

SECTION 05121

STRUCTURAL CAST STEEL COMPONENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Structural cast steel components including:
 - 1. Custom designed castings.

1.2 RELATED SECTIONS

- A. Section 03300 - Cast-In-Place Concrete.
- B. Section 05120 - Structural Steel.
- C. Section 09900 - Painting and Coating.

1.3 REFERENCES

- A. American Institute of Steel Construction (AISC):
 - 1. AISC 360 - Specification for Structural Steel Buildings.
- B. American Welding Society (AWS):
 - 1. AWS D1.1 - Structural Welding Code - Steel.
- C. ASTM International (ASTM):
 - 1. ASTM A802 – Standard Practice for Steel Castings, Surface Acceptance Standards, Visual Examination.
- D. Castings Technology International (Cti):
 - 1. SCRATA Surface Comparators.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Casting material test reports and non-destructive test reports.
- C. Shop Drawings for custom designed castings: Provide project specific, scaled, stamped engineered shop drawings and calculations including:
 - 1. Design, detail and engineer castings including establishing interior and exterior dimensions and the preparation of casting specifications including material selection, non-destructive examination requirements, and all casting production parameters.
- D. Welding Procedure Specifications (WPS) prepared in accordance with AISC 360 Chapter N shall be developed by the Steel Fabricator for the welded joints between the steel castings and the attaching structural steel elements.

1.5 QUALITY ASSURANCE

- A. Casting Inspector Qualifications: in accordance with American Society for Nondestructive Testing, Inc. (ASNT), TC-1A, or equivalent independent qualified agency.
- B. Engineer Qualifications: Professional engineer licensed in the jurisdiction of the project.
- C. Manufacturer Qualifications: Specializing in structural cast steel components and having

demonstrable experience in engineering, detailing, and supplying structural steel castings of a similar size as required for this project and for use in architecturally exposed structural steel. Member of the following organizations:

1. Associate Member of the American Institute of Steel Construction.
2. Affiliate Member of the National Council of Structural Engineers Associations.
3. Associate Supplier Member of the Canadian Institute of Steel Construction.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and handle materials to avoid damage. Protect materials from corrosion, deterioration, and damage.

1.7 SEQUENCING

- A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.8 COORDINATION OF TOLERANCES BETWEEN CASTINGS AND STRUCTURAL FRAMING

- A. The steel fabricator shall assume responsibility for the final coordination between cast steel product tolerances and the overall structural geometry, including allowances for fabrication and erection tolerances.
- B. The steel fabricator shall notify the manufacturer of any discrepancies between the custom casting design and the overall structural geometry in a timely manner so that these discrepancies can be resolved prior to the creation of casting tooling.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Cast Connex Corporation; 366 Adelaide Street East, Suite 425, Toronto ON. Tel: (416) 806-3521. Email: info@castconnex.com. Web: www.castconnex.com.
- B. Substitutions: Not permitted.

2.2 STRUCTURAL CAST STEEL COMPONENTS

- A. Custom Designed Castings: Provide as shown on the drawings, as manufactured by Cast Connex Corporation, including:
 1. Structural Requirements:
 - a. The steel castings shall be engineered to resist the forces indicated on the structural drawings and shall have general out-and-out dimensions as shown on the structural drawings.
 2. Architectural Requirements:
 - a. The exterior shaping of the steel castings shall generally conform to that shown on the drawings. All edges shall be radiused and the Manufacturer may draft flat surfaces away from parting lines.
 - b. Castings shall be furnished with visual inspection of exterior surfaces to confirm compliance with ASTM A802 Level 1.
 - c. Welds between the connectors and the attaching structural member shall be ground flush and smooth to the exterior of the connector or, if loading allows and the steel assembly incorporating the connectors will be within the building envelope, the welded joints may be prepared with a concave finish and an automotive body filler material that is compatible with the steel coating system may be used to mask the welded joint.

PART 3 EXECUTION

3.1 RELATED STEEL FABRICATION

- A. Cast steel products are to be delivered to the shop of the steel fabricator and incorporated into the structural steelwork by the steel fabricator.
- B. Base material joint preparation and cleaning:
 - 1. Prior to welding, steel casting surfaces for welding shall be prepared by the steel fabricator and shall be clean and free from paint, oil, rust, scale, slag, grease, and other foreign materials that are detrimental to welding.
- C. Unless otherwise noted on the drawings, cast steel products are to be coated along with and using the same coating system as applied to the attaching structural steel elements.

END OF SECTION