

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 50 00 - Metal Fabrications.
- .4 Section 09 91 99 - Painting for Minor Works.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA)
 - .1 CAN/CSA G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CAN/CSA-G164, Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CAN/CSA-S16, Limit States Design of Steel Structures.
 - .4 CAN/CSA-S136, Cold Formed Steel Structural Members.
 - .5 CSA-S136.1, Commentary on CSA Standard S136.
 - .6 CSA W47.1, Certification of Companies for Fusion Welding of Steel Structures.
 - .7 CSA W48, Filler Metals and Allied Materials for Metal Arc Welding of Structural Steel.
 - .8 CSA W55.3, Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.
 - .9 CSA W59, Welded Steel Construction (Metal Arc Welding) Metric.
 - .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-85.10, Protective Coatings for Metals.
 - .2 CGSB 85-GP-14M, Painting Steel Surfaces Exposed to Normally Dry Weather.
 - .3 CAN/CGSB-85-100, Painting.
 - .3 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A36/A36M, Specification for Structural Steel.
 - .2 ASTM A325M, Specification for High-Strength Bolts for Structural Steel Joints Metric.
 - .3 ASTM A 307-12, Specification for Carbon Steel Bolts and Studs, 400 MPa Tensile.
 - .4 Canadian Institute of Steel Construction (CISC)/Canadian Paint Manufacturer's Association (CPMA).
 - .1 CISC/CPMA 1, Quick-Drying, One Coat Paint for Use on Structural Steel.
 - .2 CISC/CPMA 2, Quick-Drying, Primer for use on Structural Steel.
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- .5 The Society for Protective Coatings (SSPC)
 - .1 SSPC SP 1, Solvent Cleaning.
 - .2 SSPC SP 7, Brush-Off Blast Cleaning.
 - .3 SSPC SP-6-(06), Commercial Blast Cleaning.

1.3 SUBMITTALS

- .1 Shop Drawings:
 - .1 Submit shop drawings including fabrication and erection documents and materials list.
 - .2 On erection drawings: indicate details and information necessary for assembly and erection purposes such as, description of methods, sequence of erection, type of equipment used in erection and temporary bracings. Show detail of all non- standard connections such as bracing connections, truss connections, moment connections and hanger assemblies and other non-standard connections as requested by the Departmental Representative.
 - .3 Erection drawings to be stamped by a qualified professional Engineer licensed to practice in the Province of Nova Scotia. The erection drawings are to contain a clause stating that the professional Engineer who stamped the erection drawings is responsible for all fabricator designed assemblies, components and connections required for this project.
 - .4 Drawings for all fabricator designed assemblies, components and connections are to be stamped and signed by the professional Engineer who stamped the erection drawings.
 - .5 Reproduction of Contract Design Drawings for use as Erection Drawings not permitted.
- .2 Samples:
 - .1 Prepare sample of typical exposed structural connections in accordance with approval of Departmental Representative. 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.

1.4 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 Unless noted otherwise on the drawings or in the specifications connection design is the responsibility of the structural steel fabricator. Fully detailed connections shown on the contract drawings including bolt and welded sizes are deemed to have been designed by the Departmental Representative.
 - .3 If connection for shear only (standard connection is required):
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- .1 Select framed beam shear connections from an industry accepted publication such as "Handbook of the Canadian Institute of Steel Construction".
- .2 If shears are not indicated, 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.
- .4 For non-standard connections, submit sketches and design calculations stamped and signed by qualified professional Engineer licensed in the Province of Nova Scotia.

1.5 SOURCE QUALITY CONTROL

- .1 If requested submit on certified copy of mill reports covering chemical and physical properties of steel used in this work.

1.6 QUALITY ASSURANCE

- .1 At least 2 weeks prior to fabrication of structural steel submit to Departmental Representative a letter from the fabricators Welding engineer stating the Welding engineer is responsible for welding procedures and practices for this project as outlined in CSA S47.1
- .2 Provide certificate of Quality Compliance from steel fabricator upon completion of structural steel fabrication stating that the work has been designed and fabricated in accordance with the requirements of the contract documents.
- .3 If requested, submit to the Departmental Representative one copy of all approved welding procedures for this project.

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 Cold formed structural members: to CAN/CSA S-136.
 - .3 Anchor bolts: to CAN/CSA-G40.20/G40.21, Grade 300W.
 - .4 Bolts, nuts and washers: to ASTM A325M
 - .5 Welding materials: to CSA W59 and certified by Canadian Welding Bureau.
 - .6 Shop paint primer:
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- .1 To CISC/CPMA 1 for interior steel.
- .2 To CISC/CPMA 2 for exterior steel.
- .7 Hot dip galvanizing: galvanize steel for exterior steel to CAN/CSA-G164, minimum zinc coating of 600 g/m2.

2.2 FABRICATION

- .1 Fabricate structural steel in accordance with CAN/CSA-S16 and in accordance with approved reviewed shop drawings.
- .2 Install shear studs in accordance with CSA W59.
- .3 Continuously seal members by continuous welds where indicated.
- .4 Provide holes for attachment of other work, as shown on structural drawings or architectural drawings including but not limited to: bolt holes, anchor holes, anchor rods, brackets, clips and similar attachments.
- .5 Provide base plates, bearing plates and wall anchors for structural work bearing on concrete block walls, unless otherwise noted on drawings

2.3 SHOP PAINTING

- .1 Clean, prepare surfaces and shop prime structural steel in accordance with CAN/CSA-S16 except where members to be encased in concrete.
 - .2 Clean members, remove loose mill scale, rust, oil, dirt and other foreign matter. Prepare surface by solvent cleaning to SSPC SP 1, followed by brush-off blast cleaning to SSPC SP 7 or SSPC SP-6 Commercial Blast Cleaning.
 - .3 Apply one coat of primer in shop to steel surfaces 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.
 - .6 To meet requirements in paragraph 7, below.
 - .4 Apply paint under cover, on dry surfaces when surface and air temperatures are above 5°C.
 - .5 Maintain dry condition and 5°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 requirements and compatibility to meet ULC fireproofing standard requirements.
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- .8 Include wire mesh where required to install fireproofing.

PART 3 - EXECUTION

3.1 GENERAL

- .1 Structural steel work: in accordance with CAN/CSA-S16.
- .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.
- .4 It is the steel fabricator's responsibility to coordinate with the supplier of all fireproofing materials to ensure compatibility between the primer and paint being used and the fireproofing systems.

3.2 MARKING

- .1 Mark materials in accordance with CAN/CSA G40.20/G40.21. Do not use die stamping.
- .2 If steel is to be left in unpainted condition, place marking at locations not visible from exterior after erection.
- .3 Match marking: shop mark bearing assemblies and splices for fit and match.

3.3 ERECTION

- .1 Erect structural steel, as indicated and in accordance with CAN/CSA-S16 and in accordance with approved reviewed erection drawings.
 - .2 Field cutting or altering structural members: to approval of Departmental Representative.
 - .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.
 - .5 Repair areas of bare metal at galvanized surfaces with zinc-rich paint. Restrict use of zinc-rich paint to touch-up only. Replace damaged galvanized material otherwise.
 - .6 Supply falsework, staging, shoring and other temporary work necessary to carry out.
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3.4 FIELD PAINTING

- .1 Touch up damaged surfaces and surfaces without shop coat with primer to SSPC SP 7 except as specified otherwise. Apply in accordance with CAN/CGSB 85.10.

3.5 FIELD QUALITY CONTROL

- .1 Inspection and testing of materials and workmanship will be carried out by an Inspection and Testing company designated by Departmental Representative.
- .2 The Inspection and Testing Company will carry out vertical and horizontal alignment checks, torque testing and inspection of representative connection welds.
- .3 Provide safe access and working areas for testing on site, as required by testing agency and as authorized by Departmental Representative.
- .4 Submit test reports to Departmental Representative within 2 weeks of completion of inspection.
- .5 Pay costs of inspection and testing from Cash Allowance. Costs for any re-inspection and/or re-testing as a result of deficient work will be paid for by the contractor, by credit change order
- .6 Prior to inspection & testing by the Inspection and Testing company the structural steel erection contractor will carry out an inspection of the work and make the inspection results available to the Departmental Representative and the Inspection and Testing company. The inspection report will identify the areas of work inspected, deficiencies identified and measures taken to correct the deficiencies.
- .7 The Inspection and Testing agency to provide as a minimum, the following:
 - .1 Contractor appointed inspection and testing agency to provide as a minimum, visual examination of all welding procedures at the plant and in the field, as well as the following Non Destructive Testing (NDT) and test quantities:
 - .1 Long Span O.W.S.J. - 20% of welds using X-Ray method (All welds to be complete penetration).
 - .2 Five percent (5%) of all other structural steel welds including but not limited to fillet, partial penetration, complete penetration etc., are to have NDT done in accordance with CSA W59-03. Magnetic particle, ultrasonic and radiograph are all acceptable methods of testing provided they are used with appropriate material thickness, joint configuration and joints critical to overall structural integrity.

- .8 The Inspection and Testing agency to re-test and re-inspect all defective workmanship.
- .9 Contractor to pay for all costs of re-inspection and re-testing and repairs to correct defective work.
- .10 Test shear studs in accordance with CSA W59.
- .11 Copies of test reports and inspections to be included in Commissioning Manual

PART 1 - GENERAL1.1 REFERENCE STANDARDS

- .1 ASTM International
 - .1 ASTM A 53/A 53M-12, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - .2 ASTM A 307-14, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- .2 CSA International
 - .1 CSA G40.20/G40.21-13, 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 CSA S16-14, Design of Steel Structures.
 - .4 CSA W48-14, Filler Metals and Allied
 - .5 Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau)
 - .6 CSA W59-13, Welded Steel
 - .7 Construction (Metal Arc Welding) Metric.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .4 The Master Painters Institute (MPI)
 - .1 Architectural Painting Specification Manual - current edition.

1.2 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 sections plates pipe tubing and bolts and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit two copies of WHMIS MSDS in accordance with Section 01 35 29 - Health and Safety Requirements.
 - .3 Shop Drawings:
 - .1 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.
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1.3 QUALITY ASSURANCE

- .1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certifications: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 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-entilated area.
 - .2 Replace defective or damaged materials with new.

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Steel sections and plates: to CSA G40.20/G40.21, Grade 300W.
- .2 Steel pipe: to ASTM A 53/A 53M standard weight galvanized finish.
- .3 Welding materials: to CSA W59.
- .4 Welding electrodes: to CSA W48 Series.
- .5 Bolts and anchor bolts: to ASTM A 307.
- .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.
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- .2 Use self-tapping shake-proof flat-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.

2.4 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 ANGLE LINTELS

- .1 Steel angles: galvanized prime painted sizes indicated for openings. Provide 150 mm minimum bearing at ends.
- .2 Weld or bolt back-to-back angles to profiles as indicated.
- .3 For non stainless steel angle lintels, apply one shop coat of primer and finish to Section 09 91 99 - Painting.

2.6 CHANNEL FRAMES

- .1 Fabricate frames from steel, sizes of channel and opening as indicated.
 - .2 Weld channels together to form continuous frame for jambs and head of openings, sizes as indicated.
 - .3 Shop coat prime interior channel frames after fabrication. Shop coat prime exterior channel frames after fabrication and apply a high build epoxy coating finish Section 09 91 99 - Painting.
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2.7 MISCELLANEOUS STEEL SECTIONS AND PLATES

- .1 Provide miscellaneous steel sections and plates as indicated on the drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for metal fabrications 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 and after receipt of written approval to proceed from Departmental Representative.

3.2 ERECTION - GENERAL

- .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 Departmental Representative 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 Supply components for work by other trades in accordance with shop drawings and schedule.
 - .6 Make field connections with bolts to CSA S16.
 - .7 Deliver items over for casting into concrete and building into masonry together with setting templates to appropriate location and construction personnel.
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- .8 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.
 - .1 Primer: maximum VOC limit 250 g/L.

3.3 CHANNEL FRAMES

- .1 Install steel channel frames to openings as indicated.

3.4 MISCELLANEOUS STEEL SECTIONS AND PLATES

- .1 Install miscellaneous steel sections as indicated.

3.5 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.

3.6 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by metal fabrications installation.

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 03 30 00 - Cast-In-Place Concrete.
- .2 Section 05 50 00 - Metal Fabrications.
- .3 Section 09 91 99 - Painting for Minor Works.

1.2 REFERENCE STANDARDS

- .1 ASTM International
 - .1 ASTM A 53/A 5 3M-12, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - .2 ASTM A 307-14, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - .3 ASTM F 3125/F 3125M-15A, Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions.
- .2 CSA Group
 - .1 CSA G40.20-13/G40.21-13, 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 CSA W59-13, Welded Steel Construction (Metal Arc Welding).
- .3 National Association of Architectural Metal Manufacturers (NAAMM)
 - .1 AMP 510-92, Metal Stair Manual.
- .4 The Master Painters Institute (MPI)
 - .1 Architectural Painting Specification Manual - current edition.
- .5 The Society for Protective Coatings (SSPC)
 - .1 Systems and Specifications Manual, Volume 2, [2014] Edition.

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 stairs and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29 - Health and Safety Requirements.
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- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province Nova Scotia Canada.
 - .2 Indicate construction details, sizes of steel sections and thickness of steel sheet.

1.4 QUALITY ASSURANCE

- .1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certifications: 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 Section 01 61 00 - Common Product Requirements and 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 indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect stairs from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

- .1 Detail and fabricate stairs to Fabricator Metal Stairs Manual.

2.2 MATERIALS

- .1 Steel sections: to CSA G40.20/G40.21 Grade 300 W.
 - .2 Steel plate: to CSA G40.20/G40.21, Grade 260 W.
 - .3 Floor plate: to CSA G40.20/G40.21, Grade 260 W.
 - .1 Thickness: 3 mm.
 - .4 Steel pipe: to ASTM A 53/A 53M, standard weight, schedule 40 seamless
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black.

- .5 Welding materials: to CSA W59.
- .6 Bolts: to ASTM A 307.
- .7 High strength bolts: to ASTM A F3125/F3125M.
- .8 Ladder rungs:
 - .1 Inverted U-channel shaped ladder rungs.
 - .2 2.7 mm thick complete with safety perforated dimples.
 - .3 Channel size: 36 x 32 mm.

2.3 FABRICATION

- .1 Fabricate in accordance with 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:
 - .1 Make mitres and joints tight.
 - .2 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.

2.4 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 wall stringers from MC 310 x 15.8.
- .4 Provide clip angles for fastening of furring channels, where applied finish indicated for underside of stairs and landings.

2.5 ACCESS LADDERS

- .1 Design access ladders to OHS standards.
 - .2 Stringers: 10 x 64 mm, flat steel galvanized.
 - .3 Ladder rungs: as specified, in 2.2.9, welded to stringers at 305 mm on centre.
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.4 Brackets: sizes and shapes as indicated, weld to stringers at 1830 mm c.c. maximum, complete with fixing anchors.

.5 Galvanize access ladders after fabrication.

2.6 FINISHES

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

.2 Shop coat primer: to MPI- INT 5.1B.

2.7 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. Minimum temperature for painting 7 degrees C.

.5 Do not paint surfaces to be field welded.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts acceptable for metal stairs and ladders 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 OF STAIRS

- .1 Install in accordance with Fabricator, 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.

3.3 ACCESS LADDERS

- .1 Install access ladders in locations as indicated.
- .2 Erect ladders on bracket supports as indicated.

3.4 CLEANING

- .1 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.
- .2 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.5 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by metal stairs installation.