accordance with the MPI Painting Specification Manual “Approved Product” listing and shall be from a single manufacturer for each system used.

B. Acceptable Manufacturers:
1. Benjamin Moore
2. Para Painting & Coatings
3. ICI Paints, (Glidden) Company Limited
4. Sherwin Williams
5. Tiger Drylac

C. Powder coating (PT-1) and (PT-2):
1. 'Series 38’ Super Durable Polyester resin-based thermosetting powder – High performance Architectural Coating' by Tiger Drylac or approved alternative.

D. Automotive Paint (Exterior Grade):
1. Automotive Paint (Exterior Grade) for Stencil graphic application on exterior doors (Refer to EXB Graphics Package)

E. Materials and paints shall be lead and mercury free and shall have no VOC content where possible.

F. Paint materials shall have good flowing and brushing properties and shall dry or cure free of blemishes or sags.

G. Where required, paints and coatings shall meet flame spread and smoke developed ratings designated by local building code requirements and/or authorities having jurisdiction. Paint is not to increase the flame spread ratings, smoke developed ratings or combustibility of any materials.

2.02 EQUIPMENT

A. Painting and decorating equipment to best trade standards for type of product and application.

B. Spray painting equipment of ample capacity, suited to the type and consistency of paint or coating being applied and kept clean and in good working order at all times.

2.03 MIXING AND TINTING

A. Unless otherwise specified, paints shall be ready-mixed. Re-mix prior to application to ensure colour and gloss uniformity.

B. Paste, powder or catalyzed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.

C. Perform all colour tinting operations prior to delivery of paint to site.

D. Where thinner is used, addition shall not exceed paint manufacturer's recommendations.

2.04 GLOSS

A. Paint gloss shall be defined as the sheen rating of applied paint, in accordance with the following values:
1. Flat or matte: 4 to 5 units at 60° to a maximum of 10 units at 85°.
2. Eggshell, pearl, velvet, or low luster: 5 to 25 units at 60° to a minimum of 10 units at 85°.
3. Satin: 20 to 35 units at 60°.
4. Semi-gloss: 35 to 65 units at 60°.
5. Gloss: 65 units and greater.

B. Finish (gloss level) of painted surfaces shall be as indicated in Finishes Schedule.

2.05 FINISHES

A. Colours shall be as indicated on Finishes Schedule.

PART 3 – EXECUTION

3.01 CONDITION OF SURFACES

A. Prior to commencement of work of this section, thoroughly examine (and test as required) conditions and surfaces scheduled to be painted and report in writing to the Exhibit Contractor and Consultant any conditions or surfaces that will adversely affect work of this section

B. No painting work shall commence until such adverse conditions and defects have been corrected and surfaces and conditions are acceptable to the painting Subcontractor.

C. Commencement of work shall not be held to imply acceptance of surfaces except as qualified herein. Such surfaces miscellaneous metal and wood shall not be the responsibility of the painting Subcontractor.

D. The painting Subcontractor shall not be responsible for the condition of the substrate or for correcting defects and deficiencies in the substrate which may adversely affect the painting work except minimal work normally performed by the painting Subcontractor. It shall always however be the responsibility of the painting Subcontractor to see that surfaces are properly prepared before any paint or coating is applied.

3.02 PREPARATION OF SURFACES

A. Prepare surfaces in accordance with MPI Painting Specification Manual requirements.

B. Protect adjacent surfaces and areas from painting operations and damage by drop cloths, shields, masking, templates, or other suitable protective means and make good any damage caused by failure to provide such protection.

C. Substrate defects shall be made good and sanded by others ready for painting particularly after first coat of paint. Finish painting of defective surfaces (e.g. gypsum board) shall indicate acceptance of substrate and any costs of making good defects shall be borne by the painter including re-painting of entire defective surface (no touch-up painting).

D. Sand, clean, dry, etch, neutralize, and/or test surfaces under adequate illumination, ventilation, and temperature requirements.

3.03 APPLICATION

A. Do not paint unless substrates are acceptable and/or until environmental conditions, heating, ventilation, lighting and completion of other sub-trade work are acceptable for applications of Products.

B. Apply paint and decorating material in a workmanlike manner using skilled and trade qualified applicators.

C. Paint surfaces requiring paint or stain finish to minimum MPI Architectural Painting Specification Manual finish requirements with application methods in accordance with best trade practices for type and application of materials used.

D. Apply paint and coatings within an appropriate time frame after cleaning when environmental conditions encourage flash-rusting, rusting, contamination or the manufacturer's paint specifications require earlier applications

E. Painting coats specified are intended to cover surfaces satisfactorily when applied at proper consistency and in accordance with manufacturer's recommendations.

F. Tint each coat of paint progressively lighter to enable confirmation of number of coats.

G. Sand and dust between each coat to provide an anchor for next coat and to remove defects visible from a distance up to 39".

H. Do not apply finishes on surfaces that are not sufficiently dry. Unless manufacturer's directions state otherwise, each coat shall be sufficiently dry and hard before a following coat is applied.

3.04 FIELD QUALITY CONTROL

A. All surfaces, preparation and paint applications shall be inspected.

B. Painted surfaces shall be considered to lack uniformity and soundness if any of the following defects are apparent:
1. runs, sags, hiding, or shadowing by inefficient application methods.
2. evidence of poor coverage at rivet heads, plate edges, lap joints, crevices, pockets, corners, and re-entrant angles.
3. damage due to touching before paint is sufficiently dry and any other contributory cause.
4. damage due to application on moist surfaces or caused by inadequate protection from weather.
5. damage and /or contamination of paint due to wind-blown contaminants (dust, sand blast materials, salt spray, and the like).

C. Painted surfaces rejected by the Consultant shall be made good at the expense of the Contractor. Small affected area may be touched up; large affected areas or areas without sufficient dry film thickness of paint shall be repainted. Runs, Sags or damaged paint shall be removed by scraper or by sanding prior to application of paint.

3.05 PROTECTION

A. Protect all newly painted surfaces from contamination, dust, etc. until paints and paint coatings are completely dry. Curing periods shall exceed the manufacturer's recommended minimum time requirements.

B. Erect barriers or screens and post signs to warn of or limit or direct traffic away or around work area as required.

3.06 CLEAN-UP

A. Remove paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces.

B. Keep work area free from an unnecessary accumulation of tools, equipment, surplus materials and debris.

C. Remove combustible rubbish materials and empty paint cans each day and safely dispose of same in accordance with requirements of authorities having jurisdiction.

D. Clean equipment and dispose of wash water/solvents as well as other cleaning and protective materials (e.g. rags, drop cloths, masking papers, and the like), paints, thinners, paint removers/strippers in accordance with safety requirements of authorities having jurisdiction and in accordance with previously stated specifications for storage and disposal.

END OF SECTION

PART 1 – GENERAL

1.02 SECTION INCLUDES:

A. Design, labour, products, equipment, and services necessary for Exhibit Graphic Work in accordance with the Contract Documents.

1.03 COORDINATION

A. Coordinate with other work to ensure satisfactory and expeditious completion of the work of this section.

B. Provide templates, anchors, inserts, and accessories required to be fixed to or inserted in the work of this section and set in place. Instruct applicable Sub-contractors as to their locations.

C. Coordinate with partition accessories, electrical, communications, audiovisual, and finish components to ensure that proper provisions are made for the installation of the Work of this Section and for Work by others.

D. Provide cut-outs for raceways and other manufactured accessories which are required for the work of this section and for work by others.

E. Coordinate the work of this section with the existing conditions and dimensions of the Waskesiu Lake Beach House Building(s) project site and all exhibits and all other components of the Work.

F. Coordinate all graphics with the requirements for the mounting of models and casts (where applicable).

G. Provide detailing for the efficient rework of graphics for future changes to graphics.

1.04 QUALITY ASSURANCE

A. Qualifications: Provide Work of this Section, executed by competent graphic fabricators and installers with minimum five (5) years of experience in application of Products, systems and assemblies specified and with approval and training of Product manufacturers.

B. Graphics fabricator shall be able to provide OSX operated MAC-based graphic services in order to produce final image output, including:
   1. The fabricator must have the following software applications:
      a. Adobe Illustrator C56 or above (with Cad Tools extensions).
      b. Adobe Photoshop CS6 or above.
      c. Adobe InDesign CS6.
      d. Adobe Acrobat CS6 or above (Professional Version)

   2. Full-service electronic production facility.

3. Samples and Mock-ups:
   a. In accordance with Section 01 45 00

4. Review mock-ups at Exhibit fabricator's shop or Site facility as directed. Fabricate mock-ups in accordance with approved submittal schedule.
5. Construct mock-ups prior to start of shop drawings preparation. Allow sufficient time for Owner and the Consultant's review. Work affected by mock-ups may not commence prior to acceptance of mock-ups.
6. Construct mock-ups to include all related specified materials and workmanship and shall demonstrate details, operation, and functionality of components. Make revisions as directed by Owner in accordance with the intent of the Contract Documents, until mock-ups are accepted. Mock-ups, reviewed and accepted by Owner, shall become the standard of quality against which installed work will be measured.
7. Mock-ups, by prior arrangement, may be incorporated into finished work if approved by Owner.

1.05 GRAPHIC DESIGN RESPONSIBILITIES – *GRAPHICS CONTRACTOR/EXHIBIT FABRICATOR*

A. Design production; inclusions:
   1. Graphics fabricator shall be responsible for :
      a. Procurement of stock images required for the exhibit displays (review and approval by Owner and Consultant).
      b. High resolution scanning of images used in the production of artwork.
      c. Image manipulation (e.g. colour correction, close cropping and image splicing and extending) and placing images into panel layouts.
      d. Layout of Client's final approved script with all graphic design elements, for all of the graphic components of the exhibit.
      e. Preparation of high resolution production files.
      f. Provide hard copy and digital grey and colour proofs, up to three (3) revisions as required by the Consultant, for review and approval. Provide three (3) copies, allowing for one each for Owner, Consultant, and Designer.
      g. Preparation of commissioned, scientific illustrations (where applicable)

   2. Production schedule:
      a. Submit production schedule and method statements, indicating dates for production submittals and review/approval stages, up to and including implementation.
      b. Draft schedule shall be submitted within two (2) weeks from award of Contract
      c. Final schedule is to be submitted within six (6) weeks from award of Contract

1.06 GRAPHIC DESIGN RESPONSIBILITIES – *OWNER*

A. Owner shall be responsible for the following:
1. Review and approval of artwork production submittals made by the graphics contractor/exhibit fabricator in accordance with approved schedules.
2. Review and approval, in coordination with the Consultant and Contractor, of stock images to be procured for the exhibit displays.
3. Review and approval, in coordination with Owner's Curatorial Team, Consultant, and Contractor, of custom scientific illustrations. (where applicable)

1.07 PRODUCTION OF ARTWORK AND IMPLEMENTATION PHASE

A. Graphics fabricators shall use Owner's approved script to produce final graphic components for work in this section.
1. Produce all proofs, for client sign-off.
2. Graphic Producer shall be responsible to take final approved script and all final approved images and provide pre-production graphic layouts, complete with the crop marks. All pre-production layouts shall be provided digitally for review and approval by the Owner/Designer.
3. Produce the production files and final graphic components for the work of this section.
4. Install final graphic components at the Place of the Work.
5. Owner/Designer shall review and annotate all graphic layouts for final content and design. There shall be up to three (3) rounds of proofing and reviews, leading to final pre-production layouts.
6. Notwithstanding the Owner/Designer reviews, the Fabricator shall be responsible for all typographic errors. These shall be corrected at no cost.
7. Fabricator and Graphics Fabricator shall coordinate all graphic sizes and installation details with the site and millwork.
8. Fabricator shall install all graphics in coordination with the overall installation schedule.
9. Included in the cost shall be up to 10% overage/additions, in case the client wishes to add a graphic element within the existing list of graphic production types.

1.08 SUBMITTALS

A. Product data sheets:
1. Submit manufacturer's Product data sheets for Products proposed for use in the Work of this Section.

B. Shop drawings and production files:
1. Submit shop drawings for Work of this Section.

a. Include plans, sections, and large-scale details, and indicate components and methods of assembly, materials and their characteristics, fastenings, finishes and other fabrication information required for the Work of this Section. Indicate assembly joint lines.
b. Clearly indicate fabrication details, plans, elevations, hardware, and

c. mounting/installation details.
d. Identify and describe material types and substrates being supplied, thicknesses, and shapes, including connections and grades, attachments, reinforcing, anchorage and locations of fastenings, and edge treatment for components of Work of this Section and adjacent materials.
e. Submit coordination drawings indicating locations of graphics integrated with work of other Sections.

C. Samples:
1. Submit samples in accordance to Section 01 45 00.

D. Close-out submittals:
1. Maintenance data:
a. Submit maintenance data instructions.
2. Digital Files:
a. Submit final, as built, fabrication digital files to Owner for Owner's future use.
b. Digital files shall be submitted in native format of software used to create them with profiles, and the like, and at full resolution quality
3. Templates:
a. Submit templates to Exhibit Fabricator for use by installers and other fabricators as required for proper location and installation of graphic components, showing all integrated features such as any/all casts.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Package or crate, and brace and wrap *Products* to prevent damage during shipment and handling. Shipping costs shall be included in the work of this section.

B. Label each graphic and package, and crate according to designated exhibit numbers, for each individual graphic item.

1.10 EXTENDED WARRANTY

A. Warrant work of this section for a period of five (5) years.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Refer to EXB Graphics Package and EXA Exhibit Drawings Package.

B. Custom high pressure laminate: 12 colour high definition, custom digitally printing high pressure laminate (HPL)

C. Digital Lambda prints as produced by Lambda digital print process

D. Aluminum animal contour cut-outs: Supplied to this Section by Section 05 50 50

E. Printed Graphic on Base Building Porcelain Tile: Direct Print Graphic on Porcelain tile by Paris Group Inc. (1 416 410 8797 or 1 855 410 8797) or approved alternative

F. Stencil paint application on exterior doors: Supplied to this Section by Section 09 90 00

G. General:
1. Incorporate reinforcing, fastenings, and anchorage as required for fastening of graphic elements, signage, and millwork to all identified locations

2.02 FONTS

A. Graphics fabricator shall purchase for use the following fonts:
1. As defined by the EXB Graphics Package

2.03 FABRICATION

A. Fabricate *Products* with materials and component- sizes, metal gauges, hardware, reinforcing, anchors, and fastenings of adequate strength to ensure that work of this section will remain free of warping, buckling, opening of joints and seams, displacement, and distortion within limits of intended use.

PART 3 – EXECUTION

3.01 PREPARATION

A. 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.

3.02 INSTALLATION

A. Provide manufacturer's information and templates required for installation of work of this section, and assist or supervise, or both, the setting of anchorage devices, and construction of other work incorporated with Products specified in the work of this section in order that they function as intended.

B. Install Work to meet manufacturers' specifications and written installation instructions, true, tightly fitted, and level or flush to adjacent surfaces, as suitable for installation.

C. Include reinforcing, anchorage and mounting devices required for the installation of each product.

D. Erect frame work level and rigidly supported from framing members. Ensure positive contact with reinforcement, and use anchors designed to allow safety factor of 5.

E. Execute Work of this Section as indicated and conform to profiles, details and other conditions as indicated and required by site conditions.

F. Erect finished work rigid, secure, square, level, plumb, and frame to maintain dimensions and contours indicated. Make allowances for thermal and structural movement.

G. Ensure substrates are smooth, plumb level, and devoid of defect or surface deformations such as oil canning.

3.03 ADJUSTMENT AND CLEANING

A. Verify under Work of this Section that installed *Products* function properly, and adjust them accordingly to ensure satisfactory operation.

B. Refinish damaged or defective work so that no variation in surface appearance is discernible.

C. Upon completion of Work of this Section, or at such time or times as the *Contractor* shall direct, remove protective coverings and clean down finished work.

D. Clean adjacent surfaces which have been soiled or otherwise marred, in an acceptable manner, to completely remove evidence of material causing same.

END OF SECTION

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Labour, Products, equipment, and services necessary for miscellaneous specialties Work as listed below in accordance with the Contract Documents.

1. Coat Hooks
2. Aluminum Signage Holder Slip-In Frame

1.02 SUBMITTALS

A. Product data:
   1. Submit copies of Product data in accordance with Section 01 45 00.

B. Shop Drawings:
   1. Submit shop drawings in accordance with Section 01 45 00.

C. Samples:
   1. Submit samples in accordance with Section 01 45 00.

D. Closeout Submittals:
   1. Submit cleaning and maintenance instructions for miscellaneous specialties for incorporation into Operations and Maintenance Manuals in accordance with Section 01 78 00

1.03 DELIVERY, STORAGE, AND HANDLING

A. Package or crate, and brace products to prevent distortion in shipment and handling. Label packages and crates, and protect finish surfaces by sturdy wrapping.

PART 2 – MANUFACTURED PRODUCTS

2.01 MANUFACTURED UNITS

A. Coat Hooks:
   1. Bradley Model ‘9134’ by Bradley Corporation or approved alternative; surface mounted coat hook with concealed fasteners.
   2. Ensure adequate coordination to incorporate/integrate graphic cut-outs with manufactured coat hooks

B. Aluminum Signage Holder:
   1. AnoFrame Model ‘SW-12AF200-8511T’ by Nova Displays or approved alternative; Top load signage, anodized aluminum finish, surface mounted, capable of accepting 3mm thick graphic minimum.

PART 3 – EXECUTION

3.01 EXAMINATION

A. 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.

3.02 PREPARATION

A. Verify substrate surfaces are solid, free from surface water, dust, oil, grease, projections and other foreign matters detrimental to performance.

B. Items to be built-in: Provide information and templates required for installation of work of this Section, and assist or supervise, or both, the setting of anchorage devices, and construction of other work incorporated with products specified in this Section in order that they function as intended.
C. Verify there is adequate supports and/or blocking in gypsum wall assemblies (where applicable) prior to installation of miscellaneous specialty items as required.

3.03 INSTALLATION

A. Install miscellaneous specialties level and securely and rigidly anchored to substrate in accordance with authorities having jurisdiction, reviewed shop drawings, and manufacturer's written instructions.
B. After installation, adjust miscellaneous specialties in accordance with manufacturer's written instructions

3.04 CLEANING

A. Clean and polish exposed surfaces prior to acceptance by Consultant.

END OF SECTION

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. Provide casts, Bison Footprint in accordance with Contract Documents.

B. The work of this section shall include, but not be limited to:
   1. Products and materials, labor, equipment, tools, photography and shipping required to supply, fabricate and install the work of this section.
   2. Integration of the work of, and cooperation with, the work of other sections and separate contracts.
   3. Creation of cast information from resources from Owner.

C. Drawings, casts (but not limited to) copyright shall belong to the Owner.

D. The work of this section includes, but is not limited to the follow models:

   1. Bison Footprint Cast

1.02 COORDINATION

A. Coordinate work of this section with work of other sections and the work of separate contracts to allow adequate time for installation and sequencing of the work to avoid construction delays.

B. Coordinate and cooperate with other related sections and separate contracts in the preparation of required submittals.

C. Coordinate with all other aspect of the exhibit fabrication to ensure that the work is properly interfaced with all other exhibit structures.

1.03 DESIGN REQUIREMENTS – FABRICATIONS

A. Design fabrications for work of this section as permanent installations at the Place of the Work; fabricate transportable components and connections to facilitate efficient assembly at place of work. Design exhibit installation to allow owner to remove and easily repair the work of this section in the event of future damage.

1.04 QUALITY ASSURANCE

A. Fabricator directly responsible for the work of this section shall have a minimum of ten (10) years' experience in similar activities, Only a Fabricator fully experienced in these specialized fabrications and installations shall direct or implement the work.

B. Fabricator shall prove its capability to perform the specified work by submitting with proposal, evidence of having designed, built and installed four (4) major projects within the last five (5) years, of similar type, scale, level of replication and detail to any or all

1.05 DESIGN CRITERIA

A. Any deviation from approved prototypes, mock-ups and samples will not be accepted. Work of this section is artistic in nature, and as such may require remedial adjustments of completed the work in order to achieve the desired aesthetic and scientific accuracy as applicable, as approved by Owner's curators. Any remedial work shall be provided at no additional cost to the Contract.

E. Casts:
1. Cast fabrication shall be constructed to accurately depict specimens' anatomical elements.
2. Ensure all fasteners and anchors are securely mounted into the cast models and the adjacent mounting surface

1.06 SUBMITTALS

A. Submit required submittals in accordance with Section 01 33 00
1. Submittals required for the work of this section shall be subject to Owner's curatorial review.

B. Product Data:
1. Submit Product data and MSDS sheets in accordance with Section 01 45 00.

C. Shop Drawings:
1. Submit shop drawings in accordance with Section 01 45 00.
2. Submit shop drawings and documents to fully illustrate the construction of casts, materials, special details, colour, visual and textural qualities that will best describe the finished product.
3. Coordinate with graphics production documents (EXB), and with exhibit documents (EXA).

D. Mock-ups:
1. Submit mock-ups in accordance to Section 01 45 00.

E. Maintenance Data:
1. Submit maintenance and cleaning Instructions in accordance to Section 01 78 00.

F. Extra Stock:
1. Provide one (1) gallon of each colour and type of finishing material required for maintenance use. Store where directed by Parks Canada (Owner) Clearly identify each container.

1.07 PRODUCT HANDLING AND PROTECTION

A. Handle and store materials in accordance with manufacturer's directions.

B. Cover and protect from damage work of other sections in the area of Work. Make good all damage to the satisfaction of the Parks Canada (Owner) and at no cost to Parks Canada (Owner).

1.08 WARRANTY

A. Warrant work of this section for a period of five (5) years.

B. Warranty shall provide for the removal and replacement including labor and installation costs of defective materials

PART 2 – PRODUCTS

2.01 MATERIALS

A. General: Products and materials for the work of this section, including but not limited to the following:
1. Cast epoxy resin (clear and translucent)
2. Bronze finish.
3. Anchor hardware; thread rods; nylon sliders; bolts.

B. All materials and finishes for the work of this section to be approved by Consultant and Owner prior to fabrication

2.02 FABRICATION

A. Fabricate work of this section as permanent exhibit installations at the Place of the Work; fabricate transportable components and connections to facilitate efficient assembly.

B. Fabricate Products with materials and component sizes, metal gauges, hardware, reinforcing, anchors, and fastenings of adequate strength' to ensure that work of this section will remain free of warping, buckling, opening of joints and seams, displacement, and distortion within limits of intended use.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Install work of this section as permanent exhibit installations at the Place of the Work; install components and connections to facilitate efficient assembly, ease of disassembling in the event of damage, provide a rigid permanent installation.

B. Examine conditions under which this work is to be installed. Notify Consultant, in writing, of conditions detrimental to the installation of the work. Do not proceed with installation of the work of this section until unsatisfactory conditions have been corrected.

C. Comply with all applicable codes and regulatory requirements for the work of this section.

3.02 CLEAN-UP AND PROTECTION

A. Immediately after installation, finished work shall be protected from damage.

END OF SECTION

APPENDIX ‘A’

DIVISION 01

Specification Section

01 14 00 – Work Restrictions

As prepared by: 1x1 architecture inc.

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not Used

1.2 ACCESS AND EGRESS

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

1.3 USE OF SITE AND FACILITIES

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

.2 Maintain existing services to building and provide for personnel and vehicle access.

.3 Where security is reduced by work provide temporary means to maintain security.

.4 Closures: protect work temporarily until permanent enclosures are completed.

1.4 EXISTING SERVICES

.1 Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.

.2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum.

.3 Provide for personnel and vehicular traffic.

.4 Construct barriers in accordance with Section 01 56 00- Temporary Barriers and Enclosures .

1.5 SPECIAL REQUIREMENTS

.1 Submit schedule in accordance with Section 01 32 16.19- Construction Progress Schedule - Bar (GANTT) Chart .

.2 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.

.3 Keep within limits of work and avenues of ingress and egress.

1.6 SECURITY

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

1.7 BUILDING SMOKING ENVIRONMENT

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

APPENDIX ‘B’

DIVISION 01

Specification Section

01 31 19 – Project Meetings

As prepared by: 1x1 architecture inc.

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not Used

1.2 ADMINISTRATIVE

.1 Schedule and administer project meetings biweekly project meetings throughout the progress of the work, based on approved meeting Schedule established prior to the commencemenet of work.

.1 Every second biweekly meeting will have on site representation from the Consultant team. Every other biweekly meeting, the consultant team presence shall be through teleconference.

.2 Prepare agenda for meetings.

.3 Provide means for teleconferencing for members of the consultant team, departmental representative not on site to participate .

.4 Distribute written notice of each meeting four days in advance of meeting date to Departmental Representative .

.5 Provide physical heated space and make arrangements for meetings.

.6 Preside at meetings.

.7 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

.8 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants affected parties not in attendance and Departmental Representative.

.9 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.3 PRECONSTRUCTION MEETING

.1 Pre-Construction Meeting will be scheduled and administered by Departmental Representative (Parks Canada Agency)

.2 Within 10 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.3 Departmental Representative, Contractor, major Subcontractors will be in attendance.

.4 Establish time and location of meeting and notify parties concerned minimum10 days before meeting.

.5 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.

.6 Agenda to include:

.1 Appointment of official representative of participants in the Work.

.2 Schedule of Work: in accordance with Section 01 32 16.07- Construction Progress Schedules - Bar (GANTT) Chart .

.3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00- Submittal Procedures .

.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00- Construction Facilities .

.5 Site security in accordance with Section 01 56 00- Temporary Barriers and Enclosures .

.6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.

.7 Owner provided products.

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

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

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

.11 Environmental Procedures

.12 Construction Waste Management Plan

.13 Safety Procedures

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

.15 Appointment of inspection and testing agencies or firms.

.16 Insurances, transcript of policies.

1.4 PROGRESS MEETINGS

.1 Progress Meeting will be scheduled and administered by Contractor

.2 Bi-weekly from commencement of contract to project completion.

.3 Contractor, major Subcontractors involved in Work are to be in attendance.

.4 Notify parties minimum 10 working days in advance prior to meetings

.5 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within three days after meeting

.6 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.

.2 Site Safety

.3 Review of Work progress since previous meeting.

.4 Field observations, problems, conflicts.

.5 Potential Problems which could impede construction schedule.

.6 Review of off-site fabrication delivery schedules.

.7 Corrective measures and procedures if required to regain projected schedule.

.8 Updates to construction schedule.

.9 Progress schedule, during succeeding work period.

.10 Review submittal schedules: expedite as required.

.11 Maintenance of quality standards.

.12 Review proposed changes for affect on construction schedule and on completion date.

.13 Other business.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

APPENDIX ‘C’

DIVISION 01

Specification Section

01 32 16.19 – Construction Progress Schedule Bar (GANTT) Chart

As prepared by: 1x1 architecture inc.

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not Used

1.2 DEFINITIONS

.1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.

.2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.

.3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.

.4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.

.5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.

.6 Master Plan: summary-level schedule that identifies major activities and key milestones.

.7 Milestone: significant event in project, usually completion of major deliverable.

.8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

.9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

1.3 REQUIREMENTS

.1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.

.2 Plan to complete Work in accordance with prescribed milestones and time frame.

.3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.

.4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Substantial Performance and Final Performance as defined times of completion are of essence of this contract.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit to Departmental Representative within 5 working days of Award of Contract, a GANTT Chart to serve as a Master Plan for planning, monitoring and reporting of project progress

.3 Submit Project Schedule to Departmental Representative within 5 working days of receipt of acceptance of Master Plan.

1.5 PROJECT MILESTONES

.1 Project milestones form interim targets for Project Schedule.

.1 Substantial Performance: May 1, 2019

.2 Final Performance: May 15, 2019

1.6 MASTER PLAN

.1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).

.2 Departmental Representative will review and return revised schedules within 5 working days.

.3 Revise impractical schedule and resubmit within 5 working days.

.4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.7 PROJECT SCHEDULE

.1 Develop detailed Project Schedule derived from Master Plan.

.2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:

.1 Award.

.2 Shop Drawings, Samples.

.3 Permits.

.4 Mobilization.

.5 Excavation.

.6 Backfill.

.7 Building Foundation

.8 Building Superstructure

.9 Siding and Roofing.

.10 Interior Architecture (Walls, Floors and Ceiling).

.11 Plumbing.

.12 Lighting.

.13 Electrical.

.14 Piping.

.15 Controls.

.16 Heating, Ventilating, and Air Conditioning.

.17 Millwork.

.18 Fire Systems.

.19 Testing and Commissioning.

1.8 PROJECT SCHEDULE REPORTING

.1 Update Project Schedule on monthly basis reflecting activity changes and completions, as well as activities in progress.

.2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.9 PROJECT MEETINGS

.1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

.2 Weather related delays with their remedial measures will be discussed and negotiated.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

APPENDIX ‘D’

DIVISION 01

Specification Section

01 33 00 – Submittal Procedures

As prepared by: 1x1 architecture inc.

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not Used

1.2 ADMINISTRATIVE

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

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

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

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

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

.6 Notify Departmental Representative , in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify field measurements and affected adjacent Work are co-ordinated.

.8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.

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

1.3 SHOP DRAWINGS AND PRODUCT DATA

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

.2 For all sections of Work which require the Contractor or Sub Contractor to provide professional engineering services, the Contractor’s or Sub Contractor’s Registered Professional Engineer in the Province of Saskatchewan shall design and engineer components for the project which the Contractor’s or Sub Contractor’s Registered Professional Engineer is responsible for, and shall sign and seal all shop drawings and supporting documentation. The Contractor’s or Sub Contractor’s Registered Professional Engineer shall review all fabrication and installation of such components. At completion of the Work, each of the Contractor's and/or Sub Contractor’s Registered Professional Engineers shall provide to the Consultant, a letter confirming that:

.1 All civil, structural, architectural, mechanical, electrical and other components are fabricated and erected in conformance with their design.
.2 All components are capable of supporting all the loads or capable of performance specified or indicated on the reviewed shop drawings.
.3 All changes to the contract documents have been reviewed and are acceptable.
.4 All components have been designed, fabricated and installed to substantially comply with the applicable requirements of the National Building Code.
.5 All components have been designed and installed to conform with the seismic restraint requirements of the National Building Code 2015.
.6 The fabrication and installation of such components has been reviewed and accepted by the Contractor's and/or Sub Contractor's Registered Professional Engineers.
.7 All components are fabricated and erected in accordance with the reviewed shop drawings

.3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.4 Allow 14 days review of each submission for Departmental Representative's review

.5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.

.6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.

.7 Accompany submissions with transmittal letter containing:

.1 Date.

.2 Project title.

.3 Contractor's name and address.

.4 Identification and quantity of each shop drawing, product data and sample.

.5 Other pertinent data.

.8 Submissions include:

.1 Date and revision dates.

.2 Project title.

.3 Name and address of:

.1 Subcontractor.

.2 Supplier.

.3 Manufacturer.

.4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.

.5 Details of appropriate portions of Work as applicable:

.1 Fabrication.

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

.3 Setting or erection details.

.4 Capacities.

.5 Performance characteristics.

.6 Standards.

.7 Operating weight.

.8 Wiring diagrams.

.9 Single line and schematic diagrams.

.10 Relationship to adjacent work.

.9 After Departmental Representative's review, distribute copies.

.10 Submit electronic copies (pdf format) of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

.11 Submit electronic copies (pdf format) of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

.12 Submit electronic copies (pdf format) copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative .

.1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.

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

.13 Submit electronic copies (pdf format) of certificates for requirements requested in specification Sections and as requested by Departmental Representative.

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

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

.14 Submit electronic copies (pdf format) of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental Representative.

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

.15 Submit electronic copies (pdf format) of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.

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

.17 Submit electronic copies (pdf format) and 6 copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative .

.18 Delete information not applicable to project.

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

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

.21 The review of shop drawings by Departmental Representative / Parks Canada Agency (PCA) is for sole purpose of ascertaining conformance with general concept.

.1 This review shall not mean that Departmental Representative / Parks Canada Agency (PCA) approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

.2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.4 SAMPLES

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

.2 Deliver samples prepaid to Departmental Representative's business address located in Saskatoon, Saskatchewan (Parks Canada Agency) and Winnipeg, Manitoba (Architectural Consultant).

.3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.

.4 Where colour, pattern or texture is criterion, submit full range of samples.

.5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.

.6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.

.7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.5 MOCK-UPS

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

1.6 PHOTOGRAPHIC DOCUMENTATION

.1 Submit electronic copy of colour digital photography in jpg format, standard resolution, monthly with progress statement.

.2 Project identification: name and number of project and date of exposure indicated.

.3 Submitted photographs to be sufficient in order to represent the progress of the project.

1.7 CERTIFICATES AND TRANSCRIPTS

.1 Immediately after award of Contract, submit Workers' Compensation Board status .

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

APPENDIX ‘E’

DIVISION 01

Specification Section

01 35 29.06 – Health and Safety Requirements

As prepared by: 1x1 architecture inc.

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not Used

1.2 REFERENCE STANDARDS

.1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations

.2 Province of Saskatchewan

.1 Occupational Health and Safety Act, 1993, S.S. - Updated [2012] .

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:

.1 Site Specific Work Procedures

.2 Results of site specific safety hazard assessment.

.3 Results of safety and health risk or hazard analysis for site tasks and operation.

.3 Submit weekly to the Departmental Representative.

.4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.

.5 Submit copies of incident and accident reports.

.6 Submit WHMIS MSDS - Material Safety Data Sheets on products and materials listed elsewhere in specification..

.7 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor.

.8 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

.9 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative .

1.4 FILING OF NOTICE

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

.2 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.

1.5 SAFETY ASSESSMENT

.1 Perform site specific safety hazard assessment related to project.

1.6 MEETINGS

.1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.

1.7 REGULATORY REQUIREMENTS

.1 Do Work in accordance with Section 01 41 00- Regulatory Requirements .

1.8 PROJECT/SITE CONDITIONS

.1 Work at site will involve contact with:

.1 Hazardous materials as indicated in the Capital Asset Inventory System – Building Record supplied by Parks Canada Agency. Refer to Appendix. Contractor to take appropriate measures during demolition.

1.9 GENERAL REQUIREMENTS

.1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.

.2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.10 RESPONSIBILITY

.1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

1.11 COMPLIANCE REQUIREMENTS

.1 Comply with Occupational Health and Safety Regulations, 1996.

1.12 UNFORSEEN HAZARDS

.1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Provincehaving jurisdiction and advise Departmental Representative verbally and in writing.

1.13 HEALTH AND SAFETY CO-ORDINATOR

.1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:

.1 Have working knowledge of occupational safety and health regulations.

.2 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.

.3 Be responsible for implementing and monitoring site-specific Contractor's Health and Safety Plan.

1.14 POSTING OF DOCUMENTS

.1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Provincehaving jurisdiction, and in consultation with Departmental Representative.

1.15 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative .

.2 Provide Departmental Representativewith written report of action taken to correct non-compliance of health and safety issues identified.

.3 Departmental Representativemay stop Work if non-compliance of health and safety regulations is not corrected.

1.16 BLASTING

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

1.17 POWDER ACTUATED DEVICES

.1 Use powder actuated devices only after receipt of written permission from Departmental Representative.

1.18 WORK STOPPAGE

.1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

APPENDIX ‘F’

DIVISION 01

Specification Section

01 35 43 – Environmental Procedures

As prepared by: 1x1 architecture inc.

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not Used

1.2 DEFINITIONS

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

.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit electronic copies of WHMIS MSDS in accordance with =01 35 29.06- Health and Safety Requirements .

.3 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review Departmental Representative .

.4 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.

.5 Address topics at level of detail commensurate with environmental issue and required construction task[s] .

.6 Include in Environmental Protection Plan:

.1 Names of persons responsible for ensuring adherence to Environmental Protection Plan.

.2 Names and qualifications of persons responsible for manifesting hazardous waste to be removed from site.

.3 Names and qualifications of persons responsible for training site personnel.

.4 Descriptions of environmental protection personnel training program.

.5 Erosion and sediment control plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.

.6 Drawings indicating locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.

.7 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather.

.1 Plans to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.

.8 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.

.1 Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.

.9 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.

.10 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.

.11 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.

.12 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.

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

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

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

1.4 FIRES

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

1.5 DRAINAGE

.1 Develop and submit erosion and Sediment Control Plan (ESC) identifying type and location of erosion and sediment controls provided. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations

.2 Storm Water Pollution Prevention Plan (SWPPP) to be substituted for erosion and sediment control plan.

.3 Provide temporary drainage and pumping required to keep excavations and site free from water.

.4 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.

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

1.6 SITE CLEARING AND PLANT PROTECTION

.1 Protect trees and plants on site.

.2 Protect trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m minimum.

.3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage.

.1 Avoid unnecessary traffic, dumping and storage of materials over root zones.

.4 Minimize stripping of topsoil and vegetation.

1.7 WORK ADJACENT TO WATERWAYS

.1 Construction equipment to be operated on land only.

.2 Use waterway beds for borrow material only after written receipt of approval from Departmental Representative.

.3 Waterways to be kept free of excavated fill, waste material and debris.

.4 Design and construct temporary crossings to minimize erosion to waterways.

.5 Do not skid logs or construction materials across waterways.

.6 Avoid indicated spawning beds when constructing temporary crossings of waterways.

1.8 POLLUTION CONTROL

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

.2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.

.3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.

.1 Provide temporary enclosures where directed by Departmental Representative.

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

1.9 NOTIFICATION

.1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.

.2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Consultant .

.1 Take action only after receipt of written approval by Departmental Representative .

.3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11- Cleaning.

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

.2 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.

.3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11- Cleaning .

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

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

END OF SECTION

APPENDIX ‘G’

DIVISION 01

Specification Section

01 41 00 – Regulatory Requirements

As prepared by: 1x1 architecture inc.

Part 1 General

1.1 SUMMARY

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

1.2 RELATED REQUIREMENTS

.1 Not Used

1.3 REFERENCES TO REGULATORY REQUIREMENTS

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

.2 Perform Work in accordance with Provincial Code and Standards and National Building Code of Canada (NBC) 2015 including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.

.3 Specific design and performance requirements listed in specifications or indicated on Drawings may exceed minimum requirements established by referenced Building Code; these requirements will govern over the minimum requirements listed in Building Code

.1 Meet or exceed requirements of:

.1 Contract documents.

.2 Specified standards, codes and referenced documents.

1.4 HAZARDOUS MATERIAL DISCOVERY

.1 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify Departmental Representative.

.1 Refer to attached Capital Asset Inventory System – Building Record - in the appendix for known Hazardous materials in the existing buildings.

.2 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Departmental Representative.

.3 Mould: stop work immediately when material resembling mould is encountered during demolition work. Notify Departmental Representative..

1.5 BUILDING SMOKING ENVIRONMENT

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

1.6 NATIONAL PARKS ACT

.1 Perform Work in accordance with National Parks Act when projects are located within boundaries of National Park.

1.7 QUALITY ASSURANCE

.1 Regulatory Requirements: Except as otherwise specified, Constructor shall apply for, obtain, and pay fees associated with, permits, licenses, certificates, and approvals required by regulatory requirements and Contract Documents, based on General Conditions of Contract and the following:

.1 Regulatory requirements and fees in force on date of Bid submission, and

.2 A change in regulatory requirements or fees scheduled to become effective after date of tender submission and of which public notice has been given before date of tender submission

Part 2 Products

2.1 NOT USED

.1 Not Used.

2.2 EASEMENTS AND NOTICES

.1 Owner will obtain permanent easements and rights of servitude that may be required for performance of Work.

.2 Constructor shall give notices required by regulatory requirements.

2.3 PERMITS

.1 Building Permit:

.1 Contractor shall apply for, obtain and pay for building permit, and other permits required for Work and its various parts.

.2 Constructor will require that specific Subcontractor ’s obtain and pay for permits required by authorities having jurisdiction, where their Work is affected by Work requiring permits.

.3 Constractor shall display building permit and other permits in a conspicuous location at Place of Work.

.2 Business Licence

.1 Contractor and all sub-contractors shall obtain a business licence to operate in the Prince Albert National Park. Licences are available at the Parks Canada Offices on site.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

APPENDIX ‘H’

DIVISION 01

Specification Section

01 51 00 – Temporary Utilities

As prepared by: 1x1 architecture inc.

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not Used

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

1.3 INSTALLATION AND REMOVAL

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

.2 Remove from site all such work after use.

.3 Notify Departmental Representative in advance for approval of any excavation required to facilitate temporary utilities

1.4 DEWATERING

.1 Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.

1.5 WATER SUPPLY

.1 Potable Water at Building No 1 and Building No 2 sites will be capped as part of the demolition of the structures. No other potable water is available in close proximity to the sites. Contractor may use this existing water connection that will be capped for use during construction. It should be noted that this water line is not below the frost line and is subject to freezing in cold weather, thus will not be available during cold weather. Contractor to find alternate source of potable water during cold weather.

.2 Arrange for connection with appropriate utility company and pay costs for installation, maintenance and removal.

.3 Contractor will pay for utility charges at prevailing rates.

1.6 TEMPORARY HEATING AND VENTILATION

.1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.

.2 Construction heaters used inside building must be vented to outside or be non-flameless type. Solid fuel salamanders are not permitted.

.3 Provide temporary heat and ventilation in enclosed areas as required to:

- .1 Facilitate progress of Work.
- .2 Protect Work and products against dampness and cold.
- .3 Prevent moisture condensation on surfaces.
- .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.

.5 Provide adequate ventilation to meet health regulations for safe working environment.

.4 Maintain temperatures of minimum 10 degrees C in areas where construction is in progress.

.5 Ventilating:

.1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.

.2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.

.3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.

.4 Ventilate storage spaces containing hazardous or volatile materials.

.5 Ventilate temporary sanitary facilities.

.6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.

.6 Permanent heating system of building, not to be used when available.

.7 Maintain strict supervision of operation of temporary heating and ventilating equipment to:

.1 Conform with applicable codes and standards.

.2 Enforce safe practices.

.3 Prevent abuse of services.

.4 Prevent damage to finishes.

.5 Vent direct-fired combustion units to outside.

.8 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.7 TEMPORARY POWER AND LIGHT

.1 Contractor to pay for temporary power during construction for temporary lighting and operating of power tools.

.2 Arrange for connection with appropriate utility company. Pay costs for installation, maintenance and removal.

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

1.8 TEMPORARY COMMUNICATION FACILITIES

.1 Provide and pay for temporary telephone, fax, data hook up as necessary for own use and use of Departmental Representative .

1.9 FIRE PROTECTION

.1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction, governing codes, regulations and bylaws.

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

END OF SECTION

APPENDIX ‘I’

DIVISION 01

Specification Section

01 52 00 – Construction Facilities

As prepared by: 1x1 architecture inc.

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not Used

1.2 REFERENCE STANDARDS

.1 Canadian General Standards Board (CGSB)

.1 CAN/CGSB 1.189-[00] , Exterior Alkyd Primer for Wood.

.2 CGSB 1.59-[97] , Alkyd Exterior Gloss Enamel.

.2 CSA Group (CSA)

.1 CSA-A23.1/A23.2-[04] , Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CSA-0121-[M1978(R2003)] , Douglas Fir Plywood.

.3 CAN/CSA-S269.2-[M1987(R2003)] , Access Scaffolding for Construction Purposes.

.4 CAN/CSA-Z321-[96(R2001)] , Signs and Symbols for the Occupational Environment.

.3 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as of: May 14, 2004.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

1.4 INSTALLATION AND REMOVAL

.1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.

.2 Identify areas which have to be gravelled to prevent tracking of mud.

.3 Indicate use of supplemental or other staging area.

.4 Provide construction facilities in order to execute work expeditiously.

.5 Remove from site all such work after use.

1.5 PROTECTION OF EXISTING SITE ELEMENTS

.1 Provide measures for protection as well as provisions to ensure that construction and demolition processes do not cause damage to elements required to remain.

.2 Notify Departmental Representative of any damage to existing site elements caused during construction or demolition.

.3 Contractor to be responsible for repair and/or replacement of any damage to existing site elements caused during construction or demolition with like materials to the satisfaction of the Departmental Representative.

1.6 SCAFFOLDING

.1 Scaffolding in accordance with CAN/CSA-S269.2.

.2 Provide and maintain ramps, platforms, ladders, scaffolding and temporary stairs .

1.7 HOISTING

.1 Provide, operate and maintain hoists and cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.

.2 Hoists and cranes to be operated by qualified operator.

1.8 SITE STORAGE/LOADING

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

1.9 CONSTRUCTION PARKING

.1 Parking will be permitted on site in an area designated by the Departmental Representative.

.2 Contractor to provide snow clearing in parking lot for own use.

.3 Provide and maintain adequate access to project site.

.4 If authorized to use existing roads for acces to project site, maintain such roads for duration of Contract and make good any damage resulting from Contractor's use.

1.10 SECURITY

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

.1 Contractor to determine if security personnel is required on site.

1.11 OFFICES

.1 Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.

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

.3 Subcontractors to provide their own offices as necessary. Direct location of these offices.

1.12 EQUIPMENT, TOOL AND MATERIALS STORAGE

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

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

1.13 SANITARY FACILITIES

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

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

.3 Locate sanitary facilities as directed by Departmental Representative.

1.14 CONSTRUCTION SIGNAGE

.1 Contractor to provide safety signage.

1.15 PROTECTION AND MAINTENANCE OF TRAFFIC

.1 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Departmental Representative.

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

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

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

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

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

.7 Dust control: adequate to ensure safe operation at all times.

.8 Location, grade, width, and alignment of construction and hauling roads: subject to approval by Departmental Representative.

.9 Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.

.10 Provide snow removal during period of Work.

.11 Remove, upon completion of work, haul roads designated by Departmental Representative.

1.16 CLEAN-UP

.1 Remove animal attractants (including food) material from work site daily.

.2 Clean dirt or mud tracked onto paved or surfaced roadways.

.3 Store materials resulting from demolition activities that are salvageable.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to the requirements of authorities having jurisdiction.

END OF SECTION

APPENDIX ‘J’

DIVISION 01

Specification Section

01 61 00 – Common Product Requirements

As prepared by: 1x1 architecture inc.

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not Used

1.2 REFERENCE STANDARDS

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

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

.3 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.

1.3 QUALITY

.1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.3 Should disputes arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.

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

.5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.4 STORAGE, HANDLING AND PROTECTION

.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

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

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

.8 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative .

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

1.5 TRANSPORTATION

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

.2 Transportation cost of products supplied by Owner will be paid for by Departmental Representative. Unload, handle and store such products.

1.6 MANUFACTURER'S INSTRUCTIONS

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

.2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representativewill establish course of action.

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

1.7 QUALITY OF WORK

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

.2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.

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

1.8 CO-ORDINATION

.1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.9 CONCEALMENT

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

.2 Before installation inform Departmental Representativeif there is interference. Install as directed by Departmental Representative .

1.10 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.11 LOCATION OF FIXTURES

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

.2 Inform Departmental Representative of conflicting installation. Install as directed.

1.12 FASTENINGS

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

.6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

.7 Situate and locate flashings, membranes, and materials carefully in accordance with good practice for installation. Ensure materials are lapped in correct sequence to ensure water flows away from building envelope

1.13 FASTENINGS - EQUIPMENT

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.

.3 Bolts may not project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.14 PROTECTION OF WORK IN PROGRESS

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

1.15 EXISTING UTILITIES

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

.2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

APPENDIX ‘K’

DIVISION 01

Specification Section

01 73 00 – Execution

As prepared by: 1x1 architecture inc.

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not Used

1.2 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit written request in advance of cutting or alteration which affects:

- .1 Structural integrity of elements of project.
- .2 Integrity of weather-exposed or moisture-resistant elements.
- .3 Efficiency, maintenance, or safety of operational elements.
- .4 Visual qualities of sight-exposed elements.
- .5 Work of Owner or separate contractor.

.3 Include in request:

- .1 Identification of project.
- .2 Location and description of affected Work.
- .3 Statement on necessity for cutting or alteration.
- .4 Description of proposed Work, and products to be used.
- .5 Alternatives to cutting and patching.
- .6 Effect on Work of Owner or separate contractor.
- .7 Written permission of affected separate contractor.
- .8 Date and time work will be executed.

1.3 MATERIALS

.1 Required for original installation.

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

1.4 PREPARATION

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

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

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

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

.5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.5 EXECUTION

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

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

.3 Uncover Work to install ill-timed Work.

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

.5 Remove samples of installed Work for testing .

.6 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.

.7 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

.8 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.

.9 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.

.10 Restore work with new products in accordance with requirements of Contract Documents.

.11 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.12 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material, in accordance with Section 07 84 00 – Firestopping, full thickness of the construction element

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

.14 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

1.6 WASTE MANAGEMENT AND DISPOSAL

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

APPENDIX ‘L’

DIVISION 01

Specification Section

01 74 00 – Cleaning

As prepared by: 1x1 architecture inc.

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not Used

1.2 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.

.2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site.

.3 Clear snow and ice from access to building, bank/pile snow in designated areas only .

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

.5 Provide on-site garbage and recycling containers for collection of waste materials and debris.

.6 Provide and use marked separate bins for recycling. Refer to Section 01 74 19- Waste Management and Disposal .

.7 Dispose of waste materials and debris off site .

.8 Dispose of wildlife attractants debris, including food waste, off site daily

.9 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.

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

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

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

.13 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.3 FINAL CLEANING

.1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.

.3 Prior to final review remove surplus products, tools, construction machinery and equipment.

.4 Remove waste products and debris other than that caused by Owner or other Contractors not engaged by the Contractor.

.5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative . Do not burn waste materials on site.

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

.7 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.

.8 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, and walls.

.9 Clean lighting reflectors, lenses, and other lighting surfaces.

.10 Vacuum clean and dust building interiors, behind grilles, louvres and screens.

.11 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.

.12 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.13 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.14 Remove dirt and other disfiguration from exterior surfaces.

.15 Clean and sweep roofs, gutters, areaways, and sunken wells.

.16 Sweep and wash clean paved areas.

.17 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.

.18 Clean roofs, downspouts, and drainage systems.

.19 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

.20 Remove snow and ice from access to building.

1.4 WASTE MANAGEMENT AND DISPOSAL

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

APPENDIX ‘M’

DIVISION 01

Specification Section

01 74 19 – Waste Management and Disposal

As prepared by: 1x1 architecture inc.

Part 1 General

1.1 SUMMARY

.1 This Section includes requirements for management of construction waste and disposal, which forms the Contractor ’s commitment to reduce and divert waste materials from landfill and includes the following:

.2 Owner has established that this project shall generate the least amount of waste possible and that processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors be employed by the Contractor .

1.2 RELATED REQUIREMENTS

.1 Not Used

1.3 REFERENCE STANDARDS

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

.1 ASTM E1609 01, Standard Guide for Development and Implementation of a Pollution Prevention Program

1.4 DEFINITIONS

.1 Clean Waste: Untreated and unpainted; not contaminated with oils, solvents, sealants or similar materials.

.2 Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction and demolition

.3 Hazardous: Exhibiting the characteristics of hazardous substances including properties such as ignitability, corrosiveness, toxicity or reactivity.

.4 Non hazardous: Exhibiting none of the characteristics of hazardous substances, including properties such as ignitability, corrosiveness, toxicity, or reactivity.

.5 Non toxic: Not poisonous to humans either immediately or after a long period of exposure.

.6 Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

.7 Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.

.8 Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form; recycling does not include burning, incinerating, or thermally destroying waste.

.9 Return: To give back reusable items or unused products to vendors for credit.

.10 Reuse: To reuse a construction waste material in some manner on the project site.

.11 Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

.12 Sediment: Soil and other debris that has been eroded and transported by storm or well production run off water.

.13 Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

.14 Toxic: Poisonous to humans either immediately or after a long period of exposure.

.15 Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

.16 Volatile Organic Compounds (VOC's): Chemical compounds common in and emitted by many building products over time through outgassing:

.1 Solvents in paints and other coatings;

.2 Wood preservatives; strippers and household cleaners;

.3 Adhesives in particleboard, fiberboard, and some plywood; and foam insulation.

.4 When released, VOC's can contribute to the formation of smog and can cause respiratory tract problems, headaches, eye irritations, nausea, damage to the liver, kidneys, and central nervous system, and possibly cancer.

.17 Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.5 ADMINISTRATIVE REQUIREMENTS

.1 Coordination: Coordinate waste management requirements with all Divisions of the Work for the project, and ensure that requirements of the Construction Waste Management Plan are followed.

.2 Preconstruction Meeting: Pre-Construction Meeting will be scheduled and administered by Departmental Representative (Parks Canada Agency). Meeting to be attended by the Owner, Contractor , affected Subcontractor 's and Departmental Representative to discuss the Contractor 's Construction Waste Management Plan and to develop mutual understanding of the requirements for a consistent policy towards waste reduction and recycling.

1.6 SUBMITTALS

.1 Provide required information in accordance with Section 01 33 00 – Submittal Procedures.

.2 Action Submittals: Provide the following submittals before starting any work of this Section:

.1 Submit 1 copies (pdf format)of the Contractors Waste Management Plan (WMP)

1.7 PROJECT CLOSEOUT SUBMISSIONS

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

1.8 QUALITY ASSURANCE

.1 Resources for Development of Construction Waste Management Report (CWM Report): The following sources may be useful in developing the Draft Construction Waste Management Plan:

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

.2 Waste-to-Energy Systems: Investigate local waste-to-energy incentives where systems for diverting materials from landfill for reuse or recycling are not available.

1.9 DELIVERY, STORAGE AND HANDLING

.1 Storage Requirements: Implement a recycling/reuse program that includes separate collection of waste materials as appropriate to the project waste and the available recycling and reuse programs in the project area.

.2 Handling Requirements: Clean materials that are contaminated before placing in collection containers and ensure that waste destined for landfill does not get mixed in with recycled materials:

.1 Deliver materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process.

.2 Arrange for collection by or delivery to the appropriate recycling or reuse facility.

.3 Hazardous Waste and Hazardous Materials: Handle in accordance with applicable regulations.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 (CWM PLAN) IMPLEMENTATION

.1 Manager: Contractor is responsible for designating an on site party or parties responsible for instructing workers and overseeing and documenting results of the CWM Plan for the project.

.2 Distribution: Distribute copies of the CWM Plan to the job site foreman, each Subcontractor , the Owner, the Departmental Representative and other site personnel as required to maintain CWM Plan .

.3 Instruction: Provide on site instruction of appropriate separation, handling, and recycling, salvage, reuse, composting and return methods being used for the project to Subcontractor ’s at appropriate stages of the project.

.4 Separation Facilities: Lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, composting and return:

.1 Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.

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

3.2 SUBCONTRACTOR'S RESPONSIBILITY

.1 Subcontractor 's shall cooperate fully with the Contractor to implement the CWM Plan .

3.3 CONSTRUCTION WASTE MANAGEMENT FORMS

.1 Contractor to establish their own forms for recording management of construction waste:

END OF SECTION

APPENDIX ‘N’

DIVISION 01

Specification Section

01 77 00 – Closeout Procedures

As prepared by: 1x1 architecture inc.

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not Used

1.2 REFERENCE STANDARDS

.1 Canadian Environmental Protection Act (CEPA)

.1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Acceptance of Work Procedures:

.1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.

.2 Request Departmental Representative inspection.

.2 Departmental Representative Inspection:

.1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.

.2 Contractor to correct Work as directed.

.3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:

.1 Work: completed and inspected for compliance with Contract Documents.

.2 Defects: corrected and deficiencies completed.

.3 Equipment and systems: tested, adjusted, balanced and fully operational.

.4 Certificates required by Authority Having Jurisdiction: submitted.

.5 Operation of systems: demonstrated to Owner's personnel.

.6 Underground and Aboveground storage tank inspection documentation, registration, forms, decommissioning and removal in accordance with CEPA SOR/2008-197.

.7 Work: complete and ready for final inspection.

.4 Final Inspection:

.1 When completion tasks are done, request final inspection of Work by Departmental Representative, and Contractor .

.2 When Work incomplete according to Departmental Representative, complete outstanding items and request re-inspection.

1.4 FINAL CLEANING

.1 Clean in accordance with Section 01 74 11- Cleaning .

.1 Remove surplus materials, excess materials, rubbish, tools and equipment.

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

APPENDIX ‘O’

DIVISION 01

Specification Section

01 78 00 – Closeout Submittals

As prepared by: 1x1 architecture inc.

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not Used

1.2 REFERENCE STANDARDS

.1 Canadian Environmental Protection Act (CEPA)

.1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Pre-warranty Meeting:

.1 Convene meeting one week prior to contract completion with Departmental Representative in accordance with Section 01 31 19- Project Meetings to:

.1 Verify Project requirements.

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

.2 Departmental Representative to establish communication procedures for:

.1 Notifying construction warranty defects.

.2 Determine priorities for type of defects.

.3 Determine reasonable response time.

.3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.

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

1.4 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative , one pdf copy and two final copies of operating and maintenance manuals and As-Built Documents in English .

.3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.

.4 Provide evidence, if requested, for type, source and quality of products supplied.

.5 Pay for costs of transportation of submittal submittals.

1.5 FORMAT

.1 Organize data as instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.

.3 When multiple binders are used correlate data into related consistent groupings.

.1 Identify contents of each binder on spine.

.4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

.5 Arrange content under Section numbers and sequence of Table of Contents.

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

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

.8 Drawings: provide with reinforced punched binder tab.

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

.9 Provide scaled CAD files in dwg format on CD .

1.6 CONTENTS - PROJECT RECORD DOCUMENTS

.1 Table of Contents for Each Volume: provide title of project;

.1 Date of submission; names.

.2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.

.3 Schedule of products and systems, indexed to content of volume.

.2 For each product or system:

.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.

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

.5 Typewritten Text: as required to supplement product data.

.1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00- Quality Control .

.6 Training: refer to Section 01 79 00- Demonstration and Training .

1.7 AS -BUILT DOCUMENTS AND SAMPLES

.1 Maintain, in addition to requirements in General Conditions, at site for Departmental Representative one record copy of:

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Change Orders and other modifications to Contract.

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

.6 Field test records.

.7 Inspection certificates.

.8 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction.

.1 Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.

.1 Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition.

.1 Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by Departmental Representative .

1.8 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

.1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Departmental Representative.

.2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.

.3 Record information concurrently with construction progress.

.1 Do not conceal Work until required information is recorded.

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

.1 Measured depths of elements of foundation in relation to finish first floor datum.

.2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

.4 Field changes of dimension and detail.

.5 Changes made by change orders.

.6 Details not on original Contract Drawings.

.7 Referenced Standards to related shop drawings and modifications.

.5 Specifications: mark each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

.2 Changes made by Addenda and change orders.

.6 Other Documents: maintain inspection certifications, manufacturer's certifications, field test records, required by individual specifications sections.

.7 Provide digital photos, if requested, for site records.

1.9 FINAL SURVEY

.1 Submit final site survey certificate in accordance with Section 01 71 00- Examination and Preparation , certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

1.10 EQUIPMENT AND SYSTEMS

.1 For each item of equipment and each system include description of unit or system, and component parts.

.1 Give function, normal operation characteristics and limiting conditions.

.2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

.2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.

.3 Include installed colour coded wiring diagrams.

.4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.

.1 Include regulation, control, stopping, shut-down, and emergency instructions.

.2 Include summer, winter, and any special operating instructions.

.5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

.6 Provide servicing and lubrication schedule, and list of lubricants required.

.7 Include manufacturer's printed operation and maintenance instructions.

.8 Include sequence of operation by controls manufacturer.

.9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

.10 Provide installed control diagrams by controls manufacturer.

.11 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.

.12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

.13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

.14 Include test and balancing reports as specified in Section 01 45 00- Quality Control

.15 Aboveground and Underground storage tank inspection documentation, registration, forms, decommissioning and removal in accordance with CEPA SOR/2008-197.

.16 Additional requirements: as specified in individual specification sections.

1.11 MATERIALS AND FINISHES

.1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.

.1 Provide information for re-ordering custom manufactured products .

.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.4 Additional requirements: as specified in individual specifications sections.

1.12 MAINTENANCE MATERIALS

.1 Spare Parts:

.1 Provide spare parts, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to location as directed by Deoartmental Representative; place and store.

.4 Receive and catalogue items.

.1 Submit inventory listing to Departmental Representative.

.2 Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit prior to final payment.

.2 Extra Stock Materials:

.1 Provide maintenance and extra materials, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to as directed by Departmental Representative; place and store.

.4 Receive and catalogue items.

.1 Submit inventory listing to Departmental Representative.

.2 Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit prior to final payment.

.3 Special Tools:

.1 Provide special tools, in quantities specified in individual specification section.

.2 Provide items with tags identifying their associated function and equipment.

.3 Deliver to as directed by Departmental Representative; place and store.

.4 Receive and catalogue items.

.1 Submit inventory listing to Departmental Representative .

.2 Include approved listings in Maintenance Manual.

1.13 DELIVERY, STORAGE AND HANDLING

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

.3 Store components subject to damage from weather in weatherproof enclosures.

.4 Store paints and freezable materials in a heated and ventilated room.

.5 Remove and replace damaged products at own expense and for review by Departmental Representative.

1.14 WARRANTIES AND BONDS

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

.2 Submit warranty management plan, 30 days before planned pre-warranty conference, to Departmental Representative approval.

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

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

.5 Submit, warranty information made available during construction phase, to Departmental Representative for approval prior to each monthly pay estimate.

.6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:

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

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

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

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

.5 Co-execute submittals when required.

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

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

.8 Conduct 11 month warranty review, measured from time of substantial performance.

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

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

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

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

.1 Name of item.

.2 Model and serial numbers.

.3 Location where installed.

.4 Name and phone numbers of manufacturers or suppliers.

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

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

.7 Cross-reference to warranty certificates as applicable.

.8 Starting point and duration of warranty period.

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

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

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

.4 Contractor's plans for attendance at 11 month post-construction warranty inspections.

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

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

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

.11 Written verification to follow oral instructions.

.1 Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

1.15 WARRANTY TAGS

.1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Departmental Representative .

.2 Attach tags with copper wire and spray with waterproof silicone coating.

.3 Leave date of acceptance until project is accepted for occupancy.

.4 Indicate following information on tag:

.1 Type of product/material.

.2 Model number.

.3 Serial number.

.4 Contract number.

.5 Warranty period.

.6 Inspector's signature.

.7 Construction Contractor.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

APPENDIX ‘P’

DIVISION 01

Specification Section

01 79 00 – Demonstration and Training

As prepared by: 1x1 architecture inc.

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Not Used

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Demonstrate operation and maintenance of equipment and systems to Owner's personnel two weeks prior to date of final inspection .

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

.3 Preparation:

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

.2 Verify designated personnel are present.

.3 Ensure equipment has been inspected and put into operation in accordance with appropriate specification Section

.4 Ensure testing, adjusting, and balancing has been performed in accordance with Mechanical and Electrical Divisions, and equipment and systems are fully operational.

.4 Demonstration and Instructions:

.1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, at the agreed upon location

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

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

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

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

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

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

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

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

1.4 QUALITY ASSURANCE

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

.1 Instruct Owner's personnel.

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

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

APPENDIX ‘Q’

DIVISION 03

Specification Section

03 10 00 – Concrete Forming and Accessories

As prepared by: 1x1 architecture inc.

Part 1 General

1.1 REFERENCES

.1 Canadian Standards Association (CSA)

.1 CSA A23.1-09/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CSA O86-09, Engineering Design in Wood.

.3 CSA O121-08, Douglas Fir Plywood.

.4 CSA S269.1-1975, Falsework for Construction Purposes.

.5 CAN/CSA S269.3-M92, Concrete Formwork, National Standard of Canada.

.2 Underwriters' Laboratories of Canada (ULC)

.1 CAN/ULC S701-05, Thermal Insulation, Polystyrene, Boards and Pipe Covering.

1.2 DESIGN REQUIREMENTS

.1 Design, engineer, and construct formwork, shoring, and bracing to conform to code requirements; resultant concrete to conform to required shape, line and dimension.

.2 Conform to CSA S269.1.

.3 Perform Work in accordance with CSA A23.1/A23.2, CSA S269.1, CAN/CSA S269.3 and the Province of Saskatchewan.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Waste Management and Disposal:

.1 Remove waste materials in accordance with Section 01 74 2 Construction/Demolition Waste Management and Disposal.

Part 2 Products

2.1 MATERIALS

.1 Formwork materials:

.1 For concrete without special architectural features, use wood and wood product formwork materials to CSA O121, and CAN/CSA O86.

.2 For concrete with special architectural features, use formwork materials to CSA A23.1/A23.2.

.3 Rigid insulation board: To CAN/ULC S701.

.4 Replace scratched, chipped, dented, stained, or otherwise damaged formwork; do not reuse.

.2 Form ties: Removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm diameter in concrete surface.

.3 Form stripping agent: Colourless mineral oil, non-toxic, biodegradable, low VOC, free of kerosene.

.4 Falsework materials: To CSA S269.1.

.5 Anchor Bolts: As approved by Departmental Representative.

.6 Void Form: Honeycomb type biodegradable plastic wrapped cardboard, thickness as indicated on drawings, treated to provide sufficient structural support for poured concrete until concrete cures.

Part 3 Execution

3.1 EXAMINATION

.1 Verify existing conditions before starting work.

.2 Verify lines, levels and centres before proceeding with formwork.

.3 Ensure that dimensions are in accordance with Drawings.

3.2 FABRICATION AND ERECTION

.1 Verify lines, levels and centres before proceeding with formwork/falsework and ensure dimensions agree with drawings.

.2 Fabricate and erect falsework in accordance with CSA S269.1.

.3 Before concrete is placed, thoroughly clean forms, re tighten as is necessary and saturate the surface of construction joints and form sides with water as recommended by the manufacturer.

.4 Brace and tie together horizontally and vertically to maintain position, shape with adequate strength to resist horizontal, vertical loads from weight of wet concrete, reinforcing, form weight, wind, fluid pressure of concrete, weight of workers, other forces from equipment used in placing concrete.

.5 Do not place shores and mud sills on frozen ground.

.6 Provide site drainage to prevent washout of soil supporting mud sills and shores.

.7 Fabricate and erect formwork in accordance with CAN/CSA S269.3 to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CSA A23.1/A23.2.

.8 Align form joints and make watertight. Keep form joints to minimum.

.9 Use 25 mm chamfer strips on external corners and/or 25 mm fillets at interior corners, joints, unless specified otherwise.

.10 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.

.11 Obtain Departmental Representative’s permission prior to framing openings not indicated, in concrete beams and slabs.

.12 Build in anchors, sleeves, and other inserts as required to accommodate Work specified in other sections.

.1 Provide additional reinforcing steel around formed openings, sleeves, and inserts as directed by Departmental Representative.

.2 Ensure that anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting. Coring concrete will not be permitted unless otherwise specified.

.13 Clean formwork in accordance with CSA A23.1/A23.2, before placing concrete.

.14 Prior to coating formwork or placing concrete, ensure form surfaces are clean. Remove chalk marks, stains, etc. so that these will not be visible on stripped surfaces.

.15 Coat formwork with form release agent, except formwork for surfaces to receive concrete topping, sealer, or other coating, and before reinforcement, anchors accessories, and other building items are installed.

.16 Place structural slab void forming to manufacturer's directions where indicated on sand fill bed. Provide 6 mm thick tempered hardboard over void form.

.17 Install plastic wrapped cardboard void form continuously below slabs where indicated on Drawings, thickness as indicated on Drawings.

3.3 REMOVAL AND RESHORING

.1 Notify Departmental Representative 48 hours in advance prior to removing formwork.

.2 Do not remove forms and bracing until concrete has gained sufficient strength to carry its own weight, construction loads, and design loads that are liable to be imposed upon it. Verify strength of concrete by compressive test results.

.3 Leave formwork in place for following minimum periods of time after placing concrete.

.1 Walls and Columns: Concrete curing temperatures of:

.1 16°C - 35°C = 2 days

.2 16°C - 21°C = 3 days

.3 10°C - 16°C = 4 days

.2 Beam soffits, slabs, decks and other structural members: Concrete curing temperature of:

.4 21°C - 35°C = 14 days

.5 16°C - 21°C = 17 days

.6 10°C – 16°C = 21 days

.4 Remove formwork when concrete has reached 75% of its design strength or minimum period noted above, whichever comes later, and replace immediately with adequate reshoring.

.5 Provide necessary reshoring of members where early removal of forms may be required or where members may be subjected to additional loads during construction as required.

.6 Space reshoring in each principal direction at not more than 3000 mm apart.

.7 Re-use formwork and falsework subject to requirements of CSA A23.1/A23.2.

.8 Do not pry against face of concrete to remove forms. Use only wooden wedges as required.

.9 Protect all corners and surfaces subject to damage from construction activity using boards and hoarding as required, especially exposed to view concrete beams and columns.

END OF SECTION

APPENDIX ‘R’

DIVISION 03

Specification Section

03 20 00 – Concrete Reinforcing

As prepared by: 1x1 architecture inc.

Part 1 General

1.1 REFERENCES

.1 Canadian Standards Association (CSA)

- .1 CSA A23.1-09/A23.2-09, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
- .2 CAN/CSA A23.3-04, Design of Concrete Structures.
- .3 CSA G30.18-M92, Billet Steel Bars for Concrete Reinforcement.
- .4 CAN/CSA G40.20-04/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
- .5 CSA W186-M1990 (R2016), Welding of Reinforcing Bars in Reinforced Concrete Construction.

.2 Reinforcing Steel Institute of Canada (RSIC)

- .1 RSIC-2014, Reinforcing Steel Manual of Standard Practice.
- .2 RSIC Placing Reinforcing Bars, 2015.

1.2 SUBMITTALS

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

.2 Prepare reinforcement drawings in accordance with RSIC Manual of Standard Practice.

.3 Shop Drawings:

- .1 All fabricator designed assemblies, components and connections, and drawings to be stamped and signed by professional engineer registered or licensed in Province of Manitoba.
- .2 Shop drawings to indicate placing of reinforcement and:
  - .1 Bar bending details.
  - .2 Lists.
  - .3 Quantities of reinforcement.
  - .4 Sizes, spacings, locations of reinforcement and mechanical splices if approved by Departmental Representative, with identifying code marks to permit correct placement without reference to structural drawings
  - .5 Indicate sizes, spacings and locations of chairs, spacers and hangers.
  - .6 Prepare drawings in accordance with RSIC Manual of Standard Practice.
- .3 Detail lap lengths and bar development lengths to CAN/CSA A23.3, unless otherwise indicated.

1.3 QUALITY ASSURANCE

.1 Submit in accordance with Section 01 45 00 - Quality Control.

.2 Welders' Certificates: Submit to Section 01 45 00, Manufacturer's Certificates, certifying welders employed on the Work, verifying CSA qualification within the previous 12 months

.3 Upon request provide certified copy of mill test report of reinforcing steel, showing physical and chemical analysis.

.4 Upon request provide source of material to be supplied.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Deliver materials to site in original factory packaging, labelled with manufacturer's name and address suitably bundled and marked for placement location.

.3 Storage and Handling Requirements:

.1 Store materials off ground, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area, away from haulage routes, standing water, and other deleterious materials.

.2 Replace defective or damaged materials with new.

Part 2 Products

2.1 MATERIALS

.1 Substitute different size bars only if permitted in writing by Departmental Representative.

.2 Reinforcing Steel: CSA G30.18 reinforcing steel, grade 400, deformed bars, unless indicated otherwise.

.3 Cold-drawn annealed steel wire ties: To ASTM A82/A82M.

.4 Chairs, bolsters, bar supports, spacers: To CSA A23.1/A23.2.

.5 Mechanical splices: Subject to approval of Departmental Representative.

.6 Plain round bars: To CSA G40.20/G40.21.

2.2 FABRICATION

.1 Fabricate reinforcing steel in accordance with CSA A23.1/A23.2 and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada. Fabrication to be performed only in a fabricating shop. Ensure reinforcing is free of loose rust, scale, oil, and structural defects.

.2 Obtain Departmental Representative's written approval for locations of reinforcement splices other than those shown on placing drawings.

.3 Upon approval of Departmental Representative, weld reinforcement in accordance with CSA W186.

.4 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

.5 Fabricate reinforcing to following tolerances:

.1 Sheared length, plus or minus 25 mm.

.2 Depth of truss bar, plus or minus 13 mm.

.3 Stirrups, ties, spirals, plus or minus 13 mm.

.4 Other bends, plus or minus 25 mm.

2.3 SOURCE QUALITY CONTROL

.1 Upon request, provide Departmental Representative with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis, minimum 4 weeks prior to beginning reinforcing work.

.2 Upon request inform Departmental Representative of proposed source of material to be supplied.

Part 3 Execution

3.1 FIELD BENDING

.1 Do not field bend or field weld reinforcement except where indicated or authorized by Departmental Representative.

.2 When field bending is authorized, bend without heat, applying slow and steady pressure.

.3 Replace bars, which develop cracks or splits.

3.2 PLACING REINFORCEMENT

.1 CSA A23.1/A23.2 and CRSI Manual of Standard Practice CSA A23.1/A23.2 and CRSI Manual of Standard Practice.

.2 Use plain round bars as slip dowels in concrete where noted on the Drawings.

.1 Paint portion of dowel intended to move within hardened concrete with one coat of asphalt paint.

.2 When paint is dry, apply thick even film of mineral lubricating grease.

.3 Prior to placing concrete, obtain Departmental Representative's approval of reinforcing material and placement.

.4 Ensure cover to reinforcement is maintained during concrete pour. All reinforcing is to be held in place by suitable chairs fastened to formwork. Conform to project Drawings for concrete cover over reinforcement. Use hardboard pads on slab base or void form to prevent chairs from sinking.

.5 Do not displace or damage vapour barrier.

3.3 FIELD TOUCH-UP

.1 Touch up damaged and cut ends of epoxy coated or galvanized reinforcing steel with compatible finish to provide continuous coating.

3.4 CLEANING

.1 Cleaning: Clean in accordance with Section 01 74 11 – Cleaning.

.2 Waste Management: Remove waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

APPENDIX ‘S’

DIVISION 03

Specification Section

03 30 00 – Cast-In-Place Concrete

As prepared by: 1x1 architecture inc.

Part 1 General

1.1 REFERENCES

.1 ASTM International

.1 ASTM C260-06, Air-Entraining Admixtures for Concrete.

.2 ASTM C309-11, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

.2 Canadian General Standards Board (CGSB)

.1 .1 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

.3 Canadian Standards Association (CSA)

.1 CSA A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CAN/CSA A3000-08, Cementitious Materials Compendium.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Coordinate with other work having a direct bearing on work of this section.

1.3 CERTIFICATES

.1 Provide certification that mix proportions selected will produce concrete of quality, yield and strength as specified in concrete mixes, and will comply with CSA-A23.1/A23.2. Certification letter to be sealed by an engineer registered in the Province of Saskatchewan

.2 Provide certification that plant, equipment, and materials to be used in concrete comply with requirements of CSA-A23.1. Certification letter to be sealed by an engineer registered in the Province of Saskatchewan.

1.4 SUBMITTALS

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

.2 Upon request, at least 4 weeks prior to beginning Work, provide Departmental Representative with samples of materials proposed for use with concrete.

.3 Provide testing reports for review by Departmental Representative and do not proceed without written approval when deviations from mix design or parameters are found.

.4 Shop Drawings: Indicate dimensions, general construction, specific modifications, plus the following specific requirements.

.1 Form tie holes, finishes, locations of cold joints, location of floor boxes and conduit in floor slabs, railings, bollards, stair nosings, tactile warning materials, slope, floor drains, and all other items which are inset into the concrete.

.2 Sequence of pour.

.5 Concrete Mix Designs: Additional Durability and Architectural Requirements.

.1 Submit, using the standard form for Concrete Mix Design Submissions, all concrete mix designs for review. The mix designs shall include, as a minimum the following information:

.2 Concrete Strength.

.3 Exposure Class.

.4 Water-Cement Ratio.

.5 Maximum Aggregate Size.

.6 Maximum SCM Replacement.

.7 Additional Durability and Architectural Requirements.

.8 Slump Range.

.9 Plastic Air Range.

.10 Method of Placement.

.11 Other specific information regarding the source and type of all materials being proposed.

.12 Describe in detail on the mix design summary, the location(s) where each mix is to be placed in the structure.

.6 Provide samples as required for testing and as requested by Departmental Representative.

.7 Submit sealed suppliers concrete mix design for all concrete types for the Departmental Representative's review prior to ordering concrete.

.8 Provide two copies of WHMIS MSDS in accordance with Section 01 35 29 - Health and Safety.

1.5 QUALITY ASSURANCE

.1 Quality Assurance: In accordance with Section 01 45 00 - Quality Control.

.2 Provide Departmental Representative, minimum 4 weeks prior to starting concrete work, with valid and recognized certificate from plant delivering concrete.

.1 Provide test data and certification by qualified independent inspection and testing laboratory that materials and mix designs used in concrete mixture will meet specified requirements.

.3 Minimum 4 weeks prior to starting concrete work, provide proposed quality control procedures for review by Departmental Representative on following items:

.1 Hot weather concrete.

.2 Cold weather concrete.

.3 Curing.

.4 Finishes.

.5 Formwork removal.

.6 Joints.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Concrete hauling time: deliver to site of Work and discharged within 120 minutes maximum after batching.

.1 Do not modify maximum time limit without receipt of prior written agreement from Departmental Representative and concrete producer as described in CSA A23.1/A23.2.

.2 Deviations to be submitted for review by Departmental Representative.

.2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.

Part 2 Products

2.1 MATERIALS

.1 Portland Cement: to CSA A3001, Type as noted on Drawings.

.2 Blended hydraulic cement: Type as noted on Drawings to CSA A3001.

.3 Supplementary cementing materials: to CSA A3001, quantities subject to approval by Departmental Representative.

.4 Aggregates: to CSA A23.1/A23.2.

.5 Admixtures:

.1 Air entraining admixture: To ASTM C260.

.6 Shrinkage compensating grout: premixed compound consisting of non-metallic aggregate, Portland cement, water reducing and plasticizing agents to CSA A23.1/A23.2.

.1 Compressive strength: 60 MPa at 28 days.

.7 Non-premixed dry pack grout: composition of non-metallic aggregate Portland cement with sufficient water for mixture to retain its shape when made into ball by hand and capable of developing compressive strength of 25 MPa at 28 days.

.8 Mechanical waterstops: ribbed extruded PVC of sizes indicated with shop welded corner and intersecting pieces with legs not less than 75 mm long:

.1 Tensile strength: to ASTM D412, method A, Die "C".

.2 Elongation: to ASTM D412, method A, Die "C", minimum 275%.

.3 Tear resistance: to ASTM D624, method A, Die "B", minimum 30 kN/m.

.9 Premoulded joint fillers:

.1 Bituminous impregnated fiber board: to ASTM D1751.

.10 Dampproof membrane: Polyethylene sheet, 10 milthickness to CAN/CGSB-51.34.

2.2 MIXES

.1 Refer to General Notes on Drawings for concrete mix requirements.

Part 3 Execution

3.1 EXAMINATION

.1 Verify existing conditions before starting work; identify conditions detrimental to proper or timely completion. Do not proceed until unsatisfactory conditions have been corrected.

.2 Verify all dimensions and locations required on Drawings.

.3 Verify requirements for concrete cover over reinforcement.

.4 Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not impede concrete placement.

.5 Verify locations of all openings and embedments required for other structural, architectural, mechanical, and electrical work

3.2 PREPARATION

.1 Obtain Departmental Representative's written approval before placing concrete. Provide 72 hours minimum notice prior to placing of concrete.

.2 Place concrete reinforcing in accordance with Section 03 20 00 - Concrete Reinforcing.

.3 During concreting operations:

.1 Development of cold joints not allowed.

.2 Ensure concrete delivery and handling facilitates placing with minimum of re-handling, and without damage to existing structure or Work.

.4 Pumping of concrete is permitted only after approval of equipment and mix.

.5 Ensure reinforcement and inserts are not disturbed during concrete placement.

.6 Prior to placing of concrete obtain Departmental Representative's approval of proposed method for protection of concrete during placing and curing in adverse weather. Protection and curing must comply with the hot weather and cold weather requirements of CSA-A23.1

.7 Protect previous Work from staining.

.8 Clean and remove stains prior to application for concrete finishes.

.9 Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.

.10 In locations where new concrete is dowelled to existing work, drill holes in existing concrete.

.1 Place steel dowels as indicated on Drawings.

.11 Do not place load upon new concrete until authorized by Departmental Representative.

3.3 INSTALLATION/ APPLICATION

.1 Do cast-in-place concrete work to CSA A23.1/A23.2.

.2 Sleeves and inserts:

.1 Do not permit penetrations, sleeves, ducts, pipes or other openings to pass through joists, beams, column capitals or columns, except where indicated or approved by Departmental Representative.

.2 Where approved by Departmental Representative, set sleeves, ties, pipe hangers and other inserts and openings as indicated or specified elsewhere.

.3 Sleeves and openings greater than 100 x 100 mm not indicated, must be reviewed by Departmental Representative.

.4 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain written approval of modifications from Departmental Representative before placing of concrete.

.5 Confirm locations and sizes of sleeves and openings shown on drawings.

.6 Set special inserts for strength testing as indicated and as required by non-destructive method of testing concrete.

.3 Anchor bolts:

.1 Set anchor bolts to templates in co-ordination with appropriate trade prior to placing concrete.

.2 Protect anchor bolt holes from water accumulations, snow and ice build-ups.

.3 Locate anchor bolts used in connection with expansion shoes, rollers and rockers with due regard to ambient temperature at time of erection.

.4 Drainage holes and weep holes:

.1 Form weep holes and drainage holes in accordance with Section 03 10 00 - Concrete Forming and Accessories. If wood forms are used, remove them after concrete has set.

.2 Install weep hole tubes and drains as indicated.

.5 Grout under base plates and machinery using procedures in accordance with manufacturer's recommendations which result in 100% contact over grouted area.

.6 Finishing and curing:

.1 Finish concrete to CSA A23.1/A23.2.

.2 Use procedures as reviewed by Departmental Representative to remove excess bleed water. Ensure surface is not damaged.

.3 Use curing compounds compatible with applied finish on concrete surfaces.

.4 Provide written declaration that compounds used are compatible.

.5 Rub exposed sharp edges of concrete with carborundum to produce 3 mm minimum radius edges unless otherwise indicated.

.6 Stairs, Interior ramps and slabs, top of beams and walls.

.1 Screed concrete to specified grade immediately following placing.

.2 Darby or bull float surface to remove high spots, ridges, and fill voids.

.3 Commence final finishing after bleed water has disappeared and when concrete has stiffened sufficiently to prevent working of excess mortar to surface. Use no additional water to facilitate finishing. Unless otherwise specified, finish surfaces with power finishing machine. Terminate floating when coarse aggregate is firmly embedded below thin layer of

mortar that has produced surface of uniform texture, free from hollows, bumps, or screed marks.

.4 Produce finish surfaces that are hard, smooth, dense trowelled, free from blemishes to within tolerance defined as "flat" in Clause 22.1.2 of CSA A23.1 to all floors receiving carpet and liquid-applied flooring. For resilient flooring, provide tolerance defined as "very flat". Finish floors receiving thin-set ceramic or quarry tile to the "flat" tolerance but with broom, wood float, or textured swirl trowel marks or undulations to tolerance defined as "moderately flat" in Clause 22.1.2 of CSA A23.1. Where this section conflicts with other sections in Division 3, this section will govern.

.5 Do not sprinkle dry cement or dry cement sand mixture over concrete.

.6 Apply curing and sealing compound in accordance with manufacturer's instructions to all areas not scheduled to receive further floor finish and hardened floor finish. Apply at rate of not less than 10 m²/L for float or broom finished surfaces.

.7 Protect surfaces exposed to direct sunlight during curing period in accordance with curing compound manufacturer's instructions.

.7 Waterstops:

.1 Install waterstops to provide continuous water seal.

.2 Do not distort or pierce waterstop in way as to hamper performance.

.3 Do not displace reinforcement when installing waterstops.

.4 Use equipment to manufacturer's requirements to field splice waterstops.

.5 Tie waterstops rigidly in place.

.6 Use only straight heat sealed butt joints in field.

.7 Use factory welded corners and intersections unless otherwise approved by Departmental Representative.

.8 Joint fillers:

.1 Furnish filler for each joint in single piece for depth and width required for joint, unless otherwise authorized by Departmental Representative.

.2 When more than one piece is required for joint, fasten abutting ends and hold securely to shape by stapling or other positive fastening.

.3 Locate and form isolation joints as indicated.

.4 Install joint filler.

.5 Use 12 mm thick joint filler to separate slabs-on-grade from vertical surfaces and extend joint filler from bottom of slab to within 12 mm of finished slab surface unless indicated otherwise.

.9 Dampproof membrane:

.1 Install dampproof membrane under concrete slabs-on-grade inside building.

.2 Lap dampproof membrane minimum 150 mm at joints and seal.

.3 Seal punctures in dampproof membrane before placing concrete.

.4 Use patching material at least 150 mm larger than puncture and seal.

3.4 SURFACE TOLERANCE

.1 Cross-section dimensions:

.1 Slabs (thickness): - 3 mm (1/8 inch) to + 6 mm (1/4 inch).

3.5 FIELD QUALITY CONTROL

.1 Site tests: conduct tests as follows in accordance with Section 01 45 00 - Quality Control and submit report as described in PART 1 - ACTION AND INFORMATIONAL SUBMITTALS.

.1 Concrete pours.

.2 Slump.

.3 Air content.

.4 Compressive strength at 7 and 28 days, and at 7 and 56 days for concrete whose compressive strength is specified at 56 days.

.5 Air and concrete temperature.

.2 Inspection and testing of concrete and concrete materials will be carried out by testing laboratory designated by Departmental Representative for review to CSA A23.1/A23.2.

.1 .1 Ensure testing laboratory is certified to CSA A283.

.3 Ensure test results are distributed for discussion at pre-pouring concrete meeting between testing laboratory and Departmental Representative.

.4 Departmental Representative will indicate when to take additional test cylinders during cold weather concreting. Cure cylinders on job site under same conditions as concrete which they represent.

.5 Non-Destructive Methods for Testing Concrete: to CSA A23.1/A23.2.

.6 Inspection or testing by Departmental Representative will not augment or replace Contractor quality control nor relieve Contractor of his contractual responsibility.

3.6 CLEANING

.1 Clean in accordance with Section 01 74 11 - Cleaning.

.2 Waste Management: Remove waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION