

PART 1 - GENERAL

1.1 REFERENCES

- .1 Canada Green Building Council (CaGBC)
 - .1 LEED Canada-NC-2009, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations.
 - .2 LEED Canada-CI Version 1.0-2007, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Guide For Commercial Interiors.
 - .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 2-75, Quick-Drying, Primer for Use on Structural Steel.
 - .4 CSA International
 - .1 CSA G40.20/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CSA S16-14, Design of Steel Structures.
 - .3 CSA S136-12, North American Specification for the Design of Cold Formed Steel Structural Members.
 - .4 CSA W47.1-09 (R2014), Certification of Companies for Fusion Welding of Steel.
 - .5 CSA W55.3-08, Certification of Companies for Resistance Welding of Steel and Aluminum.
 - .6 CSA W59-M13, Welded Steel Construction (Metal Arc Welding) Metric.
 - .5 The Society for Protective Coatings (SSPC) and National Association of Corrosion Engineers (NACE) International.
 - .1 SSPC-SP-1 Solvent Cleaning.
 - .2 NACE No. 4/SSPC SP-7 Brush-Off Blast Cleaning.
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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 steel joist framing and include product characteristics, performance criteria, physical size, finish and limitations.
 - .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Newfoundland and Labrador.
 - .2 Indicate on erection drawings, relevant details such as joist mark, depth, spacing, bridging lines, bearing, anchorage and details.
 - .3 Indicate 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.
 - .4 Delegated Design Submittals:
 - .1 Submit 2 copies of calculations and joist design drawings for typical joists to Departmental Representative for review at least 4 weeks prior to fabrication and/or delivery.
 - .5 Sustainable Design Submittals:
 - .1 LEED Canada-NC Version 1.0 Submittals: in accordance with Section 01 35 21 - LEED Requirements.
 - .2 Construction Waste Management:
 - .1 Submit project Waste Management Plan highlighting recycling and salvage requirements.
 - .2 Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating that 75 % of construction wastes were recycled or salvaged.
 - .3 Recycled Content:
 - .1 Submit listing of recycled content products used, including details of required percentages or recycled content materials and products, showing their
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- 1.2 ACTION AND INFORMATIONAL SUBMITTALS (Cont'd)
- .5 Sustainable Design Submittals:(Cont'd)
- .3 Recycled Content:(Cont'd)
- .1 (Cont'd)
costs and percentages of post-consumer and post-industrial content, and total cost of materials for project.
- .4 Regional Materials: submit evidence that project incorporates required percentage 20% of regional materials and products, showing their cost, distance from project to furthest site of extraction or manufacture, and total cost of materials for project.
- 1.3 QUALITY ASSURANCE
- .1 Submit 2 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
- 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-ventilated area.
- .2 Replace defective or damaged materials with new.
- .4 Develop Construction Waste Management Plan related to Work of this Section and in accordance with Section 01 35 21 - LEED Requirements.
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1.4 DELIVERY,
STORAGE AND
HANDLING
(Cont'd)

- .5 Packaging Waste Management: remove for reuse or return of pallets, crates, padding, banding, and packaging materials as specified in Construction Waste Management Plan in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal and Section 01 35 21 - LEED Requirements.

PART 2 - PRODUCTS

2.1 DESIGN CRITERIA

- .1 Design steel joists and bridging to carry loads indicated in joist schedule shown on drawings to CSA S16 and 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 300 maximum of span and deflection due to specified total load to 240 maximum of span.
- .5 Limit floor joist deflection due to specified live load to 360 of maximum span and deflection due to specified total load to 240 maximum of span.

2.2 MATERIALS

- .1 Open web steel joists: to CSA S16 and CSA S136.
- .2 Structural steel: to CSA G40.20/G40.21.
- .3 Welding materials: to CSA W59.
- .4 Shop paint primer: to CISC/CPMA-2-75, grey.

2.3 FABRICATION

- .1 Fabricate steel joists and accessories as indicated in accordance with CSA S16 and CSA S136 and in accordance with reviewed shop drawings.
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2.3 FABRICATION
(Cont'd)

- .2 Weld in accordance with CSA W59.
- .3 Provide top and bottom chord extensions where indicated.
- .4 Provide diagonal and horizontal bridgings and anchorages as required.

2.4 SHOP PAINTING

- .1 Clean, prepare and shop prime surfaces of steel joists to CSA S16.
- .2 Clean members of loose mill scale, rust, oil, dirt and other foreign matter. Prepare surfaces according to SSPC SP1, folled by Brush Off Blast Cleaning to SSPC SP7.
- .3 Apply one coat of primer in shop to steel surfaces to achieve dry film thickness of .065 mm to .080 mm maximum 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.
- .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 bolts, nuts, sharp edges and corners before prime coat is dry.

PART 3 - EXECUTION

- 3.1 EXAMINATION .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for steel joist framing 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 INSTALLATION .1 Do structural steel work: to CSA S16 and CSA S136.
- .2 Do welding: in accordance with CSA W59.
 - .3 Ensure installers are certified to CSA W47.1 for fusion welding and CSA W55.3 for resistance welding.
 - .4 Submit certification that welded joints are qualified by Canadian Welding Bureau.
- 3.3 CONNECTION TO EXISTING WORK .1 Verify dimensions and condition of existing work; report discrepancies and potential problem areas to Departmental Representative for direction before commencing fabrication.
- 3.4 FIELD QUALITY CONTROL .1 Inspection and testing of materials and workmanship will be carried out by testing laboratory designated by Departmental Representative.
- .2 Testing laboratory will inspect representative joists for integrity, accuracy of fabrication and soundness of welds. Testing
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- 3.4 FIELD QUALITY CONTROL (Cont'd) .2 (Cont'd)
laboratory will also monitor test loading of joists used by manufacturer to verify design and check representative field connections. Departmental Representative will determine extent of and identify all inspections.
- .3 Submit test report to Departmental Representative within 10 days after completion of inspection.
- .4 Contractor will pay costs of tests as specified in Section 01 29 83 - Payment Procedures: Testing Laboratory Services.
- 3.5 ERECTION .1 Erect steel joists and bridging as indicated to CSA S16 and in accordance with reviewed erection drawings.
- .2 Complete installation of 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 Departmental Representative.
- .4 Clean and touch up shop primer to bolts, welds, burned or scratched surfaces at completion of erection.
- 3.6 FIELD PAINTING .1 Paint: in accordance with Section 09 91 00 - Painting.
- .2 Touch up all damaged surfaces and surfaces without shop coat with primer to CISC/CPMA-2-75 in accordance with manufacturers' recommendations.
- 3.7 CLEANING .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.
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3.7 CLEANING
(Cont'd)

- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal and Section 01 35 21 - LEED Requirements.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.8 PROTECTION

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