

Construction Specification for Flexible Bicycle Bollards

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TS 780.01 SCOPE

This specification covers the requirements for the supply and installation of three types of flexible bollards use for bicycle lanes.

TS 780.02 REFERENCES – Not Used

TS 780.03 DEFINITIONS – Not Used

TS 780.04 DESIGN AND SUBMISSION REQUIREMENTS

Contractor shall provide proof of installation training by Develotech Inc. for Removable Slim Bollards and Removable Slim Bollards – Object Markers and by Impact Recovery Systems for Removable Tubular Style Bollards.

TS 780.05 MATERIALS

TS 780.05.01 Removable Slim Bollard

The removable slim bollard shall be Cyclo-Zone removable slim bollard by Develotech Inc. or approved equivalent. Bollards shall be white with white reflective sheeting, or yellow with yellow reflective sheeting with the City of Toronto logo on the top reflective sheet.

Bollards shall be as follows:

- Height: 122 cm
- Width: 10.2 cm
- Thickness: 0.3 cm
- Width of the Reflective Sheeting: 76 mm
- Height of the Reflective Sheeting: 80 mm
- Number of Reflective Sheeting: 4X

TS 780.05.02 Removable Slim Bollard – Object Marker

The removable slim bollard – object marker shall be Cyclo-Zone flexible bollard with Object marker by Develotech Inc. or approved equivalent. Bollards shall be black with yellow reflective sheeting with object marker screen printed on both sides.

Bollards shall be as follows:

- Height: 122 cm
- Width: 10.2 cm
- Thickness: 0.3 cm
- Width of the Reflective Sheeting: 76 mm
- Height of the Reflective Sheeting: 914 mm
- Object marker Reflective Sheeting fixed on both sides

TS 780.05.03 Removable Tubular Style Bollard

The removable tubular style bollard shall be by Impact Recovery Systems or approved equivalent. Bollards shall be white in colour.

Bollards shall be as follows:

- Height: 91.44 cm
- Outer Diameter: 7.62 cm
- Short squeeze with pinched top with two 75 mm reflective bands.
- Surface Mount Fixed base, black

TS 780.06 EQUIPMENT – Not Used

TS 780.07 CONSTRUCTION

The Contractor to install removable slim bollard and removable slim bollard – object marker.

TS 780.07.01 Removable Slim Bollard – Installation on Asphalt Pavement

Drill four holes 19 mm in diameter and 102 mm in depth, pour in Bitu-Link epoxy, insert Cyclo-Zone anchors into each of the four holes and wait 24 hours for epoxy to cure. Fill the anchors with white grease and fasten the bollards using bolts.

TS 780.07.02 Removable Slim Bollard – Installation on Removable Precast Concrete Curb or Concrete Surfaces

Drill four holes 12.7 mm in diameter and 44.5 mm in depth, insert one drop-in anchor into each of the four holes. Fill the anchors with white grease and fasten the bollards using bolts.

TS 780.07.03 Removable Tubular Style Bollard

Installation in concrete is preferred. Drill four holes 15.875 mm in diameter and 76.2 mm in depth, clean holes. Utilizing the impact recovery anchor kit or an approved equivalent, use a small hammer, tap plastic sleeves into the holes until top of sleeve is flush with surface. Place bollard base over anchor hole and tighten lag screws snug into the base.

TS 780.08 QUALITY ASSURANCE – Not Used

TS 780.09 MEASUREMENT FOR PAYMENT

TS 780.09.01 Removable Slim Bollard

For measurement purposes, a count shall be made of the number of removable slim bollards installed.

TS 780.09.02 Removable Slim Bollard – Object Marker

For measurement purposes, a count shall be made of the number of removable slim bollard – object markers installed.

TS 780.09.03 Removable Tubular Style Bollard

For measurement purposes, a count shall be made of the number of removable tubular style bollards installed.

TS 780.10

BASIS OF PAYMENT

TS 780.10.01

Removable Slim Bollard – Item

Removable Slim Bollard Object Marker – Item

Removable Tubular Style Bollard – Item

Payment at the Contract Price shall be full compensation for all labour, Equipment and Material to do the work.