

STEEL FABRICATIONS

1. GENERAL

1.1 Work Included

- .1 Installation of pump skid frame.
- .2 Base plates, bearing plates, and anchor bolts.
- .3 Existing guardrailing modifications.
- .4 Welds, bolts, washers and nuts, screws, plates, and brackets.
- .5 Prime items to be finished painted as indicated on the Drawings.
- .6 Galvanizing items as indicated on the Drawings.
- .7 Field touch up of primed, finish painted, and galvanized surfaces including field welding.

1.2 Design Standards, Code Requirements

- .1 Conform to requirements of CAN/CSA-S16, CSA-S136, the CISC "Code of Standard Practice for Buildings", and the Provincial Construction Safety Act.
- .2 Use loads and load combinations where shown on the Drawings and in accordance with the National Building Code of Canada with Manitoba Amendments.
- .3 Perform all welding in accordance with requirements of CSA-W59.

1.3 Qualifications

- .1 All work is to be performed by a firm certified by the Canadian Welding Bureau to the requirements of CSA-W47.1, in Division 2.

1.4 Inspection and Testing

- .1 Shop and field inspection and testing is to be performed by an Inspection and Testing Firm appointed and paid by the City.
- .2 Provide free access to all portions of work in the shop and in the field and cooperate with appointed firm.
- .3 Pay all additional costs for inspection and re-inspection due to defective workmanship or materials.

STEEL FABRICATIONS

- .4 Radiographic and magnetic particle inspection of welds is to be performed by the Inspection and Testing Firm, in accordance with CSA-W59 and ASTM E109, when required by the Contract Administrator.
- .5 If requested by the Contract Administrator, submit four (4) copies of mill test reports, properly correlated to materials actually used.
- .6 Welds are to be considered defective if they fail to meet quality requirements of CSA-W59.
- .7 Additionally, all welds are to be visually inspected.

1.5 Shop Drawings, Submittals

- .1 Submit Shop Drawings in accordance with Section 01300 - Submittals.
- .2 Provide a fabrication and erection schedule to the Contract Administrator prior to commencement of shop fabrication and field erection, in ample time to allow proper scheduling of inspection and testing.
- .3 Submit details of typical connections and special connections for review prior to preparation of Shop Drawings.
- .4 Shop Drawings and design briefs are to bear the seal of a Professional Engineer, registered in the Province of Manitoba.
- .5 As a minimum, clearly indicate profiles, sizes, spacing and locations of steel items, connections, attachments, size and type of fasteners, accessories, anchor bolt locations, and setting details. Include erection drawings, elevations, and details.
- .6 Indicate welded connections using welding symbols in compliance with CISC Welding Standards. Clearly indicate net weld lengths.

2. PRODUCTS

2.1 Materials

- .1 All materials are to be new. All steel to be shop primed or galvanized as indicated.
- .2 Structural steel: conforming to CSA-G40.21, Grade 350W, with minimum yield strength of 350 MPa.
- .3 Steel pipe for guardrailing: conforming to CSA-G40.21, Grade 350W, Class 'C', with minimum yield strength of 350 MPa.
- .4 Bolts, nuts, and washers: conforming to ASTM A325, finished to match members to which they attach.

STEEL FABRICATIONS

- .5 Anchor bolts: fabricated from material conforming to CSA-G40.21, Grade 350W, with yield strength 300 MPa; nuts and washers to be of equal or greater strength than bolts.
- .6 Welding materials: conforming to CSA-W59.
- .7 Concrete anchors: hot dip galvanized or stainless steel 304 as applicable, with epoxy adhesive or epoxy acrylate.
- .8 Galvanizing: conforming to CSA-G164.
- .9 Galvanizing touch-up: conforming to CAN/CGSB 1.181, Sealtight Galvafruid Zinc-Rich Coating by W. R. Meadows Ltd.
- .10 Primer: for surfaces to be finish painted to conform to CISC/CMPA 2-75.
- .11 Finish paint: Refer to Section 09900 – Painting – Concrete and Steel Fabrications.

2.2 Fabrication

- .1 Fabricate steel members in accordance with CAN/CSA-S16 and CAN/CSA-S136.
- .2 Verify all Drawing and on Site dimensions prior to commencing fabrication.
- .3 Design and detail all connections for loads shown.
- .4 Fabricate items of sizes and profiles detailed on Drawings, with joints neatly fitted and properly secured.
- .5 Fit and shop assemble in largest practical sections, for delivery to Site.
- .6 Supply all components required for proper anchorage of steel items. Fabricate anchorage and related components of same material and finish as steel fabrications, unless otherwise specified or shown.
- .7 Shop weld connections where possible, otherwise bolt connections. Cut off bolts flush with nuts.
- .8 Accurately cut and mill bearing plates to assure full contact of bearing surfaces prior to welding or bolting.
- .9 Accurately form all connections and joints with exposed faces flush, mitres and joints tight.
- .10 Close and weatherproof all gaps, butt joints, and connections exposed to exterior steel items. All exposed welds are to be flush with surface of welded members; grind or file smooth where required.

STEEL FABRICATIONS

- .11 Provide lugs, clips, brackets, hangers, and struts as required for attaching miscellaneous metal items securely to building structure.
- .12 Design and detail connections for structural steel so that corrosion potential is minimized. Cap and seal weld all exposed ends of HSS sections.

2.3 Shop Painting

- .1 Clean all members, remove loose mill scale, rust, oil, dirt, and other foreign matter.
- .2 Prepare surfaces of member to be painted according to SSPC SP 7. Prepare surfaces of members to be galvanized to SSPC SP. 10
- .3 Apply one coat of prime paint in the shop to all steel surfaces, except:
 - .1 Surfaces to be encased in concrete.
 - .2 Surfaces and edges to be field welded.
 - .3 Elements to be galvanized.
- .4 Apply paint under cover, on dry surfaces only and when surface and air temperatures are above 5°C.
- .5 Maintain dry condition and 5°C minimum temperature until paint is thoroughly dry.
- .6 Patch paint bolts, nuts, sharp edges, and corners one coat before full prime coat is applied.
- .7 Apply paint by brush or spray to a dry film thickness of 0.05 mm minimum.

3. EXECUTION

3.1 Damaged Members

- .1 Repair or replace members damaged during transit or erection, before securing in position.

3.2 Erection

- .1 Erect steel in accordance with CAN/CSA-S16 and Drawings.
- .2 Field connections are to be bolted or as shown on Drawings.
- .3 Do not field weld wet surfaces or during rain unless under cover.
- .4 Do not weld at temperature below 5°C except with express permission of the Contract Administrator.

STEEL FABRICATIONS

- .5 Conform to requirements of CSA-W59 for minimum preheat and interpass temperatures.
- .6 Make adequate provision for all erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of necessary permanent bracing.
- .7 Erection error is not to exceed requirements of CAN/CSA-S16. Obtain Contract Administrator's written permission prior to field cutting or altering steel members.
- .8 Install items plumb, square, and level, fit accurately, and maintain free from distortion or defects detrimental to appearance and performance.
- .9 After erection field prime welds, nuts, bolts, and washers and touch up abrasions and damage to shop primed surfaces.
- .10 Perform necessary cutting and altering for the installation of work of other sections, and as indicated on Drawings. No additional cutting is to be done without the acceptance of the Contract Administrator.
- .11 Perform all field assembly bolting and welding to match standard of shop bolting and welding. Bolts and screws are to be concealed whenever possible.
- .12 After installation, touch-up field bolts, nuts, welds, and scratched and damaged primed surfaces. Field touch-up primer to be same as shop primer.
- .13 After installation, touch-up galvanized items with zinc rich paint to match original finish.
- .14 Supply, to appropriate Sections, items required to be cast into or drilled into, or cored into concrete, complete with necessary setting templates.

END OF SECTION