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**5.18 SUPPLY OF PERMANENT HIGHWAY SIGNS, POSTS AND BASES**5.18.1 GENERAL

The Work consists of supplying concrete bases, steel breakaway posts as applicable, cluster frames, wooden posts and designated highway signs as indicated in the special provisions, as shown on the plans or as directed by the Consultant.

5.18.2 MATERIALS5.18.2.1 **General**

All materials shall be supplied by the Contractor.

The Contractor shall supply the Consultant with certification from the supplier that the signs conform with the specifications and shall only purchase signs that are certified by the supplier to meet the specifications of the sheeting manufacturer.

5.18.2.2 **Signs**

Sign patterns shall conform to the Uniform Traffic Control Devices of Canada Sign Pattern Manual or to the Alberta Transportation Sign Pattern Manual. All other signs shall be as specified by the Consultant.

All lettering on signs shall conform to the series Type Highway Font from the Standard Alphabet for Highway Signs, available from the Federal Highway Administration (CHTO-20), Washington, D.C., 20590, unless otherwise specified by the Uniform Traffic Control Devices of Canada Sign Pattern Manual or the Alberta Transportation Sign Pattern Manual.

When signs not included in the Schedule of Signs are required, the Consultant will provide the following information:

Dimensions of the sign  
Dimensions of the lettering  
Colours of the sign  
Material specifications

5.18.2.3 **Wooden Posts**

Posts shall be pine or spruce structural framing no. 2 or better, as per NLGA 1980 Rules Par. 123 C. Posts are to be CCA (Copper, Chromate, Arsenate) pressure treated in accordance with CSA 080.14 and CSA 081.1. Material supplied shall be free from wane and shall be clean and dry.

Post sizes to be supplied shall be 100 mm x 100 mm, 100 mm x 150 mm and 150 mm x 200 mm dimension lumber, in lengths ranging from 365 cm to 610 cm.

5.18.2.4 **Cluster Frames**

The Contractor shall supply cluster frames suitable for the installation of multiple signs of up to 1.5 m<sup>2</sup> in accordance with diagram TEB 1.71A, C-Cluster Frame. The frames shall be painted with rust resistant

aluminum paint or a metal primer and aluminum paint suitable to the Consultant.

5.18.2.5 **Concrete Bases**

The Contractor shall supply bases in accordance with drawing TEB 1.83. The Contractor shall provide the Consultant with the manufacturer’s certification indicating that the base has been manufactured to specified requirements.

The Contractor shall supply all material necessary to install the base, including suitable backfill material. Cementitious and organic materials are not acceptable backfill.

5.18.2.6 **Breakaway Steel Sign Posts**

The Contractor shall supply steel posts as shown on drawing TEB 1.82.

The Contractor shall provide the Consultant with the material manufacturer’s certification that the material meets the Department’s specifications.

The Contractor shall supply zinc-rich paint (i.e. galvicon or equivalent) for repairs to any damaged galvanized surfaces.

5.18.2.7 **Mounting Hardware**

The Contractor shall supply all bolts and other hardware required to mount signs to posts or to frames and the frames to the posts. All bolts and hardware shall be galvanized.

5.18.2.8 **Material Specifications**

5.18.2.8.1 Reflective Sheeting

Reflective Sheeting shall meet or exceed the minimum requirements as specified in ASTM-D4956, Performance Requirements Type III, High Intensity Retroreflective Sheeting.

5.18.2.8.2 Reflective Sheeting for Select Permanent Highway Signs

For installations of the following signs:

- RA-1 "Stop",
- RA-2 "Yield",
- RB-22 "Wrong Way" and
- RB-23 "Do Not Enter",

the Contractor shall supply reflective sheeting complying with the minimum coefficient of retro-reflectivity (RA (cd/lux/m2)) as shown in the following table:

Observation Angle	Entrance Angle	White	Red
0.2°	-4°	370	98
0.2°	+30°	225	65
0.5°	-4°	275	70
0.5°	+30°	125	32

At the time of publication of this manual, 3M's Diamond Grade (VIP), Series 3990, reflective sheeting material is the only acceptable material for use on these signs, however, future products shown to meet these requirements will be posted on the Alberta Transportation Recognized Products list on the Department's web site.

5.18.2.8.3 **Backing**

- Plywood - Sanded one side
  - ½" 100/100 or 120/120 Hi-Density
  - ¾" 100/100 or 120/120 Hi-Density
- Aluminum

Extruded aluminum panels for major signs, shall be Alcan Shape #73247 with anodize treatment and shall conform to ASTM B221M, "Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes", Alloys 6061-T6 or 6063-T5.

Aluminum for standard signs shall be a minimum of 2 mm flat sheet tension levelled, sign grade aluminum and shall conform to the requirements of ASTM B209M, "Specification for Aluminum and Aluminum-Alloy Sheet and Plate", Alloys 6061-T6 or 5052-H38.

5.18.3 **MEASUREMENT AND PAYMENT**

5.18.3.1 **Wooden Posts**

No separate payment will be made for the supply of Sign Posts. The cost of supplying and delivering sign posts to the jobsite will be included in the applicable unit price bid for the sign post installation.

5.18.3.2 **Cluster Frames**

No separate payment will be made for the supply of Cluster Frames. The cost of supplying and delivering cluster frames to the jobsite will be included in the unit price bid for the cluster frame installation.

5.18.3.3 **Concrete Bases**

No separate payment will be made for the supply of Concrete Bases. The cost of supplying and delivering concrete bases to the jobsite will be included in the unit price bid for the concrete base installation.

5.18.3.4 **Breakaway Steel Posts**

No separate payment will be made for the supply of Breakaway Steel Posts.

The cost of supplying and delivering breakaway steel posts to the jobsite will be included in the applicable unit price bid for the steel post installation.

**5.18.3.5 Mounting Hardware**

No separate payment will be made for the supply of bolts, nuts washers or any other hardware required for breakaway post assembly or the mounting of signs, cluster frames or other assemblies necessary to complete the Work.

**5.18.3.6 Signs**

Measurement will be in square metres for the specific reflective sheeting and backing required.

Payment for signs will be made at the applicable unit price bid per square metre for "Supply of Signs, ½" Plywood ", "Supply of Signs, ¾" Plywood", "Supply of Signs, Aluminum", or "Supply of Signs, Extruded Aluminum". This payment will be full compensation for the manufacture and supply of the signs to the worksite and all labour, materials, equipment, tools and incidentals necessary to complete the Work.