

Specification For The Erection Of Precast Prestressed Concrete Stringers - 7810

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1 GENERAL

1.1 Description

- 1.1.1 The Work shall consist of the erection of precast prestressed concrete girders in accordance with this specification, the bridge plans and the Special Provisions.
- 1.1.2 The design, supply and erection of any required temporary bracing shall also be included as part of the work.
- 1.1.3 If the substructure construction and the erection of girders are done under separate contracts, the Ministry shall provide the substructure, constructed to correct lines and elevations and properly finished, and shall establish the lines and elevations required for setting the girders.

2 MATERIALS

- 2.1 The Contractor shall be responsible for properly handling all material during unloading, storage, installation and erection. Materials damaged by the Contractor shall be repaired or replaced by the Contractor at their expense.

3 CONSTRUCTION

3.1 General

- 3.1.1 The Contractor provide the Ministry with lifting plans for review prior to lifting any precast prestressed concrete stringers. The lifting plan shall be stamped by a Professional Engineer registered in the Province of Saskatchewan who shall assume full responsibility to ensure that the

erection procedure is being followed, and complies with the Saskatchewan Employment Act and The Occupational Health and Safety Regulations, 1996. The pick-up points for the stringers shall be no farther than 1.5 metres from the end of the stringers.

- 3.1.2 The Contractor shall be responsible for undertaking all temporary work necessary to facilitate erection. Modification of the roadway embankment and the location and type of temporary dikes or berms shall be subject to the approval of the Ministry. All temporary material deposited within any stream area shall subsequently be removed and the excavated material disposed of in a manner and at locations acceptable to the Ministry. Embankments shall be restored to their original configuration by placing material in 150 mm layers and compacting to 95% of the maximum density as determined by STP205-7 Density-In-Place by Nuclear Gauge. Riprap and granular filter blanket, if disturbed, shall be rebuilt as directed by the Ministry.
- 3.1.3 The Contractor shall position the precast prestressed girders as per the Plans.
- 3.1.4 The concrete girders shall be picked up only by the lifting devices and such devices shall be cut off flush after erection. If blockouts are present, the blockouts shall be filled with an approved rapid curing mortar after erection.
- 3.1.5 The Contractor shall accurately position the bearings and ensure that the girders seat uniformly against the bearings. When shown on the plans, the bearings shall be welded to steel plates embedded in the girders. Welding shall be by the manual shielded metal-arc process, and shall be performed under the supervision of the Ministry, after the location of the bearings has been approved. Bearings shall be installed and positioned as per the Plans.
- 3.1.6 Anchorage hardware shall be installed as the girders are erected. Final tightening shall be delayed until the Ministry has inspected and approved the installation.

3.2 Precast Prestressed Box Girders

- 3.2.1 Each unit shall be installed tight to the adjacent stringers to minimize the occurrence of side or end gaps.
- 3.2.2 Gaps between stringers exceeding 10 mm shall be closed by repositioning the stringers.

- 3.2.3 Dowels cast into precast concrete caps shall be coated with grease and covered with $\frac{3}{4}$ " I.D. PVDF plastic tubing prior to positioning the concrete stringers in their final position.
- 3.2.4 After stringers have been placed in their final erected position, dowel holes in concrete stringers shall be filled with rapid curing mortar. Rapid curing mortar shall be as identified on the Plan.
- 3.2.5 $\frac{3}{4}$ " diameter x 2 $\frac{3}{4}$ " long galvanized A325 High Strength Bolts shall be used to connect each stringer to the adjacent stringer(s).
- 3.2.6 A325 bolts shall be tightened using the turn-of-nut method. Each A325 bolt shall be brought to snug tight using a spud wrench. After all A325 bolts have been brought to a snug tight condition, the Contractor shall drive a fully loaded tandem axle gravel truck a minimum of 5 times across the bridge in each lane. Each crossing shall start and end with the truck completely off of the stringers. After the truck has crossed 5 times in each lane, the bolts shall again be brought to a snug tight condition. After all A325 bolts are again in a snug tight condition, either the nut or the bolt head shall be given an additional $\frac{1}{3}$ of a turn while preventing the opposite part from turning.
- 3.2.7 After all A325 bolts have been tightened, connector pockets shall be filled with rapid curing mortar. Rapid curing mortar shall be as identified on the Plans.

3.3 I-Girders

- 3.3.1 When required, diaphragm reinforcing steel shall be threaded into the inside face of exterior I-girders before these girders are erected.
- 3.3.2 I-girders shall be braced after their erection. This bracing shall be so designed and installed that it will not interfere with the formwork and the placing of concrete for the diaphragms and deck. The Contractor shall submit his proposed method of bracing to the Ministry for approval, but this approval shall not in any way relieve the Contractor of his responsibility to design and install safe and satisfactory bracing.

4 PAYMENT

- 4.1 Payment for PRECAST PRESTRESSED CONCRETE STRINGER ERECTION shall be at the contract lump sum price. The lump sum price shall be full compensation for all labour, tools and equipment necessary for the unloading, storing, erection and bracing of the girders, for the installation of bearings, anchorage hardware and

diaphragm reinforcing steel, for the construction and removal of any temporary dikes or berms and for the modification of roadway embankment required to facilitate erection.