Part 1 General

1.1 Related Sections

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.3 Section 05 21 00 - Steel Joist Framing.

.4 Section 05 31 00 - Steel Decking.

.5 Section 09 91 23 – Painting.

1.2 References

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

.1 ASTM A36/A36M-01, Specification for Structural Steel.

.2 ASTM A193/A193M-01b, Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service.

.3 ASTM A325M-00, Specification for High-Strength Bolts for Structural Steel Joints Metric.

.4 ASTM A490M-00, 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(R1998), Hot Dip Galvanizing of Irregularly Shaped Articles.

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

.4 CAN/CSA-S136-94(R2001), Cold Formed Steel Structural Members.

.5 CSA-S136.1-95(R2001), Commentary on CSA Standard S136.

.6 CSA W47.1-92(R2001), Certification of Companies for Fusion Welding of Steel Structures.

.7 CSA W48-01, 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) Metric.

.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 Provinces of Manitoba, Canada for non-standard connections.

1.4 Shop Drawings

.1 Submit shop drawings including fabrication and erection documents and materials list in accordance with Section 01 33 00 - Submittal Procedures.

.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.

.3 Ensure Fabricator drawings showing designed assemblies, components and connections are stamped and signed by qualified professional Engineer licensed in the Province of Manitoba, Canada.

1.5 Samples

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

.2 Prepare sample of typical exposed structural connections in accordance with AISC Specifications of Architecturally exposed structural steel for approval of Contract Administrator. 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 2 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 Manitoba, 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.

1.7 Waste Management and Disposal

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

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

.3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

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

.5 Divert unused paint material from landfill to official hazardous material collections site approved by Contract Administrator.

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

Part 2 Products

2.1 Materials

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

.2 Anchor bolts: to CAN/CSA-G40.20/G40.21, Grade 300W ASTM A36/A36M.

.3 Bolts, nuts and washers: to ASTM A307 ASTM A325 ASTM A325M ASTM A490/A490M.

.4 Welding materials: to CSA W48 Series CSA W59 and certified by Canadian Welding Bureau.

.5 Shop paint primer: to CISC/CPMA1 and CISC/CPMA2 SSPC SP-6.

.6 Hot dip galvanizing: galvanize steel, where indicated, to CAN/CSA-G164, minimum zinc coating of 600 g/m^2.

2.2 Fabrication

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

.2 Install shear studs in accordance with CSA W59.

.3 Continuously seal members by continuous welds as indicated or required.

2.3 Shop Painting

.1 Clean, prepare surfaces and shop prime structural steel in accordance with CAN/CSA-S16 CAN/CSA-S136 MPI INT 5.1 EXT 5.1 except where members to be encased in concrete.

.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 .065mm to .80mm, except:

.1 Surfaces to be encased in concrete.
.2 Surfaces to receive field installed stud shear connections.
.3 Surfaces and edges to be field welded.
.4 Faying surfaces of friction-type connections.
.5 Below grade surfaces in contact with soil.

.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.

Part 3 Execution

3.1 General

.1 Structural steel work: in accordance with CAN/CSA-S16 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 Contract Administrator for direction before commencing fabrication.

3.3 Marking

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

.2 Field cutting or altering structural members: to approval of Contract Administrator.

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

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

3.5 Field Quality Control

.1 Inspection and testing of materials and workmanship will be carried out by testing laboratory designated by Contract Administrator as required.

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

.3 Submit test reports to Contract Administrator within 2 weeks of completion of inspection.

.4 City of Winnipeg will pay costs of tests as specified in Section 01 29 83 - Payment Procedures Testing Laboratory Services.

.5 Test shear studs in accordance with CSA W59.

3.6 Field Painting

.1 Paint in accordance with Section 09 91 23 - Painting.

.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.

END OF SECTION

Part 1 General

1.1 Related Sections

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.3 Section 04 05 10 - Common Work Results for Masonry: Installation of anchors.

.4 Section 05 31 00 - Steel Deck.

.5 Section 09 91 23 - Painting.

1.2 References

.1 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB-1.40-97, Anticorrosive Structural Steel Alkyd Primer.
- .2 CAN/CGSB-1.105-M91, Quick Drying Primer.
- .3 CAN/CGSB-85.10-99, Protective Coatings for Metals.
- .4 CAN/CGSB-85.100-93, Painting.

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

- .1 CISC/CPMA 2-75, Quick-Drying, Primer for Use on Structural Steel.
- .2 CISC/CPMA 1-73a, Quick-Drying, One-Coat Paint for Use on Structural Steel.

.3 Canadian Standards Association (CSA International)

- .1 CSA-G40.20/G40.21-98, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
- .2 CAN/CSA-S16-01, Limit States Design of Steel Structures.
- .3 CSA-S136-94(R2001), Cold Formed Steel Structural Members.
- .4 CSA-W47.1-92(R2001), Certification of Companies for Fusion Welding of Steel Structures.
- .5 CSA-W55.3-1965(R1998), Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.
- .6 CSA-W59-M1989(R2001), Welded Steel Construction (Metal Arc Welding) Metric.
- .7 CSA-W59S1-M1989(R1998), Supplement No.1-M1989, Steel Fixed Offshore Structures, to W59- M1989, Welded Steel Construction (Metal Arc Welding).

.4 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.

1.3 Quality Assurance

.1 Submit 3 copies of mill test reports at least 4 weeks prior to fabrication of steel joists and accessories. Reports to show:

.1 Chemical and physical properties.

.2 Other details of steel to be incorporated into work.

.3 Certification by qualified metallurgists confirming that tests conform to requirements of CSA G40.20/G40.21

.2 Supply affidavit prepared by fabricator of structural steel joists stating that materials and products used in fabrication conform to this specification.

1.4 Design of Steel Joists and Bridging

.1 Design steel joists and bridging to carry loads indicated in joist schedule shown on drawings in accordance with CAN/CSA-S16 CSA-S136.

.2 Design joists and anchorages for uplift forces as indicated.

.3 Ensure joists are manufactured to consider load effects due to fabrication, erection and handling.

.4 Limit roof joist deflection due to specified live load to 1/360 of span and deflection due to specified total load to 1/300 of span.

.5 Submit 6 copies of calculations and joist design drawings for typical joists for Contract Administrator review at least 4weeks prior to fabrication and/or delivery.

1.5 Shop Drawings

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

.2 Submit drawings stamped and signed by qualified professional Engineer licensed in province of Manitoba, Canada.

.3 Indicate on erection drawings, relevant details such as joist mark, depth, spacing, bridging lines, bearing, anchorage and details.

.4 Provide particulars, on shop drawings, relative to joist geometry, framed openings, splicing details, bearing and anchorage. Include member size, properties, specified and factored member loads, and stresses under various loadings, deflection and camber.

.5 Reproduction of contract drawings for use as erection drawings in not permitted.

1.6 Regulatory Requirements

.1 Perform steel joist work by qualified fabricators to CAN/CSA-S16.1, CSA S136.

.2 Perform metal arc welding work to CSA W59.

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

1.7 Material Delivery, Storage & Handling

.1 Verify available storage space on site.

.2 Handle, store steel joists on site to cause no damage to other materials, to existing property, to new structure.

.3 Store steel joist under cover on blocks, skids, clear of ground, standing water.

1.8 Waste Management and Disposal

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities where available as direct by Contract Administrator.

.3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

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

.5 Dispose of unused paint material at official hazardous material collections site approved by Contract Administrator.

.6 Do not dispose of unused paint material into sewer system, into streams, lakes, onto ground or in other locations where it will pose health or environmental hazard.

Part 2 Products

2.1 Materials

.1 Open Web Steel Joists: Refer to Structural Drawings – Shop prime and paint finish.

.1 Bridging by Open Web Steel Joist supplier – Refer to Structural Drawings.

.2 Structural steel: to CSA-G40.20/G40.21 and CSA-S136.

.3 Welding materials: to CSA-W59 with CSA-W59S1.

.4 Shop paint primer:

.1 Sherwin Williams manufacture, “Kronic Primer” 3715-31, red.

.2 Pittsburg Paint manufacture, “Multi Prime” 97682, red.

.3 Refer to MPI Standards.

.4 Approved equivalent by Contract Administrator.

.5 Shear studs: to CSA-W59, Appendix H with CSA-W59S1.

2.2 Fabrication

.1 Fabricate steel joists and accessories as indicated in accordance with CAN/CSA-S16.1 CSA-S136 and in accordance with reviewed shop drawings.

.2 Weld in accordance with CSA-W59 and with CSA-W59S1.

.3 Provide top bottom chord extensions where indicated.

.4 Provide diagonal and horizontal bridging and anchorages as indicated.

.5 Weld studs to top or bottom, chords for attachment purposes as indicated,

.6 Install shear studs in accordance with CSA-W59 and with CSA-W59S1.

.7 Build in specific camber.

2.3 Shop Painting

.1 Clean, prepare and shop prime surfaces of steel joists to CAN/CSA-S16.

.2 Clean members of loose mill scale, rust, oil, dirt and other foreign matter. Prepare surfaces in accordance with SSPC SP1 brush blast.

.3 To MPI standards.

.4 Apply one coat of CISC/CPMA 2-75 primer to steel surfaces to achieve maximum dry film thickness of .065 mm to .080 mm except:

.1 Surfaces to be encased in concrete.
.2 Surfaces to receive field installed stud shear connectors and steel decks.
.3 Surfaces and edges to be field welded.
.4 Faying surfaces of friction-type connections.
.5 Below grade surfaces in contact with soil.

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

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

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

Part 3 Execution

3.1 General

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

.2 Welding: in accordance with CSA-W59 and with CSA-W59S1.

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

.4 Provide end bearing of joists as indicated on the structural drawings and not less than

.1 65 mm on steel edge.

.2 100 mm on masonry.

.5 Install bridging before application of construction loads and anchor bridging lines to walls and other supporting structural members as indicated on the drawings.

.6 Weld joist to each compression flange, chord of supporting steel member receiving full lateral support at maximum interval not exceeding fifteen times flange, chord width.

.7 Refer to drawings for bearing plates, anchors, joists, seats, etc. not specified herein.

.8 Provide certification that welded joints are qualified by Canadian Welding Bureau.

3.2 Connection to Existing Work

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

3.3 Field Quality Control

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

.2 Testing laboratory will inspect representative joists for integrity, accuracy of fabrication and soundness of welds. Testing laboratory will also monitor test loading of joists used by manufacturer to verify design and check representative field connections. Contract Administrator will determine extent of and identify all inspections.

.3 Submit test report to Contract Administrator within 5 days after completion of inspection.

.4 City of Winnipeg will pay costs of tests as specified in Section 01 29 83 - Payment Procedures: Testing Laboratory Services.

.5 Test shear studs in accordance with CSA-W59.

3.4 Erection

.1 Erect steel joists and bridging as indicated in accordance with CAN/CSA-S16 and in accordance with reviewed erection drawings.

.2 Complete installation of all bridging and anchorages before placing construction loads on joists.

.3 Field cutting or altering joists or bridging that are not shown on shop drawings: to approval of Contract Administrator.

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

3.5 Field Painting

.1 Paint: in accordance with Section 09 91 23 -Painting.

.2 Touch up all damaged surfaces and surfaces without shop coat with CISC/CPMA-1, CISC/CPMA-2-75, CAN/CGSB-1.105, CAN/CGSB-1.40 and in accordance with manufacturers' recommendations to CAN/CGSB-85.10.

END OF SECTION

Part 1 General

1.1 Related Sections

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

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

.4 Section 05 21 00 - Steel Joist Framing.

.5 Section 07 52 00 – Modified Bituminous Membrane Roofing.

.6 Section 07 61 00 – Sheet Metal Roofing.

.7 Section 07 21 16 – Blanket Insulation.

.8 Section 09 91 23 - Painting.

1.2 References

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

- .1 ASTM A653/A653M-01a, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 ASTM A792/A792M-01a, 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-S16.1-94(R2000), Limit States Design of Steel Structures.
- .3 CSA-S136-94(R2001), Cold Formed Steel Structural Members.
- .4 CSA W47.1-92(R2001), Certification of Companies for Fusion Welding of Steel Structures.
- .5 CSA W55.3-1965(R1998), Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.
- .6 CSA W59-M1989(R2001), Welded Steel Construction, (Metal Arc Welding) Metric.

.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 and , CSSBI 10M and CSSBI 12M.

.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 plaster gypsum board 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 Section 01 33 00 - Submittal Procedures.

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

.3 Submit design calculations if requested by Contract Administrator.

.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.

1.5 Waste Management and Disposal

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.2 Divert unused metal from landfill to metal recycling facility approved by Contract Administrator.

.3 Dispose of unused paint material at official hazardous material collections site approved by Contract Administrator.

.4 Do not dispose of unused paint material into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.

.5 Dispose of unused caulking material at official hazardous material collections site approved by Contract Administrator.

Part 2 Products

2.1 Materials

.1 Zinc-iron Alloy (ZF) coated steel sheet: to ASTM A653/A653M structural quality Grade 230 255, with ZF75 coating, for interior surfaces not exposed to weather, painted unpainted finish, .76 mm minimum base steel thickness.

.2 Acoustical fluted deck pan insulation: inert, non-organic glass fibre sound absorbing batts as per acoustical batt specification Section 07 21 16 – Blanket Insulation. Glass fibre strips cut to proper width and profiled to suit trapezoidal deck flutes.

.1 Type Deck Pan, standard sizes, custom trapezoidal strips to standard length 914mm. Fabricate from drawing details or accurate field measurements.

.2 Refer to Section 07 52 00 – Modified Bituminous Damproofing.

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

.4 Cover plates, cell closures and flashings: steel sheet with minimum base steel thickness of 0.76 mm. Metallic coating same as deck material.

.5 Primer: zinc rich, ready mix to CAN/CGSB-1.181 to MPI Standards. See Section 09 91 23 – Painting.

.6 Sealants: to Section 07 92 10.

.7 Shear studs: to CSA W59.

2.2 Types of Decking

.1 Steel roof deck: 0.76 mm minimum base steel thickness, 38 mm maximum deep profile, non-cellular, perforated, interlocking side laps. As indicated on Structural Drawings.

.2 Acoustical steel roof deck: minimum base steel thickness and maximum deep profile as indicated on Structural Drawings, non-cellular, perforated on vertical face of flute, flute fillers, interlocking side laps. Refer to Section 07 52 00 – Modified Bituminous Damproofing.

.1 Perforated Decking.

.2 Fibreglass flute fillers in perforated deck.

Part 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 50 mm minimum.

.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.

3.3 Closures

.1 Install closures adjacent insulation conditions.

3.4 Openings and Areas of Concentrated Loads

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

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

.3 For deck openings with any one dimension greater than 300 mm 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.

3.6 Schedule

.1 Perforated decking throughout .

END OF SECTION

Part 1 General

1.1 Related Sections

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.3 Section 03 30 00 - Cast-in-Place Concrete.

.4 Section 03 48 00 – Precast Architectural Specialties.

.5 Section 04 05 10 - Common Work Results for Masonry.

.6 Section 04 05 19 - Masonry Anchorage and Reinforcing.

.7 Section 05 12 23 - Structural Steel.

.8 Section 05 21 00 - Steel Joist Framing.

.9 Section 05 51 29 – Metal Stairs and Ladders.

.10 Section 05 31 00 - Steel Deck.

.11 Section 06 10 00 – Rough Carpentry.

.12 Section 07 44 56 – Mineral Fibre Reinforced Building Panels.

.13 Section 09 91 23 – Painting.

1.2 References

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

- .1 ASTM A53/A53M-02, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Steamless.
- .2 ASTM A269-02, Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
- .3 ASTM A307-02, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

.2 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB-1.40-97, Anti-corrosive Structural Steel Alkyd Primer.
- .2 CAN/CGSB-1.181-92, Ready-Mixed, Organic Zinc-Rich Coating.

.3 Canadian Standards Association (CSA International)

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

.2 CAN/CSA-G164-M92(R1998), Hot Dip Galvanizing of Irregularly Shaped Articles.

.3 CAN/CSA-S16.1-01, Limit States Design of Steel Structures.

.4 CSA W48-01, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).

.5 CSA W59-1989(R2001),Welded Steel Construction (Metal Arc Welding) (Imperial Version).

.4 The Environmental Choice Program

.1 CCD-047a-98, Paints, Surface Coatings.

.2 CCD-048-98, Surface Coatings - Recycled Water-borne.

.5 Master Painters Institute (MPI)

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

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

1.3 Submittals

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit two 3 copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's:

.1 For finishes, coatings, primers and paints.

.2 Shop Drawings

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

.2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

1.4 Quality Assurance

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

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

.3 Pre-installation Meetings: Conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.5 Delivery, Storage, and Handling

.1 Packing, Shipping, Handling and Unloading:

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

.2 Storage and Protection:

.1 Cover exposed stainless steel surfaces with pressure sensitive heavy protection paper or apply strippable plastic coating, before shipping to job site.

.2 Leave protective covering in place until final cleaning of building. Provide instructions for removal of protective covering.

1.6 Waste Management and Disposal

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

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

.3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

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

Part 2 Products

2.1 Materials

.1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 300W or 350W – see Structural Drawings.

.2 Steel pipe: to ASTM A53/A53M standard weight, primed finish.

.3 Welding materials: to CSA W59.

.4 Welding electrodes: to CSA W48 Series.

.5 Bolts and anchor bolts: to ASTM A307.

.6 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

2.2 Fabrication

.1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.

.2 Use self-tapping shake-proof flat round oval headed screws on items requiring assembly by screws or as indicated.

.3 Where possible, fit and shop assemble work, ready for erection.

.4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

2.3 Finishes

.1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m2 to CAN/CSA-G164.

.2 Shop coat primer: to MPI Standards.

.3 Zinc primer: zinc rich, ready mix to MPI Standards.

2.4 Isolation Coating

.1 Isolate aluminum from following components, by means of bituminous paint:

.1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.

.2 Concrete, mortar and masonry.

.3 Wood.

2.5 Shop Painting

.1 Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.

.2 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 degrees C.

.3 Clean surfaces to be field welded; do not paint.

.4 To MPI Standards.

2.6 Angle Window/ Door Lintels

.1 Steel angles: galvanized, sizes indicated for openings. Provide 150 mm minimum bearing at ends.

.2 Weld or bolt back-to-back angles to profiles as indicated.

.3 Primed ready for paint.

2.7 Masonry Support Angles

.1 Angles: 67mm x 76mm x 6mm.

.2 38mm insulation spacer as shown.

.3 Galvanized.

2.8 Metal Frames

.1 14 gauge cold rolled steel.

.2 Shop fabricated – Refer to Drawing A – 9.

.3 Shop primed ready for paint – powder coat finish.

.4 Acceptable Product by Koch or approved equal.

2.9 Splash Pad Ledge

.1 Angles: 67mm x 76mm x 6mm - 450mm long.

.2 Angles: 64mm x 64mm x 6mm – See Drawings.

.3 Angle concrete anchor and 50mm insulation spacer.

.4 Holes: Two min. holes in angle for fastening to wall.

.5 Primed ready for paint.

2.10 Double L Angle Supports

.1 Refer to Structural Drawings.

2.11 Metal Floor Transitions

.1 Metal transitions: as recommended by flooring manufacturer. To fit snug.

2.12 Vanity Support Brackets

.1 6.3 mm plate x 100 wide to shape shown

.2 Predrill for fastening to wall and vanity

2.13 Angle Attaching New Basement Wall to Existing Wall

.1 6mm x 76 x 76 for full length as shown.

.2 Predrill for cinch anchors at 400 O.C.

.3 Refer to Drawing 4/ A-3.

2.14 Wall Pipe Handrail & Bracket

.1 38 ø pipe rail.

.2 Bracket: 13 ø arm, 6 x 100 x 100mm plate, 4 predrilled holes for fastening to wall

.3 Primed ready for paint.

2.15 Guardrail Pipe

.1 38 ø pipe rail.

.2 Bracket: 13 ø arm, 6 x 100 x 100mm plate, 4 predrilled holes for fastening to wall, 41mm spacing.

.3 Primed ready for paint.

2.16 Free Standing Handrail

.1 38 ø pipe rails and posts.

.2 6 x 100 x 100mm plate, 4 predrilled holes

.3 Primed ready for paint.

2.17 Bench Wall Bracket

.1 9 x 50mm bar bent to shape shown.

.2 Predrill for wall fastening and counter sunk screw holes.

2.18 Gutter/ Downspout/ Scupper Supports

.1 Steel Angle as per Drawings.

2.19 Parapet Vertical Supports:

.1 L 76 x 76 x 6 vertical masonry support members (@ 1200 OC).

.2 Height of members vary – to be determined during shop drawing period.

.3 Pre-drill @ 1200 OC.

Part 3 Execution

3.1 Erection

.1 Do welding work in accordance with CSA W59 unless specified otherwise.

.2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

.3 Provide suitable means of anchorage acceptable to Consultant such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.

.4 Exposed fastening devices to match finish and be compatible with material through which they pass.

.5 Provide components for building by other sections in accordance with shop drawings and schedule.

.6 Make field connections with bolts to CAN/CSA-S16.1, or weld.

.7 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.

.8 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.

.9 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

3.2 Masonry Opening Angles

.1 Install angles over doorways, window and other openings.

.2 Paint to finish as specified.

3.3 Masonry Angles Support

.1 Attach angle and spacer at base of wall to concrete foundation.

.2 Galvanized.

3.4 Splash Pad Ledge/Support

.1 Install pad support angle to concrete base with 2 min. bolts

.2 Galvanized.

3.5 Vanity Support Brackets

.1 Install vanity brackets as shown

.2 Paint to finish as specified.

3.6 Angle Attaching New Basement Wall to Existing Wall

.1 Install angle vertically to existing basement wall as shown.

.2 Install using neoprene gasket and cinch anchors.

.3 Refer to Drawing 4/ A -3.

3.7 Gutter/ Downspout/ Scupper Supports

.1 Steel Angle as per Drawings.

3.8 Wall Pipe Handrail & Bracket

.1 Install pipe rail to wall.

.2 Paint to finish as specified.

3.9 Metal Frames

.1 Profiles as shown in Drawings.

.2 Metal Frames for Fibre Cement Siding Panels by James Hardie.

3.10 Guardrail

.1 Install at Exterior Landing and Stairs – See Drawings.

.2 Refer to Detail 5/ A -4.

3.11 Free Standing Handrail

.1 Install free standing handrail

.2 Recess plate into wood base

.3 Place anchor plates in flush with concrete finish and weld post/handrail to plates

.4 Paint to finish as specified.

3.12 Double L Angle Supports

.1 Refer to Structural Drawings.

3.13 Metal Floor Transitions

.1 Refer to Drawings.

3.14 Bench Wall Bracket

.1 9 x 50mm bar bent to shape shown.

.2 Predrill for wall fastening and counter sunk screw holes.

.3 Refer to Drawing 5/ A -3.

3.15 Parapet Vertical Supports:

.1 Members to be installed @ 1200 OC. Weld angles to the top flange of the perimeter roof

3.16 Cleaning

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

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

END OF SECTION

Part 1 General

1.1 Related Sections

.1 Section 01 33 00 - Submittal Procedures.

.2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.3 Section 03 30 00 - Cast-in-Place Concrete.

.4 Section 04 05 10 - Common Work Results for Masonry.

.5 Section 05 50 00 - Metal Fabrications.

.6 Section 09 91 23 – Painting.

1.2 References

.1 American National Standards Institute/National Association of Architectural Metal Manufacturers (ANSI/NAAMM)

.1 ANSI/NAAMM MBG531-00, Metal Bar Grating Manual.

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

.1 ASTM A53/A53M-02, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.

.2 ASTM A325M-02, Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.

.3 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-1.40-97, Anti-corrosive Structural Steel Alkyd Primer.

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

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

.4 CAN/CSA-G164-M92(R1998), Hot Dip Galvanizing of Irregularly Shaped Articles.

.4 Canadian Standards Association (CSA International)

.1 CSA W59-1989(R2001), Welded Steel Construction (Metal Arc Welding/Imperial Version).

.5 National Association of Architectural Metal Manufacturers (NAAMM)

.1 AMP 510-92, Metal Stair Manual.

.6 Steel Structures Painting Council (SSPC), Systems and Specifications Manual, Volume 2.

.7 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.

1.3 System Description

.1 Design Requirements:

.2 Design metal stair, balustrade and landing construction and connections to NBC vertical and horizontal live load requirements.

.3 Detail and fabricate stairs to NAAMM Metal Stairs Manual.

1.4 Submittals

.1 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's:

.1 For finishes, coatings, primers and paints.

.2 Shop Drawings

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

.2 Indicate construction details, sizes of steel sections and thickness of steel sheet.

.3 Submit shop drawing bearing stamp of a qualified professional Engineer registered in Canada, in the Province of Manitoba.

1.5 Quality Assurance

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

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

.3 Pre-installation Meetings: Conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.6 Waste Management and Disposal

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

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

.3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, etc., packaging material in appropriate on-site for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

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

Part 2 Products

2.1 Materials

.1 Steel sections: to CAN/CSA-G40.20/G40.21 Grade 350 W.

.2 Steel plate: to CAN/CSA-G40.20/G40.21, Grade 300 W.

.3 Floor plate: to CAN/CSA-G40.20/G40.21, Grade 300 W.

.1 Thickness: 6 mm.

.4 Steel pipe: to ASTM A53/A53M, standard weight, schedule 40 seamless black.

.5 Steel tubing: to CAN/CSA-G40.20/G40.21, Grade 350, round, wall thickness, sizes and dimensions as indicated.

.6 Welding materials: to CSA W59.

.7 High strength bolts: to ASTM A325M.

2.2 Fabrication

.1 Fabricate to NAAMM, Metal Stair Manual.

.2 Weld connections where possible, otherwise bolt connections. Countersink exposed fastenings, cut off bolts flush with nuts. Make exposed connections of same material, colour and finish as base material on which they occur.

.3 Accurately form connections with exposed faces flush; mitres and joints tight. Make risers of equal height.

.4 Grind or file exposed welds and steel sections smooth—continuous welds Stair No. 2.

.5 Shop fabricate stairs in sections as large and complete as practicable.

2.3 Steel Pan Stairs

.1 Fabricate stairs with closed riser steel pan construction.

.2 Form treads and risers from 5 mm thick steel plate. Secure treads and risers to L 35 x 35 x 5 horizontal and vertical welded to stringers.

.3 Form wall stringers from MC 310 x 15.8 unless noted on Drawings.

.4 Form outer stringers from MC 310 x 15.8 with 5mm thick plate fascia welded on, unless noted in Drawings.

.5 Form all stringers from C 310 x 45 with 5mm thick plate fascia welded on, unless noted in Drawings.

.6 Form landings from 3 mm thick steel plate, reinforced by L 55 x 55 x 6 mm spaced at 400mm on centre unless otherwise noted in Drawings.

.7 Provide clip angles for fastening of furring channels, where applied finish is indicated for underside of stairs and landings.

.8 Extend stringers around mid landings to form steel base.

.9 Close ends of stringers where exposed.

2.4 Pipe/ Tubing Balustrades

.1 Construct balusters and handrails from steel pipe as indicated.

.2 Cap and weld exposed ends of balusters and handrails.

.3 Terminate at abutting wall with end flange.

2.5 Finishes

.1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/$m^2$to CAN/CSA-G164.

.2 Shop coat primer: to CAN/CGSB-1.40.

.3 Zinc primer: zinc rich, ready mix to CAN/CGSB-1.181.

2.6 Shop Painting

.1 Clean surfaces in accordance with Steel Structures Painting Council Manual Volume 2.

.2 Apply one coat of shop primer except interior surfaces of pans.

.3 Apply two coats of primer of different colours to parts inaccessible after final assembly.

.4 Use primer as prepared by manufacturer without thinning or adding admixtures. Paint on dry surfaces, free from rust, scale, grease, do not paint when temperature is below 7 degrees C.

.5 Do not paint surfaces to be field welded.

.6 To MPI Standards for steel.

Part 3 Execution

3.1 Installation of Stairs

.1 Install in accordance with NAAMM, Metal Stair Manual.

.2 Install plumb and true in exact locations, using welded connections wherever possible to provide rigid structure. Provide anchor bolts, bolts and plates for connecting stairs to structure.

.3 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.

.4 Do welding work in accordance with CSA W59 unless specified otherwise.

.5 Touch up shop primer to bolts, welds, and burned or scratched surfaces at completion of erection.

3.2 Cleaning

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

.2 Clean and wax plastic handrails immediately prior to final inspection.

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

3.3 Schedule

.1 Stair 112; Stair 113.

END OF SECTION