

## PART 1 - GENERAL

- 1.1 REFERENCES
- .1 American Society for Testing and Materials International (ASTM)
    - .1 ASTM A82/A82M-07, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
    - .2 ASTM C260-06, Standard Specification for Air-Entraining Admixtures for Concrete.
    - .3 ASTM C309-07, Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
    - .4 ASTM C494/C494M-08a, Standard Specification for Chemical Admixtures for Concrete.
    - .5 ASTM C881/C881M-02, Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
  - .2 Canadian Standards Association (CSA)
    - .1 CSA-A23.1-09/A23.2-09, Concrete Materials and Methods of Concrete Construction/Test methods and Standard Practices for Concrete.
    - .2 CSA-A3000-03, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
      - .1 CSA-A3001-03, Cementitious Materials for use in Concrete.
    - .3 CAN/CSA-G30.18-09, Carbon Steel Bars for Concrete Reinforcement.
    - .4 CAN/CSA-O86-09, Engineering Design in Wood (Limit States design).
    - .5 CAN/CSA-S269.3-M92 (R2008), Concrete Formwork.
    - .6 Reinforcing Steel Manual of Standard Practice, RSIC, Fourth Edition, 2004.
- 1.2 CONSTRUCTION QUALITY CONTROL
- .1 Inspection and testing of concrete and concrete materials, including housekeeping pad grout and floor patching mortars, will be carried out in accordance with CSA-A23.1.
  - .2 Non-destructive Methods for Testing Concrete shall be in accordance with CSA-A23.2.
  - .3 Inspection or testing by Departmental Representative will not augment or replace Contractor's quality control nor relieve him of his contractual responsibilities.
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## PART 2 - PRODUCTS

- 2.1 MATERIALS
- .1 Grout for construction of housekeeping pads:  
Acceptable products:
    - .1 Masterflow 648 CP by BASF Building Systems.
    - .2 Alternate Materials: Approved by addendum in accordance with Instructions to Tenderers.
  - .2 Water: to CSA-A23.1.
  - .3 Aggregates: to CSA-A23.1/A23.2. Coarse aggregates to be normal density.
  - .4 Acrylic adhesive for dowel and anchor rod anchorage: to ASTM C881/C881M, Type IV, Grade 3, Class A, B, and C.
    - .1 Acceptable Products:
      - .1 Epcon Acrylic 7 by ITW Ramset/Red Head.
      - .2 HIT-HY 200 Adhesive Anchoring System by HILTI.
      - .3 Acrylic-Tie Anchoring System by Simpson Strong-Tie.
      - .4 Alternate Materials: Approved by addendum in accordance with Instructions to Tenderers.
  - .5 Patching Materials for Concrete Floor Repair, Patching and Levelling:
    - .1 For applications feather edge to 25 mm in thickness: Acceptable Products:
      - .1 MAPECEM 101 by Mapei.
      - .2 FLO-TOP 90 by Euclid.
      - .3 EMACO - R300 by BASF Building Systems.
      - .4 Alternate Materials: Approved by addendum in accordance with Instructions to Tenderers.
    - .2 For applications above 25 mm in thickness: (maximum lifts as specified by product manufacturer).
      - .1 MAPECEM 102 by Mapei.
      - .2 EUCO-SPEED by Euclid.
      - .3 EMACO R310 by BASF Building Systems.
      - .4 Alternate Materials: Approved by addendum in accordance with Instructions to Tenderers.
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- 2.1 MATERIALS  
(Cont'd)
- .6 Bonding Agent for bonding new concrete to prepared base concrete: High modulus, high strength, epoxy bonding adhesive.
    - .1 Acceptable Products:
      - .1 Sikadur 32 Hi-Mod.
      - .2 Concresive LPL by BASF Building Systems.
    - .2 Alternate Materials: Approved by addendum in accordance with Instructions to tenderers.
  - .7 Reinforcing steel: carbon steel, grade 400, deformed bars to CAN/CSA-G30.18, unless indicated otherwise.
  - .8 Cold-drawn annealed steel wire ties: to ASTM A82.
  - .9 Chairs, bolsters, bar supports, spacers: to CSA-A23.1. Non-metallic where within 40 mm of exposed concrete surfaces.

- 2.2 FABRICATION OF  
REINFORCING STEEL
- .1 Fabricate reinforcing steel in accordance with CSA-A23.1, ANSI/ACI 315, and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada, unless indicated otherwise.

PART 3 - EXECUTION

- 3.1 PLACING  
REINFORCMENT
- .1 Place reinforcing steel as indicated on drawings and in accordance with CSA-A23.1.
  - .2 Install, support and space reinforcement in alignment to position and clearances indicated and secure to supports.
  - .3 Ensure cover to reinforcing is maintained during concrete pour.
  - .4 Clean reinforcement before placing concrete.

- 3.2 PREPARATION
- .1 Ensure reinforcement and inserts are not disturbed during concrete placement.
  - .2 Protect previous work from staining.
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- 3.2 PREPARATION  
(Cont'd)
- .3 Clean and remove stains prior to application for concrete finishes.
  - .4 Prepare existing base concrete as detailed and as required to provide for installation of new work.
  - .5 Clean and prepare existing surfaces at interface of all new concrete work in accordance with CSA-A23.2, Clause 19.2.
  - .6 Remove all foreign materials, loose concrete, oil, grease and laitance, dust, and dirt on base concrete surface. Partially expose aggregate. Surface to be roughened to provide an amplitude of at least 5 mm.
- 3.3 CONSTRUCTION
- .1 Do concrete work, (including floor patching and housekeeping pad construction), in accordance with CSA-A23.1.
  - .2 Reinforcing steel to be secured in position prior to placing concrete.
  - .3 Ensure reinforcement and inserts are not disturbed during concrete placement.
  - .4 Cure concrete housekeeping pads and patching mortars on concrete surfaces as per manufacturer's written instructions.
  - .5 Finishing.
    - .1 Finish concrete materials in accordance with CSA-A23.1.
    - .2 Housekeeping Pads and Floor Patches:
      - .1 Class A, to Table 22, CSA A23.1, Steel Trowel Finish.
      - .2 Use procedures acceptable to Departmental Representative, or those noted in CSA-A23.1, to remove excess bleed water. Ensure surface is not damaged.
- 3.4 SITE TOLERANCE
- .1 Tolerances to be in accordance with CSA-A23.1 and as otherwise indicated.
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- 3.5 HOUSEKEEPING PADS
- .1 Provide reinforced concrete housekeeping pads/bases for floor mounted mechanical and electrical equipment as indicated on plans or in specifications of related trades.
  - .2 Coordinate with related trade for pad size and locations.
  - .3 Submit pad locations to Departmental Representative for review.
- 3.6 FIELD QUALITY CONTROL
- .1 Inspection and testing of concrete and concrete materials will be carried out by a Testing Laboratory designated by Departmental Representative in accordance with CAN/CSA-A23.1.
  - .2 Owner will pay for costs of tests as specified in Section 01 45 00 - Quality Control.
  - .3 Non-destructive Methods for Testing Concrete shall be in accordance with CAN/CSA-A23.2.
  - .4 Inspection or testing by Departmental Representative will not augment or replace Contractor quality control nor relieve him of his contractual responsibility.

PART 1 - GENERAL

- 1.1 REFERENCES
- .1 Canadian Institute of Steel Construction (CISC)/Canadian Paint Manufacturers Association (CPMA).
    - .1 Handbook of the Canadian Institute of Steel Construction.
    - .2 CISC/CPMA Standard 2-75, Quick-Drying Primer for use on Structural Steel.
  - .2 Canadian Standards Association (CSA International)
    - .1 CSA G40.20/G40.21-04 (2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
    - .2 CAN/CSA-S16-09, Limit States Design of Steel Structures.
    - .3 CSA W47.1-09, Certification of Companies for Fusion Welding of Steel.
    - .4 CSA W55.3-08, Certification of Companies for Resistance Welding of Steel and Aluminium.
    - .5 CSA W59-03 (R2008), Welded Steel Construction (Metal Arc Welding).
  - .3 The Society for Protective Coatings (SSPC).
    - .1 SSPC SP-2-06, Hand Tool Cleaning.
    - .2 SSPC SP-3-06, Power Tool Cleaning.
    - .3 SSPC SP-6-06, Commercial Blast Cleaning.
- 1.2 ACTION AND INFORMATIONAL SUBMITTALS
- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Shop Drawings:
    - .1 Each drawing submission to bear signature and stamp of qualified Professional Engineer registered or licensed in the Province of New Brunswick, Canada.
  - .3 Erection drawings:
    - .1 Submit erection drawings indicating 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.
  - .4 Fabrication drawings:
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| 1.2 ACTION AND<br>INFORMATIONAL<br>SUBMITTALS<br>(Cont'd) | .4 | Fabrication drawings: (Cont'd)<br>.1 Submit fabrication drawings showing<br>designed assemblies, components and<br>connections.  |
|   | .5 | Review of shop details and erection diagrams<br>will extend to general design concept only.<br>This review does not relieve the Contractor of<br>the responsibility for accuracy of the detail<br>dimensions, general fit-up of parts to be<br>assembled, adequacy of connection details, or<br>for errors or defects contained in the<br>details. |

## PART 2 - PRODUCTS

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| <u>2.1 MATERIALS</u>     | .1 | Structural steel: new to CSA-G40.20/G40.21<br>Grade 350W for W-sections, and Grade 300W for<br>plates, channels and angles.   |
|                          | .2 | Welding materials: to CSA W59 and certified<br>by Canadian Welding Bureau.  |
|                          | .3 | Shop paint primer: to CISC/CPMA 2-75.   |
| <u>2.2 FABRICATION</u>   | .1 | Fabricate structural steel in accordance with<br>CAN/CSA-S16 and in accordance with reviewed<br>shop drawings.  |
|                          | .2 | Minimum fillet weld size to be 5 mm.  |
| <u>2.3 SHOP PAINTING</u> | .1 | Clean, prepare surfaces and shop prime<br>structural steel in accordance with<br>CAN/CSA-S16.   |
|                          | .2 | Clean members, remove loose mill scale, rust,<br>oil, dirt and foreign matter. Prepare surface<br>according to SSPC-SP-6.   |
|                          | .3 | Apply one coat of primer in shop to steel<br>surfaces to achieve minimum dry film thickness<br>of 1.5 to 2.0 mils, except surfaces and edges<br>to be field welded. |
|                          | .4 | Apply paint under cover, on dry surfaces when<br>surface and air temperatures are above 5<br>degrees C.   |
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| <u>2.3 SHOP PAINTING</u><br>(Cont'd) | .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

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| <u>3.1 GENERAL</u> | .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. |

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| <u>3.2 CONNECTION TO EXISTING WORK</u> | .1 | Verify dimensions and condition of existing work, report discrepancies and potential problem areas to Departmental Representative for direction before commencing fabrication. |
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| <u>3.3 ERECTION</u> | .1 | Erect structural steel, as indicated and in accordance with CAN/CSA-S16 and in accordance with 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. |

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| <u>3.4 FIELD PAINTING</u> | .1 | New steel: Touch up damaged surfaces and surfaces without shop coat with primer to CISC/CPMA 2-75 except as specified otherwise. |
|                           | .2 | See related sections for top coat requirements.  |