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## PART 1 - GENERAL

### 1.1 RELATED REQUIREMENTS

- .1 Section 05 50 00 Metal fabrication.

### 1.2 REFERENCES

- .1 The Aluminum Association (AA).
  - .1 AA DAF-45-R03, Designation System for Aluminum Finishes - 9th Edition.
- .2 American Society for Testing and Materials International, (ASTM).
  - .1 ASTM A 53/A 53M-02, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
  - .2 ASTM A 480/A 480M-03b, Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.
  - .3 ASTM B 241/B 241M-02, Standard Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube.
- .3 Canadian Standards Association (CSA International).
  - .1 CAN/CSA-G164-M92 (R1998), Hot Dip Galvanizing of Irregularly Shaped Articles.
- .4 The Master Painters Institute (MPI).
  - .1 Architectural Painting Specification Manual - March 1998 (R2002).

### 1.3 DESIGN REQUIREMENTS

- .1 Flagpole, bases and anchorage devices to resist minimum wind velocity of 145 km/h unflagged, 100 km/h flagged.
- .2 Description:
  - .1 Material: Aluminum.
  - .2 Exposed Height: 9.1M.
  - .3 Butt Diameter: 114mm.
  - .4 Top Diameter: 127mm.
  - .5 Flag Size: 66mm.

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#### 1.4 ACTION AND INFORMATIONAL SUBMITTALS

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- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit manufacturer's technical data and installation instructions for each type of flagpole.
- .3 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Indicate dimensions, finishes, base jointing, anchoring and support systems, cleats, halyard boxes, trucks, finials and base collar for flagpoles.
  - .2 Submit 6 copies of shop drawings of flagpoles and bases, showing general layout, jointing and complete anchoring and supporting systems.
- .4 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .5 Submit sample of flagpole.

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#### 1.5 QUALITY ASSURANCE

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- .1 Provide each flagpole as complete unit produced by single manufacturer, including fittings, accessories, bases and anchorage devices.

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#### 1.6 DELIVERY AND STORAGE

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- .1 Deliver, store, handle and protect materials in accordance with manufacturers written specification.
- .2 Spiral wrap each flagpole with heavy kraft paper, wood strip and steel band, or polyethylene wrap and pack in tubing for shipment.
- .3 Deliver flagpole in 3 pieces.
  - .1 When more than one piece is required, provide precision joints with self aligning internal splicing sleeve arrangement.

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#### 1.7 WASTE MANAGEMENT AND DISPOSAL

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- .1 Separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

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- .3 Collect and separate for disposal paper plastic polystyrene corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
  - .4 Separate for recycling and place in designated containers waste in accordance with Waste Management Plan.
  - .5 Fold up metal banding, flatten and place in designated area for recycling.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- .1 Aluminum:
  - .1 Aluminum Association alloy AA 6063-T5 seamless extruded aluminum tubing.
  - .2 Fabricated from seamless extruded tubing in accordance with ASTM B 241, alloy 6063 T6, having minimum tensile strength not less than 20 MPa and a yield point of 17 MPa. Heat treated and age hardened after fabrication.
- .2 Isolation coating: alkali-resistant bituminous paint or epoxy resin solution.

### 2.2 FABRICATION

- .1 Supply 9100 mm long flagpole as complete unit including base mounting brackets anchorage and fittings.
- .2 Cone tapered flagpole:
  - .1 Seamless, uniform, straight line tapered section above cylindrical butt section.
  - .2 Taper: 48 mm of run.
  - .3 Provide internal splicing, self-aligning sleeve of same material as flagpole for snug fitting, watertight field joints.
- .3 Swaged sectional flagpole:
  - .1 Telescoped or stepped.
  - .2 Join pipe sections of consecutively decreasing diameters.
  - .3 Form tight shop and field joints between inserted sections with shrunk or closely telescoped fit attained by reducing diameter of outer section where required by hydraulic bell-die swaging.

.4 Provide internal rest collar welded to inside of pipe for field joints.

.5 Weld exposed edge of section joint to form neat continuous bevelled weld. Grind smooth.

.6 Make joints air and water tight.

.4 Venetian entasis tapered flagpole: venetian entasis tapered, convex curved section, above cylindrical butt section.

.5 Do welding to appropriate CSA Standard, by welders certified by Canadian Welding Bureau. Finish exposed welds flush and smooth.

## 2.3 ACCESSORIES

.1 Finial: 152 mm diameter ball of 1.6 mm minimum thick, aluminum anodized to match flagpole finish.

.2 Truck assembly: cast aluminum ballbearing, nonfouling, revolving double truck assembly, finish to match flagpole.

.3 Cleats: 230 mm size, two per halyard, cast aluminum finish to match flagpole.

.4 Halyard: internal, two continuous halyards per flagpole; 10 mm (No.12 polypropylene, braided white, with steel or bronze core. Retaining loop and weights for internal halyard, nylon covered.

.5 Swivel snaps: two per halyard; aluminum with neoprene or vinyl covers.

.6 Cleat box: one per cleat; cast aluminum finish to match flagpole. Furnish hasp for padlock, hinged cover, and tamperproof screws. Include lockable cleat box.

## 2.4 FINISHES

.1 Aluminum.

.1 Impregnated colour anodic finish: colour to match Departmental Representative's sample.

.2 Appearance and properties of anodized finishes designated by the Aluminum Association as Architectural Class 1, Architectural Class 2, and Protective and Decorative.

## 2.5 FIELD FABRICATION

- .1 Fabricate roof-set support and braces for flagpole as indicated. Include aluminum braces; with turnbuckles, and roof anchors.
- .2 Fabricate mountings of same metal as flagpoles where exposed.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- .1 Shop apply isolation coating to metal surfaces of flagpole and base that will be encased in concrete below roof level.
- .2 Install flagpoles, base assemblies roof assemblies and fittings to shop drawings and manufacturer's instructions.