Part 1 General

1.1 References

.1 ASTM A325/A325M - Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.

.2 ASTM A449 - Quenched and Tempered Steel Bolts and Studs.

.3 ASTM A490 - Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength.

.4 ASTM A500 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

.5 CAN/CGSB 1.40 - Anti-Corrosive Structural Steel, Alkyd Primer.

.6 CAN/CGSB 85-GP-14M - Painting Steel Surfaces Exposed to Normally Dry Weather.

.7 CAN/CSA G40.20 - General Requirements for Rolled or Welded Structural Quality Steel.

.8 CAN/CSA G40.21 - Structural Quality Steels.

.9 CAN/CSA G164 - Hot Dip Galvanizing of Irregularly Shaped Articles.

.10 CAN/CSA-S16-01 - Limited States Design of Steel Structures.

.11 CSA W47.1 - Certification of Companies for Fusion Welding of Steel Structures.

.12 CSA W48.1 - Carbon Steel Covered Electrodes for Shielded Metal Arc Welding.

.13 CSA W55.3 - Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.

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

.15 SSPC (The Society for Protective Coatings) (formerly SSPC - Steel Structures Painting Council) - Steel Structures Painting Manual.

.16 ULC (Underwriters Laboratories of Canada) - List of Equipment and Materials for:

- .1 Building Materials.
- .2 Fire Resistance.
- .3 Firestop Systems and Components.

1.2 Submittals for Review

.1 Section 01 33 00: Submittal procedures.

.2 Shop Drawings:

- .1 Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.

.2 Connections. Connections not detailed.

.3 Cambers, loads.

.4 Indicate welded connections with AWS A2.0 welding symbols. Indicate net weld lengths.

1.3 Submittals for Information

.1 Section 01 33 00: Submittal procedures.

.2 Manufacturer's Mill Certificate: Certify that Products meet or exceed specified requirements. .

.3 Mill Test Reports: Submit indicating structural strength, destructive and non-destructive test analysis

.4 Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.

1.4 Quality Assurance

.1 Fabricate structural steel members in accordance with CISC Code of Standard Practice, and CSA W47.1, CSA W55.3, CSA W59. Only include the following paragraph for architectural exposed structural steel work.

.2 Perform Work in accordance with AISC Section 10.

.3 Maintain one copy of each document on site.

1.5 Qualifications

.1 Fabricator: Company specializing in performing the work of this section with minimum 3 years experience.

.2 Erector: Company specializing in performing the work of this section with minimum 3 years experience.

.3 Welders' Certificates: Submit to Section 01 33 00, certifying welders employed on the Work, verifying qualification within the previous 12 months to CSA W47.1 (steel), CSA W55.3,

.4 Design connections not detailed on the Drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the Province of Manitoba.

Part 2 Products

2.1 MATERIALS

.1 Structural Steel Members: CAN/CSA G40.20, CAN/CSA G40.21 Grade 350W unless otherwise noted.

.2 Bolts, Nuts, and Washers: ASTM A307. ASTM A325 bolts,

.3 Anchor Bolts: CAM/CSA-G40.20/G40.21 Grade 300W ASTMA36/A36M.

.4 Rivets: High strength hot-driven type or carbon carbon-manganese steel.

.5 Welding Materials: Type required for materials being welded.

.6 Grout: Non-shrink type, pre-mixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing additives, capable of developing a minimum compressive strength of 48 MPa at 28 days; manufactured by .

.7 Shop and Touch-Up Primer: SPCC 15, Type 1, red oxide. .

.8 Touch-Up Primer for Galvanized Surfaces: SPCC 20 Type I Inorganic Type II Organic. .

2.2 Fabrication

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

.2 Continuously seal joined members by continuous welds. Grind exposed welds smooth.

.3 Fabricate connections for bolt, nut, and washer connectors. for riveting.

.4 Develop required camber for members.

2.3 Finish

.1 Clean, prepare surfaces, and shop prime structural members to CAN/CSA-S16 and CAN/CGSB-85.100, except as noted below.

.2 Prepare structural component surfaces in accordance with SPCC SP 2.

.3 Shop prime structural steel members. Do not prime surfaces that will be field welded, in contact with concrete,

2.4 Source Quality Control And Tests

.1 Section 01 45 00: Provide shop testing and analysis of structural steel sections.

Part 3 Execution

3.1 Examination

.1 Section 01 33 00: Verification of existing conditions prior to beginning work.

3.2 Erection

.1 Erect structural members in accordance with CAN/CSA-S16.

.2 Perform welding: to CSA W59.

.3 Allow for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.

.4 Field weld components indicated on shop drawings.

.5 Field connect members with threaded fasteners; torque to required resistance.

.6 Do not field cut or alter structural members without approval of Contract Administrator.

.7 After erection, prime welds, abrasions, and surfaces not shop primed except surfaces to be in contact with concrete.

.8 Grout under base plates in accordance with structural drawings. Trowel grouted surface smooth, splay neatly to 45 degrees.

.9 Field Painting - Touch-Up:

.1 Paint to requirements of Section 09 90 00- Painting.

.2 Touch up all damaged surfaces and exposed surfaces without shop coat, with primer to CAN/CGSB 1.40.

.3 Apply in accordance with CGSB 85-GP-14M.

3.3 Erection Tolerances

.1 Maximum Offset From True Alignment: 6 mm.

3.4 Field Quality Control

.1 Section 01 45 00: Field inspection, testing of bolt torquing, welds, torquing of fasteners,

END OF SECTION

Part 1 General

1.1 References

.1 CAN/CSA-S16-01 - Limited States Design of Steel Structures.

.2 CSA W47.1 - Certification of Companies for Fusion Welding of Steel Structures.

.3 CSA W48.1 - Carbon Steel Covered Electrodes for Shielded Metal Arc Welding.

.4 CSA W55.3 - Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.

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

.6 SJI (Steel Joist Institute) - Specifications, Load tables, and Weight Tables for Steel Joists and Joist Girders.

.7 SSPC - Society for Protective Coatings (formerly Steel Structures Painting Council) - Steel Structures Painting Manual.

.8 SSPC (The Society for Protective Coatings) (formerly SSPC - Steel Structures Painting Council) - Steel Structures Painting Manual.

1.2 Performance Requirements

.1 Design joists and bridging to support loads and uplift loads indicated in joist schedule to CAN/CSA-S16.1. Replace or modify all existing bridging lines to suit new and existing joist layout requirements.

.2 Design joists to consider load effects due to transport handling, fabrication, and erection.

.3 Limit roof joist deflection due to imposed loads to L/300 of span.

.4 Limit floor joist deflection due to imposed loads to of span.

.5 New joist to be designed such that top and bottom chord are unbraced or alternately joist supplier to design necessary/bridging to brace top and bottom chords.

1.3 Submittals For Review

.1 Section 01 33 00: Submittal procedures.

.2 Shop Drawings:

.1 Indicate standard designations, configuration, sizes, spacing, locations of joists.

.2 Joist coding, bridging, connections, attachments, and spacing depth bearing and details.

.3 Cambers and deflection, member sizes, properties, specified and factored loads, and stresses under various loadings.

1.4 Submittals For Information

.1 Section 01 33 00: Submittal Procedures.

1.5 Quality Assurance

.1 Perform Work in accordance with SJI, Load Tables, and Weight Tables, CSA W47.1, CSA W55.3, CSA W59.

.2 Fabricator to provide, an affidavit stating that materials and products used in fabricating components conform to specified material and product standards, and identified by drawings and specifications.

.3 Maintain one copy of each document on site.

1.6 Qualifications

.1 Fabricator: Company specializing in performing the work of this section with minimum 3 years experience.

.2 Erector: Company specializing in performing the work of this section with minimum 3 years experience.

.3 Welders' Certificates: Submit to Section 01 33 00, certifying welders employed on the Work, verifying qualification within the previous 12 months to CSA W47.1, CSA W55.3Include the following paragraph if the design or bid drawings are of the outline type requiring further detailed design prior to fabrication.

.4 Design connections not detailed on the Drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the Province of Manitoba.

1.7 Delivery, Storage, And Protection

.1 Section 01 61 00: Transport, handle, store, and protect products and to SJI requirements.

Part 2 Products

2.1 MATERIALS

.1 Open Web Joists Members: SJI Type K.

.2 Anchor Bolts, Nuts and Washers: ASTM A325

.3 Structural Steel For Supplementary Framing and Joist Leg Extensions: ASTM A36/A36M. .

.4 Welding Materials: Type required for materials being welded.

.5 Shop and Touch-Up Primer: SSPC 15, Type 1, red oxide.

2.2 Fabrication

.1 Provide bottom and top chord extensions as indicated.

.2 Fabricate to achieve end bearing of:

.1 62 mm on steel

.2 100 mm on masonry.

.3 Frame special sized openings in joist web framing as detailed.

2.3 Finish

.1 Prepare joist component surfaces in accordance with SSPC SP 2.

.2 Shop prime joists. Do not prime surfaces that will be fireproofed, field welded, and in contact with concrete.

2.4 Source Quality Control And Tests

.1 Provide shop testing and analysis of steel sections.

Part 3 Execution

3.1 Examination

.1 Section 01 73 03: Verification of existing conditions prior to beginning work.

3.2 Erection

.1 Erect joist members and supports to CAN/CSA-S16.

.2 Weld in accordance with CSA W59 and CSA-W5951

.3 Erect and bear joists on supports.

.4 Allow for erection loads. Provide sufficient temporary bracing to maintain framing safe, plumb, and in true alignment.

.5 Coordinate placement of anchors in concrete and masonry construction for securing bearing plates or angles.

.6 After joist alignment and installation of framing, field weld joist seat to bearing plates. or angles.

.7 Position and field weld joist chord extensions and wall attachments as detailed.

.8 Frame roof openings greater than 450 mm with supplementary framing.

.9 Do not permit erection of decking until joists are bridged, and secured or until completion of erection and installation of permanent bridging and bracing.

.10 Do not field cut or alter structural members without approval of joist manufacturer.

.11 After erection, prime welds, abrasions, and surfaces not shop primed except surfaces to be in contact with concrete.

3.3 Erection Tolerances

.1 Maximum Offset From True Alignment: 6 mm.

END OF SECTION

Part 1 General

1.1 References

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

.1 ASTM A653/A653M -09 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 ASTM A792/A792M-09, 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 CAN/CSA-S16.1-94 (R2007), Limit States Design of Steel Structures.

.2 CSA-S136-94 (R2001), Cold Formed Steel Structural Members.

.3 CSA W47.1-03 (R2008), Certification of Companies for Fusion Welding of Steel Structures.

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

.5 CSA W59-M03 (R2008), Welded Steel Construction, (Metal Arc Welding) Metric.

.4 Canadian Sheet Steel Building Institute (CSSBI)

.1 CSSBI 10M-08, Standard for Steel Roof Deck.

.2 CSSBI 12M-08, Standard for Composite Steel Deck.

1.2 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 l/300 of span, except that when 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'.

1.3 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.

Part 2 Products

2.1 Materials

.1 Zinc-iron Alloy (ZF) coated steel sheet: to ASTM A653/A653M structural quality Grade 255, with ZF75 coating, for interior surfaces not exposed to weather, unpainted finish, 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 A653/A653M structural quality Grade 255 , with ZF75, coating, regular spangle surface, , not chemically treated for paint finish, for exterior surfaces exposed to weather, .7 mm minimum base steel thickness.

.4 Aluminum-zinc alloy (AZ) coated steel sheet: to ASTM A792/A 792M structural quality grade 230 255 , with AZ 150, AZ 180 coating, surface, chemically treated for unpainted finish, not chemically treated for paint finish, for exterior surfaces exposed to weather, mm minimum base steel thickness.

.5 Acoustic insulation: fibrous glass 17.5 kg/m3 density profiled to suit deck flutes.

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

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

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

.9 Caulking: to Section 07 92 00.

.10 Shear studs: to CSA W59.

2.2 Types of Decking

.1 Steel roof deck: 0.76 mm and 91 mm minimum base steel thickness as noted on plans, 38 mm and 75 mm maximum deep profile, see plans non-cellular cellular, interlocking side laps. Flat sheet for cellular deck, 0.76 mm and 0.91 mm minimum base steel thickness refer to plans.

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 approved erection drawings.

.2 Butt ends: to 1.5 to 3 mm gap. Install steel cover plates over gaps wider than 3 mm.

.3 Lap ends: to 50 mm minimum.

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

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

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

.7 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.

.8 Place and support reinforcing steel as 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 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.

END OF SECTION

Part 1 General

1.1 REFERENCES

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

.1 ASTM A53/A53M-07, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.

.2 ASTM A307-07b, 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-1.181-99, Ready-Mixed, Organic Zinc-Rich Coating.

.3 Canadian Standards Association (CSA International)

.1 CAN/CSA-G40.20/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel.

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

.3 CAN/CSA-S16.1-94 (R2000), Limit States Design of Steel Structures.

.4 CSA W48-06, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).

.5 CSA W59-03 (R2008), Welded Steel Construction (Metal Arc Welding) (Imperial Version).

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit submittals in accordance with Section 01 33 00.

.2 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet

.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00. Indicate VOCs, for finishes, coatings, primers and paints.

.3 Shop Drawings: Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

1.3 QUALITY ASSURANCE

.1 Certificates: Upon request provide product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

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

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, store, handle and protect materials in accordance with Section 01 60 00.

Part 2 Products

2.1 MATERIALS

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

.2 Steel pipe: to ASTM A53/A53M standard weight, black, galvanized finish as indicated.

.3 Stainless Steel: ASTM A167, Type 304 commercial grade, No. 4 finish.

.4 Ladders: ANSI A14.3

.5 Welding materials: to CSA W59.

.6 Welding electrodes: to CSA W48 Series.

.7 Bolts and anchor bolts: to ASTM A307.

.8 Shop and touch-up primer: red oxide.

.9 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 screws on items requiring assembly by screws or as indicated.

.3 Exposed mechanical fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

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

.5 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush. Grind welds of stainless steel smooth and flush; polish to match adjacent surfaces.

.6 Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.3 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.

2.4 SHOP PAINTING

.1 Apply one shop coat of primer to metal items, with exception of galvanized, stainless steel 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.

2.5 LIST OF PRINCIPLE ITEMS

.1 Items 2.6 to 2.7 are principle items only. Refer to Drawing details for items not specifically listed.

2.6 ANGLE LINTELS

.1 Steel angles: galvanized finish for exterior, prime painted for interior, sizes indicated for openings. Provide 150 mm minimum bearing at ends.

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

2.7 BARRIER FREE DOOR OPENER SUPPORT

.1 HSS Sections to sizes as indicated.

.2 Finish: paint to Section 09 90 00.

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 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 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 ANGLE LINTELS

.1 Install lintels in locations as indicated.

3.3 BARRIER FREE DOOER OPENER SUPPORT

.1 Install barrier free support securely and plumb in location indicated.

3.4 SITE PAINTING

.1 Paint non galvanized metal fabrications to Section 09 90 00.

3.5 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 REFERENCES

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

.1 ASTM A53/A53M-07, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.

.2 ASTM A307-07b, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

.3 ASTM A325M-09, Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.

.2 Canadian General Standards Board (CGSB)

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

.2 CAN/CSA-G40.20/G40.21-04 (R2009), General Requirements for Rolled or Welded Structural Quality Steel.

.3 Canadian Standards Association (CSA International)

.1 CSA W59-03 (R2008), Welded Steel Construction (Metal Arc Welding/Imperial Version).

.4 National Association of Architectural Metal Manufactures (NAAMM)

.1 AMP 510-92, Metal Stair Manual.

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

1.2 DESIGNER QUALIFICATIONS

.1 Design Engineer to have Professional Liability Insurance.

.2 Retain a qualified professional engineer who is licensed in the Province of Manitoba to design in accordance with reference Standards and inspect Work during construction of items listed in this specification section.

.3 Design Engineer to ensure the design in according to the requirements of the Manitoba Building Code and other specified criteria, and be responsible under the Building Code Act for general review of construction for the portion of the work prepared under their professional seals.

1.3 SYSTEM DESCRIPTION

.1 Design ladders, metal stairs, balustrades and landing construction and connections to NBC vertical and horizontal live load requirements.

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

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit submittals in accordance with Section 01 33 00.

.2 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet

.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00. Indicate VOCs, for finishes, coatings, primers and paints.

.3 Shop Drawings

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

.2 Submit shop drawing bearing stamp of a qualified professional engineer registered in Province of Manitoba.

.4 Inspection reports: submit by design engineer reports stamped and signed verifying satisfactory installation and the work has been completed in accordance with the drawings, specifications and shop drawings.

1.5 QUALITY ASSURANCE

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

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

Part 2 Products

2.1 MATERIALS

.1 Steel sections: to CAN/CSA-G40.20/G40.21 Grade 300 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.

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

.5 Steel tubing: to CAN/CSA-G40.20/G40.21, sizes and dimensions as indicated.

.6 Welding materials: to CSA W59.

.7 Bolts: to ASTM A307.

.8 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.

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

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

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

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

.6 Close ends of stringers where exposed.

2.4 PIPE/TUBING BALUSTRADES FOR HANDRAILS, GUARDRAILS

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

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

.3 Terminate at abutting wall with end flange.

2.5 BAR BALUSTRADES FOR HANDRAILS, GUARDRAILS

.1 Construct bar balustrades to sizes indicated.

.2 Weld balustrades to stringers as indicated.

2.6 ACCESS LADDERS

.1 Stringers: as indicated

.2 Steel Rungs: as indicated.

.3 Floor grating as indicated.

.4 Brackets: sizes and shapes as indicated, weld to stringers, complete with fixing anchors, as indicated.

.5 Provide lockable Steel panels for exterior building ladders as indicated.

.6 Provide safety cage as indicated.

.7 Shop primed, paint finish on site.

2.7 FINISHES

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

2.8 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.

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 INSTALLATION PIPE/TUBING, BAR BALUSTRADES FOR HANDRAIS

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

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

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

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

3.3 CLEANING

.1 Perform cleaning as soon as possible 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 REFERENCES

.1 National Association of Architectural Metal Manufactures (NAAMM)

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

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

1.2 DESIGNER QUALIFICATIONS

.1 Retain a qualified professional engineer who is licensed in the Province of Manitoba to design in accordance with reference Standards and inspect Work during construction.

.2 Design engineer to have Professional Liability Insurance.

.3 Design engineer to ensure the design in according to the requirements of the Manitoba Building Code and other specified criteria, and be responsible under the Building Code Act for general review of construction for the portion of the work prepared under their professional seals.

1.3 SYSTEM DESCRIPTION

.1 Design trellises and connections to NBC vertical and horizontal load requirements.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit submittals in accordance with Section 01 33 00.

.2 Product Data:

.1 Submit manufacturer's printed product literature, specifications and data sheet

.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 00 01. Indicate VOCs, for finishes, coatings, primers and paints.

.3 Shop Drawings: Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

.4 Submit shop drawing bearing stamp of a qualified professional engineer registered in Province of Manitoba.

.5 Inspection reports: submit by design engineer reports stamped and signed verifying satisfactory installation and the work has been completed in accordance with the drawings, specifications and shop drawings.

1.5 QUALITY ASSURANCE

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

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

Part 2 Products

2.1 MATERIALS

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

.2 Cold formed carbon steel.

.3 Light gauge steel.

.4 Aluminium extrusions.

.5 Welding materials: to CSA W59

.6 Welding electrodes: to CSA W48 Series.

.7 Bolts and anchor bolts: to ASTM A307.

.8 Acceptable Materials:

.1 C/S Sun Controls

.1 Outriggers: Box, 125 high, vertical.

.2 Blades: airfoil, 45 degrees.

.3 Fascia: rectangular tube, 125 high, vertical.

.2 Approved alternative.

2.2 FABRICATION

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

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

2.3 FINISHES

.1 Clear anodized.

.2 Bolts: stainless steel.

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 TRELLISES

.1 Sizes and spacing of materials to approved shop drawings.

.2 Shapes: round, airfoil.

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 Contract Administrator.

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

3.2 TRELLISES

.1 Install trellises in location as indicated.

3.3 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