SPECIFICATIONS:

PLANS:

END OF INDEX

1 Minimum Standards & Time of Completion

.1 Materials shall be new and work shall conform to the minimum applicable standards of the Canadian General Standards Board, the Canadian Standards Association, the National Building Code of Canada, Latest edition, and all applicable Provincial and Municipal codes. In the case of conflict or discrepancy the most stringent requirement shall apply.

.2 The work for this tender is to supply all labour and material to complete the installation of air intake roof structure on existing RCMP building in Iqaluit, Nunavut.

3. Commence work in accordance with notification of acceptance of your offer and all other trades and to complete the project.

4. The contractor will be responsible to complete the work in three months.

5. Scope of work:
.1 Provide new roof structure as indicated on drawings.

6. Contractors are advised that RCMP will be implementing a series of projects at the above project location. Though each of these projects are independent from the other, cooperation and coordination is required in common service areas including, but not limited to the security check points, load dock facilities, site access and parking. No contractor will have exclusive use of any of these common services areas. The successful bidder for this project will be further briefed and provided with information on all other active projects at the project start-up meeting.

.7 All correspondence to RCMP shall include the project number, be in electronic format (signed documents & 3 copies of O&M manual excluded). Hard copies and faxes will not be accepted.

.8 On occasion, work will not be allowed at the building, due the sensitivity of activity at the facility. For estimation purposes, this situation will occur up to four days per month.

2 Shop Drawings

.1 Submit for the Engineer's review, six (6) copies of each shop drawing.

.2 The review is for the sole purpose of ascertaining conformance with the general design concept, and does not mean approval of the design details inherent in the shop drawings, responsibility for which shall remain with the Contractor. Such review shall not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of his responsibility for meeting all requirements of the Contract Documents.

.3 Do not commence manufacture or order materials before shop drawings are reviewed.

3 Samples

.1 Samples: examples of materials, equipment, quality, finishes,

workmanship.

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

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

4 Product Data

.1 Product data: manufacturers catalogue sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products.

.2 Submit six (6) copies of product data.

.3 Delete information not applicable to project.

.4 Cross-reference product data information to applicable portions of Contract Documents.

5 Taxes

.1 Pay all taxes properly levied by law (including Federal, Provincial and Municipal).

6 Fees, Permits, and Certificates

.1 Pay all fees and obtain all permits. Provide authorities with plans and information for acceptance certificates. Provide inspection certificates as evidence that work conforms to requirements of Authority having jurisdiction.

7 Fire Safety Requirements

.1 Comply with the National Building Code of Canada 1995 (NBC) for fire safety in construction and the National Fire Code of Canada 1995 (NFC) for fire prevention, fire fighting and life safety in building in use.

.2 Comply with RCMP Fire Marshall standards:
.1 No. 301: Standard for Construction Operations
.2 No. 302: Standard for Welding and Cutting
.3 No. 374: Fire Protection Standard for General Storage (Indoor and Outdoor)
.4 available from Fire Protection Engineering Services, Labour Program, HRDC or following internet site: http://info.load-otea.hrdc-drhc.gc.ca/ fire_prevention/standards/commissioner.shtml
.5 Retain all fire safety documents and standards on site.

.3 Welding and cutting:
.1 At least 48 hours prior to commencing cutting, welding or soldering procedure, provide to Engineer:

.1 Notice of intent, indicating devices affected, time and duration of isolation or bypass.
.2 Completed welding permit as defined in FC 302.
.3 Return welding permit to Engineer immediately upon completion of procedures for which permit was issued.

.3 A fire watcher as described in FC 302 shall be assigned when welding or cutting operations are carried out in areas where combustible materials within 10m may be ignited by conduction or radiation.

.4 Where work requires interruption of fire alarms or fire suppression, extinguishing or protection systems:
.1 Provide watchman service as described in FC 301; In general, watchman service is defined as an individual conversant with Fire Emergency Procedures, performing fire picket duty within an unprotected and unoccupied (no workers) area once per hour.
.2 Retain services of manufacturer for fire protection systems on daily basis or as approved by FCC, to isolate and protect all devices relating to:
.1 modification of fire alarms, fire suppression, extinguishing or protection systems; and/or
.2 cutting, welding, soldering or other construction activities which might activate fire protection systems.

.5 Immediately upon completion of work, restore fire protection systems to normal operation and verify that all devices are fully operational.

.6 Inform fire alarm system monitoring agency and local Fire Department immediately prior to isolation and immediately upon restoration of normal operation.

8 Field Quality Control

.1 Carry out Work using qualified licenced workers or apprentices in accordance with Provincial Act respecting manpower vocational training and qualification.

.2 Permit employees registered in Provincial apprenticeship program to perform specific tasks only if under direct supervision of qualified licenced workers.

.3 Determine permitted activities and tasks by apprentices, based on level of training attended and demonstration of ability to perform specific duties.

9 Hazardous Materials

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

Resources Development Canada, Labour Program.

.2 For work in occupied buildings give the Engineer 48 hours notice for work involving [designated substances (Ontario Bill 208),] hazardous substances (Canada Labour Code Part II Section 10), and before painting, caulking, installing carpet or using adhesives.

10 Temporary Utilities

.1 Existing services required for the work, excluding power required for space heating, may be used by the Contractor without charge. Ensure capacity is adequate prior to imposing additional loads. Connect and disconnect at own expense and responsibility.

.2 Notify the Engineer and utility companies of intended interruption of services, obtain requisite permission.

.4 Give the Engineer 48 hours notice related to each necessary interruption of any mechanical or electrical service throughout the course of the work. Keep duration of these interruptions to a minimum. Carry out all interruptions after normal working hours of the occupants, preferably on weekends.

11 Removed Materials

.1 Unless otherwise specified, materials for removal become the Contractor's property and shall be taken from site.

12 Protection

.1 Protect finished work against damage until take-over.

.2 Protect adjacent work against the spread of dust and dirt beyond the work areas.

.3 Protect operatives and other users of site from all hazards.

13 Use of Site and Facilities

.1 Execute work with least possible interference or disturbance to the normal use of premises. Make arrangements with Engineer to facilitate work as stated. Refer to article 32 Scheduling below for work that must be done during "off hours".

.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 Where elevators, dumbwaiters, conveyors or escalators exist Contractor may use these at Engineer's discretion. Protect from damage, safety hazards and overloading of existing equipment.

.5 Sanitary facilities will be assigned for Contractor's personnel. Others shall not be used. Keep facilities clean.

.6 Closures: Protect work temporarily until permanent enclosures completed.

14 Site Storage

.1 Do not unreasonably encumber site with materials or equipment.

.2 Move stored products or equipment which interfere with operations of Engineer or other contractors.

.3 Obtain and pay for use of additional storage or work areas needed for operations.

15 Cut, Patch and Make Good

.1 Cut existing surfaces as required to accommodate new work.

.2 Remove all items so shown or specified.

.3 Patch and make good surfaces cut, damaged or disturbed, to Engineer's approval. Match existing material, colour, finish and texture.

.4 Install firestops and smoke seals in accordance with ULC-S115-1995(R2001), around pipe, ductwork, cables, and other objects penetrating fire separations to provide fire resistance not less than the fire resistance rating of surrounding floor, ceiling, and wall assembly.

16 Sleeves, Hangers and Inserts

.1 Co-ordinate setting and packing of sleeves and supply and installation of hangers and inserts. Obtain Engineer's approval before cutting into structure.

17 Examination

.1 Examine site and conditions likely to affect work and be familiar and conversant with existing conditions.

.2 Provide photographs of surrounding properties, objects and structures liable to be damaged or be the subject of subsequent claims.

18 Signs

.1 Provide common-use signs related to traffic control, information,

instruction, use of equipment, public safety devices, etcetera, in both official languages or by the use of commonly understood graphic symbols to the Engineer's approval.

.2 No advertising will be permitted on this project.

19 Access and Egress

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

20 Scaffolds and Work Platforms

.1 Design, install, and inspect scaffolds and work platforms required for work in accordance with relevant municipal, provincial and other regulations.

.2 Provide design drawings, signed and sealed by qualified Professional Engineer licensed in the province where prescribed.

.3 Additions or modifications to scaffolding must be approved by Professional Engineer in writing.

21 Public Way Protection

.1 Design, erect and maintain hoarding and covered pedestrian walkways to support all loads including windloads and provide protection, complete with signs and electrical lighting as required by authority having jurisdiction.

22 Waste Management

.1 Submit complete records of all removals from site for both "materials designated for alternative disposal" and "general waste" including:
.1 Time and date of removal
.2 Description of material and quantities.
.3 Proof that materials have been received at an Approved Waste Processing Site or certified Waste Disposal Site as required.

23 Operations and Maintenance Manuals

.1 Two (2) weeks prior to any scheduled training, submit to Engineer two (2) hard copies and 1 electronic of approved Operations Data and Maintenance Manual, compiled as follows:
.1 O and M Manuals are to be assembled in a 1" or greater 3 ring binder labeled on the front cover and on the binder edge with the: Building Name and address, project name, project number, completed date (ex. October 2013).
.2 O and M manuals are to include a Title Page with building name, address, date, general contractor information: name address & phone numbers, consultant: name address & phone numbers.
.3 O and M Manuals are to be indexed / sectioned as follows:

A - Signed Letter of warranty': dated, identifying project by name, project number, location as well as warranty period. Any extended equipment warranty must also be identified.
B - Contact information for all sub-contractors & suppliers.
C - Reports: copy of all TAB reports for HVAC systems, pre-functional tests, start-up reports, functional test reports, completed performance verification forms, cabling verifications, ESA certification, TSSA certification, fire alarm certifications and all other required certifications required by National Building Code.
D - As built drawings – to be marked in "red" and provided on a CAD
E -Sequence of operation: outline how the system is designed to work.
F - CMMS Data Sheets: All equipment which is to be deleted, removed, added or replaced from site is to have a CMMS inventory sheet completed and included in the O&M manual. If this equipment is a pressure vessel and is included in the annual inspect with TSSA the orange tag that is attached to the equipment must be removed prior to demolition and forwarded to the commissioning manager.
G, H... - Tab for each piece of new equipment or product to include: Copy of approved shop drawing and a Copy of Specific Service and Maintenance manual for each.

.3 Spare parts: List all recommended spares to be maintained on site to ensure optimum efficiency. List all special tools appropriate to unique application. All parts/tools detailed must be identified as to manufacturer, manufacturer part number and supplier (including address).

.4 Include one complete set of final shop drawings (bound separately) indicating corrections and changes made during fabrication and installation.

As per the User Document, the Consultant is to ensure that the Contractor completes Computerized Maintenance Management System (CMMS) Inventory forms, provided by RCMP in compliance with PWGSC requirements for any new, replaced or deleted equipment. CMMS Forms are to include all product data, serial and model numbers, equipment description and location. Please include requirements in the specifications.

24 Records

.1 As work progresses, maintain accurate records to show deviations from contract drawings. Just prior to Engineer's inspection for issuance of final certificate of completion, supply to the Engineer one (1) set of white prints with all deviations neatly inked in. The Engineer will provide two sets of clean white prints for this purpose.

25 Guarantees and Warranties

.1 Before completion of work collect all manufacturer's guarantees and warranties and deposit with Engineer.

26 Clean Up	.1	Clean up work area as work progresses. At the end of each work period, and more often if ordered by the Engineer, remove debris from site, neatly stack material for use, and clean up generally.
	.2	Upon completion remove scaffolding, temporary protection and surplus materials. Make good defects noted at this stage.
	.3	Wash and polish glass, mirrors, ceramic tile, aluminum, chrome, stainless steel, baked or porcelain enamel, plastic laminate and other plastic surfaces, floors, hardware and washroom fixtures. Clean manufactured articles in accordance with manufacturer's directions.
	.4	Clean areas under contract to a condition at least equal to that previously existing and to approval of Engineer.
27 Security Escort	.1	All personnel employed on this project shall be escorted paid for by RCMP.
	.2	Submit an escort request to Project Manager at least 2 days before the service is needed. For requests submitted within the time mentioned above, the Engineer will pay for the costs of the security escort. The cost incurred by a late request will be charged to the Contractor.
	.3	Any escort request may be cancelled free of charge if notification of cancellation is given at least 24 hours before the scheduled time of the escort. The cost incurred by a late cancellation will be charged to the Contractor.
	.4	The calculation of costs will be based on the average hourly rate of a security officer for a minimum of eight hours per day for a late service request and of four hours for late cancellations.
28 Building Smoking Environment	.1	Smoking is not permitted in the Building. Obey smoking restrictions on building property.
29 Dust Control	.1	Provide dust tight screens or partitions to localize dust generating activities, and for protection of workers, finished areas of work and public.
	.2	Maintain and relocate protection until such work is complete.
30 Testing Laboratory Services	.1	Where tests indicate non-compliance with specifications, contractor to pay for initial test and all subsequent testing of work to verify acceptability of corrected work.

31 Scheduling

.1 On award of contract submit bar chart construction schedule for work, indicating anticipated progress stages within time of completion. When schedule has been reviewed by the Engineer, take necessary measures to complete work within scheduled time. Do not change schedule without notifying Engineer.

.2 Carry out work during "regular hour" Monday to Friday from 07:00 to 18:00 hours.

.3 Give the Engineer 48 hours notice for work to be carried out during "off hours".

32 Cost Breakdown

.1 Before submitting first progress claim submit breakdown of Contract Amount in detail as directed by Engineer and aggregating the Contract Amount. After approval by Engineer cost breakdown will be used as the basis of progress payments

End of Section

1 General

1.1 RELATED SECTIONS

.1 Section 05 31 00 – Steel Decking.

1.2 REFERENCES

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

.1 ASTM A 36/A36M-05, Specification for Structural Steel.

.2 ASTM A 193/A193M-07, Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service.

.3 ASTM A 307-76, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.

.4 ASTM A 325-07a, Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.

.5 ASTM A 325M-07a, Specification for High-Strength Bolts for Structural Steel Joints.

.6 ASTM A 490M-08a, Specification for High-Strength Steel Bolts, Classes 10.9 and 10.9.3, for Structural Steel Joints (Metric).

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-85.10-99, Protective Coatings for Metals.

.3 Canadian Institute of Steel Construction (CISC)/Canadian Paint Manufacturer's Association (CPMA)

.1 CISC/CPMA 1-73b, Quick-Drying, One-Coat Paint for Use on Structural Steel.

.2 CISC/CPMA 2-75, Quick-Drying, Primer for use on Structural Steel.

.4 Canadian Standards Association (CSA International)

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

.2 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

.3 CAN/CSA-S16-01(05), Limit States Design of Steel Structures.

.4 CAN/CSA-S136-07, Cold Formed Steel Structural Members.

.5 CSA-S136.1-07, Commentary on CSA Standard S136.

.6 CSA W47.1-03, Certification of Companies for Fusion Welding of Steel Structures.

.7 CSA W48-06, Filler Metals and Allied Materials for Metal Arc Welding.

.8 CSA W55.3-1965(R1998), Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.

.9 CSA W59-M1989(R2001), Welded Steel Construction (Metal Arc Welding).

.5 Master Painters Institute

.1 MPI-INT 5.1-98, Structural Steel and Metal Fabrications.

.2 MPI-EXT 5.1-98, Structural Steel and Metal Fabrications.

.6 The Society for Protective Coatings (SSPC)

.1 SSPC SP-6/NACE No. 3-00, Commercial Blast Cleaning.

1.3 DESIGN REQUIREMENTS

.1 Design details and connections in accordance with requirements of CAN/CSA-S16 and CAN/CSA-S136 (with CSA-S136.1) to resist forces, moments, shears and allow for movements indicated

.2 Shear connections:

.1 Select framed beam shear connections from an industry accepted publication such as "Handbook of the Canadian Institute of Steel Construction" when connection for shear only (standard connection) is required.

.2 Select or design connections to support reaction from maximum uniformly distributed load that can be safely supported by beam in bending, provided no point loads act on beam, when shears are not indicated.

.3 Submit sketches and design calculations stamped and signed by qualified professional engineer licensed in Province of Ontario, Canada for non standard connections.

.4 Do Welding to CSA W59-M1989 (R2001).

1.4 SHOP DRAWINGS

.1 Submit shop drawings including fabrication and erection documents and materials list in accordance with Division 1.

.1 Verify site conditions and dimensions on site before shop drawing preparation. Show all on shop drawings.

.2 Shop drawings must be original. Reproduction of Engineer’s design drawings is not acceptable.

.2 Erection drawings: indicate details and information necessary for assembly and erection purposes including:

.1 Description of methods.

.2 Sequence of erection.

.3 Type of equipment used in erection.

.4 Temporary bracings.

.5 Connections.

.3 Ensure Fabricator drawings showing designed assemblies, components and connections are stamped and signed by qualified professional engineer licensed in the province of Ontario, Canada.

1.5 SAMPLES

.1 Submit samples in accordance with Division 1.

.2 Prepare sample of typical exposed structural connections in accordance with AISC Specifications of Architecturally exposed structural steel for approval of Consultant. Samples to be judged upon alignment of surfaces, uniform contact between surfaces, smoothness and uniformity of finished welds. When approved, sample units will serve as a standard for workmanship, appearance and material acceptable for entire project.

1.6 QUALITY ASSURANCE

.1 Submit 5 copies of mill test reports 4 weeks prior to fabrication of structural steel.

.1 Mill test reports to show chemical and physical properties and other details of steel to be incorporated in project.

.2 Provide mill test reports certified by metallurgists qualified to practice in province of Ontario, Canada.

.2 Provide structural steel Fabricator's affidavit stating that materials and products used in fabrication conform to applicable material and products standards specified and indicated.

2 Products

2.1 MATERIALS

.1 Structural steel: to CAN/CSA-G40.20/G40.21 Grade 350W and CAN/CSA-S136.

.2 Anchor bolts: to CAN/CSA-G40.20/G40.21, Grade 300W (A307) (unless otherwise noted on drawings).

.3 High strength anchor bolts: to ASTM A 325M.

.4 Bolts, nuts and washers: to ASTM A 325M.

.5 Welding materials: to CSA W59 and certified by Canadian Welding Bureau.

.6 Shop paint primer: to CISC/CPMA 2.

.7 Hot dip galvanizing: galvanize steel, where indicated, to CAN/CSA-G164, minimum zinc coating of 0.75 kg/m^2 (0.15 lb//ft^2).

.8 HSS Sections: to CAN/CSA-G40.21-M01, Type 350W (Class H).

2.2 FABRICATION

.1 Fabricate structural steel in accordance with CAN/CSA-S16 and CAN/CSA-S136 and in accordance with reviewed shop drawings.

.2 Continuously seal members by intermittent welds and plastic filler, unless otherwise indicated. Grind smooth.

.3 Provide holes in top and bottom flanges for attachment of wood nailers, as required.

.4 Hot dip galvanize after fabrication.

2.3 SHOP PAINTING

.1 Clean, prepare surfaces and shop prime structural steel in accordance with CAN/CSA-S16 and CAN/CSA-S136.

.2 Clean members, remove loose mill scale, rust, oil, dirt and other foreign matter. Prepare surface according to SSPC-SP-6.

.3 Apply one coat of primer in shop to steel surfaces to achieve minimum dry film thickness of 0.065 to 0.080 mils, except:

.1 Interior Steel: Concealed

.1 Surface preparation: to SSPC SP 3-89.

.2 Primer: One coat iron oxide type: to CAN/CGSB-1.40-M89 (or equivalent).

.2 Interior and Exterior Steel: Exposed

.1 Surface preparation: to SSPC SP 6-89 commercial blast cleaning using mechanical shot blast techniques. Hand cleaning not permitted.

.2 Primer: One coat applied in accordance with architectural finish schedules.

.3 Loose Lintels: Hot dipped galvanized.

.4 Apply paint under cover, on dry surfaces when surface and air temperatures are above 5 degrees C.

.5 Maintain dry condition and 5 degrees C minimum temperature until paint is thoroughly dry.

.6 Strip paint from bolts, nuts, sharp edges and corners before prime coat is dry.

.7 Primer for steel to receive intumescent paint to be compatible with finish paint specified. Refer to Division 07.

3 Execution

3.1 GENERAL

.1 Structural steel work: in accordance with CAN/CSA-S16 and CAN/CSA-S136.

.2 Welding: in accordance with CSA W59

.3 Companies to be certified under Division 1 or 2.1 of CSA W47.1 for fusion welding of steel structures and/or CSA W55.3 for resistance welding of structural components.

3.2 CONNECTION TO EXISTING WORK

.1 Verify dimensions and condition of existing work, report discrepancies and potential problem areas to Consultant for direction before commencing fabrication.

3.3 MARKINGS

.1 Mark materials in accordance with CAN/CSA G40.20/G40.21. Do not use die stamping. If steel is to be left in unpainted condition, place marking at locations not visible from exterior after erection.

.2 Match marking: shop mark bearing assemblies and splices for fit and match.

3.4 ERECTION

.1 Check anchor bolt layout before erection. Arrange for discrepancies.

.2 Erect structural steel, as indicated and in accordance with CAN/CSA-S16 and CAN/CSA-S136 in accordance with reviewed erection drawings.

.3 Field cutting or altering structural members: to approval of Consultant in writing.

.4 Clean with mechanical brush and touch up shop primer to bolts, rivets, welds and burned or scratched surfaces at completion of erection.

.5 Continuously seal members by continuous welds where indicated. Grind smooth.

.6 Use erection techniques and equipment that will not mark or abrade surfaces of exposed structural steel.

3.5 FIELD QUALITY CONTROL

.1 Inspection and testing of materials and workmanship will be carried out by testing laboratory designated by Consultant.

.2 Provide safe access and working areas for testing on site, as required by testing agency and as authorized by Engineer.

.3 Submit test reports to Consultant within 1 week of completion of inspection.

.4 Owner will pay costs of tests as specified in Division 1.

3.6 FIELD PAINTING

.1 Paint in accordance with Division 9.

.1 Touch up damaged surfaces and surfaces without shop coat with primer to SSPC-SP-6 except as specified otherwise. Apply in accordance with CAN/CGSB 85.10.

3.7 GALVANIZING TOUCH-UP

.1 Touch up galvanized surfaces damaged during transportation, handling, storage, and erection and as a result of work of other sections.

.2 Touch up in accordance with ASTM A780.

.3 Clean damaged surfaces with stiff wire brush to remove rust, loose and cracked coatings.

.4 Clean welds, bolted connections and abraded areas.

.5 Apply galvanizing repair materials to match hot dip coating weight and appearance.

END OF SECTION

1 General

1.1 RELATED SECTIONS

.1 Section 05 12 23 - Structural Steel for Buildings.

1.2 REFERENCES

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

.1 ASTM A 653/A653M-07, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM A 792/A792M-06a, Specification for Steel Sheet, 55%Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

.2 Canadian General Standards Board (CGSB).

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

.3 Canadian Standards Association (CSA International).

.1 CSA C22.2 No.79-1978(R1999), Cellular Metal and Cellular Concrete Floor Raceways and Fittings.

.2 CAN/CSA-S16.1-01(05), Limit States Design of Steel Structures.

.3 CSA-S136-07, Cold Formed Steel Structural Members.

.4 CSA W47.1-03, Certification of Companies for Fusion Welding of Steel Structures.

.5 CSA W55.3-1965(R2003), Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.

.6 CSA W59-M1989(R2001), Welded Steel Construction, (Metal Arc Welding).

.4 Canadian Sheet Steel Building Institute (CSSBI)

.1 CSSBI 10M-96, Standard for Steel Roof Deck.

.2 CSSBI 12M-96, Standard for Composite Steel Deck.

1.3 DESIGN REQUIREMENTS

.1 Design steel deck using limit states design in accordance with CSA S136.

.2 Steel deck and connections to steel framing to carry dead, live and other loads including lateral loads, diaphragm action, composite deck action, and uplift as indicated.

.3 Deflection under specified live load not to exceed 1/240 of span, except that when ceilings are hung directly from deck, live load deflection not to exceed 1/360 of span.

.4 Where vibration effects are to be controlled as indicated, dynamic characteristics of decking system to be designed to be in accordance with CAN/CSA-S16.1, Appendix 'G'.

1.4 SHOP DRAWINGS

.1 Submit shop drawings erection and shoring drawings in accordance with Division 1.

.2 Submit drawings stamped and signed by qualified professional engineer registered or licensed in Province of Ontario, Canada.

.3 Submit design calculations if requested by Consultant.

.4 Indicate deck plan, profile, dimensions, base steel thickness, metallic coating designation, connections to supports and spacings, projections, openings, reinforcement details and accessories.

.5 Indicate details of temporary shoring of steel deck, such as location, time and duration of placement and removal of shoring for concrete fill decks.

2 Products

2.1 MATERIALS

.1 Zinc-iron Alloy (ZF) coated steel sheet: to ASTM A 653/A653M structural quality Grade A, with ZF75 coating, for interior surfaces not exposed to weather, finish, 20ga. minimum base steel thickness.

.2 Decks to be painted: zinc-iron alloy coated decks suitable for finish painting.

.3 Zinc (Z) coated steel sheet: to ASTM A 653/A653M structural quality Grade A, with ZF75, coating, regular spangle surface, chemically treated for unpainted finish, not chemically treated for paint finish, for exterior surfaces exposed to weather, 20ga. minimum base steel thickness.

.4 Closures: as indicated in accordance with manufacturer's recommendations.

.5 Cover plates, cell closures and flashings: steel sheet with minimum base steel thickness of 1.22 mm (18ga). Metallic coating same as deck material.

.6 Primer: zinc rich, ready mix to CAN/CGSB-1.181.

.7 Caulking: to Division 7.

.8 Shear studs: to CSA W59.

2.2 TYPES OF DECKING

.1 Steel deck: 0.91 mm (20ga) minimum base steel thickness, 38 mm (1 ½") maximum deep profile, non-cellular, interlocking side laps.

3 Execution

3.1 GENERAL

.1 Structural steel work: in accordance with CAN/CSA-S136 and CSSBI 10M and CSSBI 12M.

.2 Welding: in accordance with CSA W59, except where specified otherwise.

.3 Companies to be certified under Division 1 or 2.1 of CSA W47.1 for fusion welding of steel and/or CSA W55.3 for resistance welding.

3.2 ERECTION

.1 Erect steel deck as indicated and in accordance with CSA S136 CSSBI 10M and CSSBI 12M and in accordance with reviewed erection drawings.

.2 Lap ends: to 150 mm (6") minimum.

.1 Weld deck to structural steel. Welds shall be 20 mm (¾") dia. fusion welds at 300 mm (12") centres on bearing supports (transverse welds) and at 300 mm (12") centres on side supports (longitudinal welds), or as noted on drawings. Mechanically clinch side joints at 300 mm (12") centres, or as noted on drawings.

.3 Weld and test stud shear connectors through steel deck to steel joists/beams below in accordance with CSA W59.

.4 Immediately after deck is permanently secured in place, touch up metallic coated top surface with compatible primer where burned by welding.

.5 Prior to concrete placement, steel deck to be free of soil, debris, standing water, loose mil scale and other foreign matter.

.6 Temporary shoring, if required, to be designed to support construction loads, wet concrete and other construction equipment. Do not remove temporary shoring until concrete attains 75% of its specified 28 day compression strength.

.7 Place and support reinforcing steel as indicated.

.8 Block flutes solid below mechanical units, sleepers; point loads, unless otherwise indicated.

3.3 CLOSURES

.1 Install closures in accordance with approved details.

3.4 OPENINGS AND AREAS OF CONCENTRATED LOADS

.1 No reinforcement required for openings cut in deck which are smaller than 150 mm (6") square.

.2 Frame deck openings with any one dimension between 150 mm to 300 mm (6" to 12") as recommended by manufacturer, except as otherwise indicated.

.3 For deck openings with any one dimension greater than 300 mm (12") and for areas of concentrated load, reinforce in accordance with structural framing details, except as otherwise indicated.

3.5 CONNECTIONS

.1 Install connections in accordance with CSSBI recommendations as indicated.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 35 29.06 – Health and Safety Requirements.

1.2 REFERENCES

.1 ASTM International

.1 ASTM A653/A653M-11, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanealled) by the Hot-Dip Process.

.2 ASTM D1761-06, Standard Test Methods for Mechanical Fasteners in Wood.

.2 CSA International

.1 CSA O151-09, Canadian Softwood Plywood.

.3 National Lumber Grades Authority (NLGA)

.1 Standard Grading Rules for Canadian Lumber 2010.

1.3 QUALITY ASSURANCE

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

.2 Plywood, particleboard, OSB and wood based composite panels in accordance with CSA and ANSI standards.

1.4 DELIVERY, STORAGE AND HANDLING

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

Part 2 Products

2.1 FRAMING STRUCTURAL AND PANEL MATERIALS

.1 Lumber: softwood, S4S, moisture content 19% (S-dry) or less in accordance with following standards:

.1 CSA O141.

.2 NLGA Standard Grading Rules for Canadian Lumber.

.2 Furring, blocking and cants:

.1 S2S is acceptable.

.2 Board sizes: "Standard" or better grade.

.3 Dimension sizes: "Standard" light framing or better grade.

.4 Post and timbers sizes: "Standard" or better grade.

.3 Canadian softwood plywood (CSP): to CSA O151, standard construction.

2.2 ACCESSORIES

.1 Exterior wall and roof sheathing membrane: Bakor Blueskin SA LT low temperature self-adhesive Air/Vapour Barrier Membrane.

.2 Sealants: in accordance with Section 07 92 00 - Joint Sealants.

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

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

.5 Fastener Finishes:

.1 Galvanizing: to ASTM A653, use galvanized fasteners for exterior work treated lumber.

.6 Wood Preservative:

.1 Preservative: in accordance with manufacturer's recommendations for surface conditions:

.1 Preservative: VOC limit 350 g/L maximum.

Part 3 Execution

3.1 EXAMINATION

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

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

3.2 PREPARATION

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

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

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

.4 Treat material as follows:

.1 Wood cants.

3.3 MATERIAL USAGE

.1 Roof sheathing:

.1 Plywood, sheathing grade, T G edge, 19 mm thick.

.2 Exterior wall sheathing:

.1 Plywood, sheathing grade, T G edge, 19 mm thick.

3.4 INSTALLATION

.1 Install members true to line, levels and elevations, square and plumb.

.2 Construct continuous members from pieces of longest practical length.

.3 Select exposed framing for appearance. Install panel materials so that grade-marks and other defacing marks are concealed or are removed by sanding where materials are left exposed.

.4 Install plywood wall sheathing in accordance with manufacturer's printed instructions.

.5 Install plywood roof sheathing in accordance with requirements of NBC.

.6 Install wood cants and other wood supports as required and secure using galvanized steel fasteners.

.7 Install membrane lapped 50 mm on both sides and end laps. Position membrane for alignment with protective film in place. Roll back, remove protective film and press firmly in place. When membrane is entirely in place, roll membrane including seams with a counter top roller to ensure full contact. Detail work must be carefully carried out to ensure continuous seal of the membrane.

3.5 CLEANING

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

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 35 29.06 – Health and Safety Requirements.

1.2 REFERENCES

.1 American Society of Mechanical Engineers (ASME)

.1 ASME B18.6.3-2011, Machine Screws, Tapping Screws, and Metallic Drive Screws (Inch Series).

.2 ASTM International

.1 ASTM A653/A653M-10, Standard specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.

.3 CSA International

.1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

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

.2 Submit 2 copies of WHMIS MSDS.

.3 Shop Drawings:

.1 Submit drawings stamped and signed by professional engineer registered or licensed in the Territory of Nunavut, or the Province of Ontario, Canada.

.2 Indicate dimensions, profiles, attachment methods, schedule of wall elevations, trim and closure pieces, metal furring, and related work.

1.4 QUALITY ASSURANCE

.1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.

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

1.5 DELIVERY, STORAGE AND HANDLING

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

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

.3 Storage and Handling Requirements:

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

.2 Store and protect metal siding from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

Part 2 Products

2.1 STEEL CLADDING AND COMPONENTS

.1 Strip siding: to CAN/CGSB-93.4, Type A horizontal, Class plain.

.1 Finish coating: Class F1S.

.2 Colour: selected by Departmental Representative.

.3 Gloss: medium.

.4 Thickness: 0.46 mm base metal thickness.

.5 Insulation: semi-rigid glass fibre insulation.

.6 Profile: Channel Wall cladding, 11 mm deep, preformed interlocking joints, fastener holes prepunched. Width of sheets 813 mm.

.2 Soffit: to CAN/CGSB-93.4, Class plain:

.1 Finish coating: Class F1S.

.2 Colour: to match colour of roofing and wall siding.

.3 Gloss: medium.

.4 Thickness: 0.46 mm base metal thickness.

.5 Backing: pressure treated plywood.

.6 Profile: flat sheet 'V' crimped for stiffness.

.3 Fascia facings and exposed trim: to CAN/CGSB-93.4, Class plain:

.1 Finish coating: Class F1S.

.2 Colour: same colour as siding.

.3 Gloss: medium.

.4 Thickness: 0.46 mm base metal thickness.

.5 Profile: manufacturer's standard to suit as shown on details.

2.2 FASTENERS

.1 Nails: CSA B111. Screws: ASME B18.6.3. Purpose made stainless steel.

2.3 CAULKING

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

2.4 SHEATHING PAPER

.1 Exterior wall sheathing paper: to CAN/CGSB-51.32, spunbond olefin type coated.

2.5 ACCESSORIES

.1 Exposed trim: inside corners, outside corners, cap strip, drip cap, undersill trim, starter strip and louver trim of same material, colour, gloss as cladding, with fastener holes pre-punched.

.2 Non-exposed accessories: material is required for complete installation.

Part 3 Execution

3.1 EXAMINATION

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

.1 Visually inspect substrate.

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

.3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 MANUFACTURER'S INSTRUCTIONS

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

3.3 INSTALLATION

.1 Install cladding in accordance with CGSB 93.5, and manufacturer's written instructions.

.2 Install one layer exterior wall sheathing paper horizontally by stapling lapping edges 150 mm.

.3 Install continuous starter strips, inside and outside corners, edgings, soffit, drip, cap, sill and at opening flashings as indicated.

.4 Install outside corners, fillers and closure strips with carefully formed and profiled work.

.5 Install soffit and fascia cladding as indicated.

.6 Maintain joints in exterior cladding, true to line, tight fitting, hairline joints.

.7 Attach components in manner not restricting thermal movement.

.8 Caulk junctions with adjoining work with sealant. Do work in accordance with Section 07 92 00 - Joint Sealants.

3.4 CLEANING

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

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

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

3.5 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by preformed metal siding installation.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 35 29.06 – Health and Safety Requirements..

1.2 REFERENCES

.1 ASTM International

.1 ASTM A653/A653M-10, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM D523-89(2008), Standard Test Method for Specular Gloss.

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

.1 Material Safety Data Sheets (MSDS).

.3 National Research Council Canada (NRC)/Institute for Research in Construction (IRC) - Canadian Construction Materials Centre (CCMC)

.1 CCMC-2011, Registry of Product Evaluations.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

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

.2 Proof of manufacturer's CCMC listing and listing number.

.3 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.

.3 Shop Drawings:

.1 Submit drawings stamped and signed by professional engineer registered or licensed in Territory of Nunavut, Canada.

1.4 DELIVERY, STORAGE AND HANDLING

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

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

.3 Storage and Handling Requirements:

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

.2 Store and protect sheet metal roofing from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

Part 2 Products

2.1 PREFINISHED STEEL SHEET

.1 Prefinished steel with factory applied finish.

.1 Class F1S.

.2 Exterior finish: metallic coatings Galvalume (Vic West), prefinished coating full paint system.

.3 The colour is to be selected by Departmental Representative from manufacturer's standard range.

.4 Specular gloss: 30 units +/-5 to ASTM D523.

.5 Coating thickness:22 micrometres minimum.

.6 Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20 % to ASTM D822 as follows:

.1 Outdoor exposure period 2500 hours minimum.

.2 Humidity resistance exposure period 5000 hours minimum.

2.2 ACCESSORIES

.1 Underlay: membrane as per Section 06 10 00.

.2 Sealant: compatible with systems materials, recommended by system manufacturer, as per Caulking see Section 07 92 00 - Joint Sealants.

.3 Cleats: of same material, and temper as sheet metal:50 mm minimum wide.

.1 Thickness same as sheet metal being secured at 300 mm minimum.

.4 Fasteners: concealed.

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

.6 Touch-up paint: as recommended by sheet metal roofing manufacturer.

2.3 FABRICATION

.1 Fabricate steel sheet metal in accordance with ASTM E72.

.2 Form individual pieces in 2400 mm maximum lengths. Make allowances for expansion at joints.

.3 Hem exposed edges on underside 12 mm, mitre and seal.

.4 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

.5 Apply minimum 0.2 mm dry film thickness coat of plastic cement to both faces of dissimilar metals in contact.

Part 3 Execution

3.1 EXAMINATION

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

- .1 Visually inspect substrate in presence of Departmental Representative.
- .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

.1 Use concealed fastenings except where approved in writing by Departmental Representative before installation.

.2 Include underlay membrane under sheet metal roofing.

- .1 Secure in place and lap joints 100 mm minimum.

.3 Install sheet metal roof panels using cleats spaced at 300 mm maximum on centre.

.4 Secure cleats with 2 fasteners each and cover with cleat tabs.

.5 Align transverse seams in adjacent panels.

.6 Flash roof penetrations with material matching roof panels, and make watertight.

.7 Form seams in direction of water-flow and make watertight.

.8 Perform soldering with well heated coppers, heat seam thoroughly and sweat solder through its full width.

.9 Clean and flux metals before soldering.

.10 Follow sheet metal manufacturer's recommendations for soldering procedures.

.11 As work progresses, neutralize excess flux with 5% to 10% washing soda solution, and thoroughly rinse. Leave work clean and free of stains.

3.3 STANDING SEAM ROOFING

.1 Use prefinished steel 0.47 mm thick (26 ga.), 600 mm wide by 2440 mm long sheets to make roofing with standing seams 300 mm on centre without straight run of standing seam exceeding 10 m.

.2 Fold lower end of each pan under 20 mm.

- .1 Slit fold 25 mm away from corner to form tab where pan turns up to make standing seam.
- .2 Fold upper end of each pan over 50 mm.
- .3 Hook 20 mm fold on lower end of upper pan into 50 mm fold on upper end of underlying pan.

.3 Apply sheet metal roofing beginning at eaves. Loose lock pans to valley flashing and edge strips at eaves and gable rakes.

.4 Finish standing seams 25 mm high on flat surfaces. Bend up one side edge 40 mm and other 45 mm.

.1 Make first fold 6 mm wide single fold and second fold 12 mm wide, providing locked portion of standing seam with 5 plies in thickness.

.2 Fold lower ends of seams at eaves over at 45 degrees angle.

.3 Terminate standing seams at ridge and hips by turning down in tapered fold.

.5 Form valleys of sheets not exceeding 3 m in length. Lap joints 150 mm in direction of flow.

.1 Extend valley sheet minimum 150 mm under roofing sheets.

.2 At valley line, double fold valley and roofing sheets and secure with cleats spaced 450 mm on centre.

3.4 CLEANING

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

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

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

3.5 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by sheet metal roofing installation.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 35 29.06 – Health and Safety Requirements.

1.2 REFERENCES

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

.1 ASTM A606-04, Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance.

.2 ASTM A653/A653M-07, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.3 ASTM B32-04, Standard Specification for Solder Metal.

.4 ASTM D523-89(1999), Standard Test Method for Specular Gloss.

.2 Canadian Roofing Contractors Association (CRCA)

.1 Roofing Specifications Manual 1997.

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

.1 Material Safety Data Sheets (MSDS).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

.1 Submit manufacturer's printed product literature for sheet metal flashing systems materials, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit two copies WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 35 29.06 - Health and Safety Requirements.

.3 Shop Drawings:

.1 Shop drawings: submit drawings stamped and signed by professional engineer registered or licensed in Territory of Nunavut, Canada.

.4 Quality assurance submittals: submit following in accordance with Section 01 45 00 - Quality Control.

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

1.4 DELIVERY, STORAGE AND HANDLING

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

Part 2 Products

2.1 PREFINISHED STEEL SHEET

.1 Prefinished steel with factory applied finish.

- .1 Class F1S.
- .2 The colour is to be selected by Departmental Representative from manufacturer's standard range and match colour of sheet metal roofing as per Section 07 61 00.
- .3 Specular gloss: 30 units +/- in accordance with ASTM D523.
- .4 Coating thickness: not less than 22 micrometres.
- .5 Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20 % to ASTM D822 as follows:
  - .1 Outdoor exposure period 2500 hours.
  - .2 Humidity resistance exposure period 5000 hours.
- .6 Thick ness of base metal sheet 0.47 mm (26 ga.).

2.2 ACCESSORIES

.1 Isolation coating: alkali resistant bituminous paint.

.2 Plastic cement: to CAN/CGSB 37.5.

.3 Underlay for metal flashing: membrane as per Section 06 10 00.

.4 Sealants: 07 92 00 Joint Sealants.

.5 Cleats: of same material, and temper as sheet metal, minimum 50 mm wide. Thickness same as sheet metal being secured, 0.47 mm.

.6 Fasteners: of same material as sheet metal, to CSA B111, flat head roofing nails of length and thickness suitable for metal flashing application.

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

.8 Touch-up paint: as recommended by prefinished material manufacturer.

2.3 FABRICATION

.1 Fabricate metal flashings and other sheet metal work as indicated.

.2 Form pieces in 2400 mm maximum lengths.

- .1 Make allowance for expansion at joints.

.3 Hem exposed edges on underside 12 mm.

- .1 Mitre and seal corners with sealant.

.4 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

2.4 METAL FLASHINGS

.1 Form flashings, copings and fascias to profiles indicated of 0.47 mm thick prefinished steel.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

.1 Install sheet metal work as detailed.

.2 Use concealed fastenings except where approved before installation.

.3 Provide underlay under sheet metal.

.1 Secure in place and lap joints 100 mm.

.4 Insert metal flashing under cap flashing to form weather tight junction.

.5 Caulk flashing at cap flashing with sealant.

3.3 CLEANING

.1 Proceed in accordance with Section 01 74 11 - Cleaning.

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

.3 Leave work areas clean, free from grease, finger marks and stains.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 35 29.06 Health And Safety Requirements.

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 Type 1 CAN/CGSB-19.13-M87, Sealing Compound, One-component, Silicone Chemical Curing.

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

.1 Material Safety Data Sheets (MSDS).

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Product Data:

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

.2 Manufacturer's product to describe:

.1 Caulking compound.

.2 Primers.

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

.3 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.

.3 Manufacturer's Instructions:

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

1.4 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: submit operation and maintenance data for incorporation into manual.

1.5 DELIVERY, STORAGE AND HANDLING

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

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

.3 Storage and Handling Requirements:

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

.2 Store and protect joint sealants from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

1.6 SITE CONDITIONS

.1 Ambient Conditions:

.1 Proceed with installation of joint sealants only when:

.1 Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4.4 degrees C.

.2 Joint substrates are dry.

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

.2 Joint-Width Conditions:

.1 Proceed with installation of joint sealants only where joint widths are more than those allowed by joint sealant manufacturer for applications indicated.

.3 Joint-Substrate Conditions:

.1 Proceed with installation of joint sealants only after contaminants capable of interfering with adhesion are removed from joint substrates.

1.7 ENVIRONMENTAL REQUIREMENTS

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

Part 2 Products

2.1 SEALANT MATERIALS

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

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

2.2 SEALANT MATERIAL DESIGNATIONS

.1 Silicones one part: to CAN/CGSB-19.13, type 1.

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

.1 Polyethylene, urethane, neoprene or vinyl foam:

.1 Extruded closed cell foam backer rod.

.2 Size: oversize [30 to 50 %].

.2 Bond breaker tape:

.1 Polyethylene bond breaker tape which will not bond to sealant.

2.3 JOINT CLEANER

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

.2 Primer: in accordance with sealant manufacturer's written recommendations.

Part 3 Execution

3.1 SURFACE PREPARATION

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

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

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

.4 Ensure joint surfaces are dry and frost free.

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

3.2 BACKUP MATERIAL

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

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

3.3 MIXING

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

3.4 APPLICATION

.1 Sealant:

.1 Apply sealant in accordance with manufacturer's written instructions.

.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.

.3 Apply sealant in continuous beads.

.4 Apply sealant using gun with proper size nozzle.

.5 Use sufficient pressure to fill voids and joints solid.

.6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.

.7 Tool exposed surfaces before skinning begins to give slightly concave shape.

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

.2 Curing:

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

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

3.5 CLEANING

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

3.6 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by joint sealants installation.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 Mechanical louvers; intakes; vents; and reinforcement and bracing for air vents, intakes and gooseneck hoods.

1.2 REFERENCES

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

.1 ASTM E90-09, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

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

.1 Material Safety Data Sheets (MSDS).

.3 Sheet Metal and Air Conditioning Contractors' National Association (SMACNA)

.4 Society of Automotive Engineers (SAE)

1.3 SYSTEM DESCRIPTION

.1 Performance Requirements:

.1 Catalogued or published ratings for manufactured items: obtained from tests carried out by manufacturer or those ordered by manufacturer from independent testing agency signifying adherence to codes and standards.

1.4 SUBMITTALS

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 010010 General Instructions. Include product characteristics, performance criteria, and limitations.

.1 Submit two] copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 010010 General Instructions.

.2 Indicate following:

.1 Pressure drop.

.2 Face area.

.3 Free area.

.4 .

.2 Quality assurance submittals: submit following in accordance with Section 010010 General Instructions.

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

Part 2 Products

2.1 FIXED LOUVRES - ALUMINUM

.1 Construction: welded with exposed joints ground flush and smooth.

.2 Material: extruded aluminum alloy 6063-T5.

.3 Blade: stormproof pattern with centre watershed in blade, reinforcing bosses and maximum blade length of 1500 mm.

.4 Frame, head, sill and jamb: 150 mm deep one piece extruded aluminum, minimum 3 mm thick with approved caulking slot, integral to unit .

.5 Mullions: at 1500 mm maximum centres.

.6 Fastenings: stainless steel SAE-194-8F with SAE-194-SFB nuts and resilient neoprene washers between aluminum and head of bolt, or between nut, ss washer and aluminum body.

.7 Screen: 19 mm intake mesh, 2 mm diameter wire aluminum birdscreen on inside face of louvres in formed U-frame.

.8 Finish: anodized. Colour: to Project Manager approval.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

.1 In accordance with manufacturer's and SMACNA recommendations.

.2 Reinforce and brace as indicated.

.3 Anchor securely into opening. Seal with caulking to ensure weather tightness.

.4 Proceed in accordance with Section 010010 General Instructions .

.5 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION