

SECTION 621 - TRAFFIC CONTROL SIGNS

621.01 Description. This work includes furnishing and installing signs, sign panels and sign structures, and incidental necessary to complete the work according to the contract. *

The contract will allow alternate designs for overhead expressway sign supports of either steel or aluminum subject to the acceptance of the Engineer and the following conditions: *

(1) Designs shall be similar in appearance and construction detail to those shown in the contract. *

(2) Designs shall conform to AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals". The Contractor shall base the design on a wind speed, fifty (50) year mean recurrence interval of eighty (80) miles per hour. The wind pressure shall not be less than thirty (30) pounds per square foot. *

(3) The Contractor shall not change the foundations or other anchorages including anchor bolt details, unless accepted by the Engineer. *

(4) Designs shall have load carrying capacities at least equal to those shown in the contract. *

The Contractor shall submit the shop drawings, specifications, and structural calculations for alternate designs of overhead sign supports to the Engineer for acceptance before sixty (60) calendar days after the notice to proceed. The Contractor shall complete and detail the drawings and identify the materials that the Contractor will use by ASTM Designation, alloy and temper. If the Contractor will use stock or standard items, the Contractor may submit catalogue cuts instead of shop drawings. *

621.02 Materials. Concrete for sign structures shall be of the class specified in the contract and shall conform to Section 601 - Structural Concrete. Other materials shall conform to the following: *

Zinc Paints	708.02
Dark Green Enamel Paint	708.03
Paint Thinner	708.04
Signs	712.20
Reflector Marker	712.21
Flexible Delineator Post	712.51
Sign Posts	713.11

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Fasteners for Signs	713.12
Ground Mounted Destination and Expressway Sign Supports	713.13
Overhead Expressway Sign Supports	713.14

The contract will require Certification and Mill Test Reports for overhead sign support materials. The Contractor shall submit the following information:

- (1) A list of component parts showing:
 - (a) the description of each part,
 - (b) the source of fabrication of the material (including ASTM numbers where applicable) and
 - (c) a statement certifying compliance to the material specification.
- (2) A complete and detailed engineering computations shall accompany the shop drawings that justify the selection of dimensions and materials. A registered Structural Professional Engineer shall certify the computations.
- (3) A copy of the Mill Test Report for structural members (posts and beams) including the physical and chemical descriptions of material incorporated.

Retroreflective sheeting type shall conform to ASTM Designation: D 4956-89 or as amended according to Subsection 712.20.

621.03 Construction Requirements.

(A) Destination and Expressway Sign Supports. The Contractor shall submit-- shop drawings for acceptance before assembling according to Section 501 - Steel Structures.

Welding shall be continuous and shall conform to Section 501 -Steel Structures.

The weld metal at transverse joints shall extend to the sleeve, making the sleeve an integral part of the joint. Longitudinal welds shall be made by the submerged arc process. The Contractor shall ground flush the welds except fillet welds with the base material.

The Contractor shall hot-dip zinc-coat the exposed surfaces including the inner portion of the tubular posts and arms after fabrication. The Contractor shall hot-dip zinc-coat the upper ten (10) inches of anchor bolts. Zinc-coating shall be according to Section 501 - Steel Structures.

The Contractor shall paint the ground mounted destination and expressway sign supports and overhead expressway sign posts, crossarms and panel frames at the work site after proper preparation of the zinc-coated surfaces according to Section 501 - Steel Structures. The exception is that painting shall include one (1) prime coat of zinc-dust zinc-oxide primer followed by two (2) coats of dark green enamel paint as specified.

The aluminum sign supports shall conform to Section 713.14(B) - Aluminum Supports.

(B) Exit Number Panel Mounting. The Contractor shall submit shop drawings and specifications for the design of panel mountings and supports to attach exit number panels to expressway signs to the Engineer for acceptance before twenty (20) calendar days after the notice to proceed date.

The shop drawings shall be complete and shall specify and identify materials used according to ASTM standards. If the Contractor uses stock or standard items, the Contractor may submit catalogue cuts instead of shop drawings.

(C) Miscellaneous Sign Supports. The Contractor shall install permanent signs on posts as specified in the contract. The Contractor shall set the posts plumb at the required locations.

(1) Sign Posts. The Contractor shall use flange channel posts or square tube posts of the size and gauge specified in the plans for:

- (a) Regulatory, warning, and construction signs
- (b) Bikeway signs
- (c) School area signs
- (d) Route marker assemblies
- (e) Civil defense signs
- (f) Conventional motorist services signs

(2) Reflector Marker, Milepost Marker and Type II Object Marker Posts. Reflector marker, milepost marker and Type II object marker posts shall be either metal posts or flexible delineator posts as specified in the contract. The Contractor shall zinc-coat the metal posts. The metal posts shall be either 1.12 pounds per foot flanged channel posts or one and a half (1-1/2) inch, twelve (12) gage square tube posts.

(3) **Directional Sign Posts.** Directional sign posts shall be flanged channel posts or square tube posts of the size and gage specified in the contract.

(D) **Destination and Expressway Signs.** The Contractor shall be responsible for submitting shop drawings pertinent to the fabrication of destination and expressway signs.

The Contractor shall assemble and check the panels in the shop for straightness, alignment and dimensions. The Contractor shall correct the variations according to the contract.

The Contractor shall install the sign panels carefully and securely according to the contract. The Contractor shall replace chipped or bent signs at no cost to the State.

(E) **Reflector Marker.** The Contractor shall make the reflector marker according to the dimensions and notes shown in the contract:

(1) Reflector markers RM-1, RM-2, and RM-3 shall be either:

(a) Type III or IV retroreflective sheeting markers,

(b) Glass sphere reflector markers with four (4) inch by five (5) inch reflector units, or

(c) Plastic prismatic reflector markers with three (3) inch diameter reflector units.

(2) Reflector marker RM-4 shall be a Type III or IV retroreflective sheeting marker.

(3) Reflector marker RM-9 shall be either:

(a) Nine (9) three (3) inch round amber plastic prismatic reflectors fastened with blind rivets to a yellow Type III or IV retroreflective sheeting marker, or

(b) A yellow Type III or IV retroreflective sheeting marker of the dimensions shown in the contract.

(F) **Type II Object Marker.** The Contractor shall make Type II object markers according to the dimensions and notes shown in the contract. Reflective sheeting material shall conform to Subsection 712.20(C)(4) - Type III or IV Retroreflective Sheeting.

(G) **Splicing of Sheet Reflecting Material.** When the Contractor uses reflecting material as a background for signs with sheet aluminum backing, the Engineer will not allow splicing on legends. The reflecting material shall be of one (1) piece whenever the sign dimensions are four (4) feet by six (6) feet or less.

(H) **Electrical Installations.** Electrical installations shall conform to Section 622 - Roadway Lighting System. |

(I) **Removal of Existing Signs.** The Contractor shall remove, clean, and store the existing regulatory, warning, expressway, destination and directional signs and markers that the Contractor will not incorporate in the completed project at a location as ordered by the Engineer. The Engineer will decide which items are for disposal or storage. *|
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621.04 Method of Measurement. The Engineer will measure the number of traffic control signs, reflectorized delineator, and route markers assemblies as complete units of the type and design specified in the proposal. *|
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The Engineer will measure destination, expressway, directional and exit number sign panels by the square foot of sign face. *|
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The Engineer will measure destination and ground mounted expressway sign ("E" Designation) posts by the linear foot. *|
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The Engineer will measure overhead mounted expressway sign ("E" designation) post and arm of posts per each as complete units of the type and design specified in the proposal. *|
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The Engineer will measure directional sign ("DIR" designation) posts per each, complete in place. *|

The Engineer will measure the footings for destination and ground mounted expressway signs ("E" designation) as complete units for each type of footing as specified in the proposal. *|
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Measurement of contract items for construction of footings for overhead mounted expressway signs will be as follows:

(1) The Engineer will measure excavation according to Section 206 - Excavation and Backfill for Conduits and Structures. *|
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(2) The Engineer will measure concrete according to Section 503 - Concrete Structures. *|

(3) The Engineer will measure reinforcing steel according to Section 602 - Reinforcing Steel. *|
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When the Engineer accepts an alternate design, the method of measurement for the various contract items affected by the design shall be identical with the various original contract items shown in the contract. The Engineer will not measure the additional items that the Contractor requires for the alternate design. *|
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The Engineer will not measure removal and disposal and storing of existing and temporary signs and markers that the Contractor will not incorporate in the completed highway for payment. |

621.05

621.05 Basis of Payment. The Engineer will pay for the accepted quantities *| of traffic control signs, reflectorized delineators and route marker *| assemblies at the contract unit price per each for the type and design *| specified complete in place. The price shall be full compensation for excavating and backfilling, furnishing and installing materials, furnishing equipment, tools, labors and incidentals necessary to complete the work.

The Engineer will pay for the accepted quantities of destination, *| expressway, directional and exit number sign panels at the contract unit price *| per square foot for the type specified complete in place. The price shall be full compensation for furnishing and installing a complete sign panel, including enameling, cut-outs, post fasteners, sign framing, stiffeners, clamp assemblies, mountings and supports for attachment of exit number panels to expressway sign panels and necessary hardware, and furnishing equipment, tools, labors, materials and other incidentals necessary to complete the work.

The Engineer will pay for the accepted quantities of destination and *| ground mounted expressway sign ("E" designation) posts at the contract unit *| price per linear foot for the type specified complete in place. The price shall be full compensation for furnishing and installing materials and furnishing equipment, tools, labors and incidentals necessary to complete the work.

The Engineer will pay for the accepted quantities of overhead mounted *| expressway sign ("E" designation) post and arm at the contract unit price per *| each type as specified complete in place. The price shall be full compensation for furnishing equipment, tools, materials, labors and incidentals necessary to complete the work.

The Engineer will pay for the accepted quantities of directional sign *| ("DIR" designation) posts at the contract unit price per each, complete in *| place. The price shall be full compensation for furnishing and installing materials including anchor bases, brackets and necessary hardware, and furnishing labors, tools, equipment and incidentals necessary to complete the work.

The Engineer will pay for the accepted quantities of footings for *| destination and ground mounted expressway signs ("E" designation) at the *| contract unit price per each, complete in place. The price shall be full compensation for materials, labors, tools, equipment and incidentals necessary for the construction of the footings.

The Engineer will not pay for removing and disposing or storing of *| existing and temporary signs and markers that the Contractor will not *| incorporate in the completed highway separately. The Engineer will consider *| them incidental to the various contract items.

The Engineer will not make payment other than those specified herein *| for the construction of footings for overhead mounted expressway signs. The *| Engineer will pay for the work, materials, tools, equipment and incidentals *| required in the construction of the footings for overhead mounted expressway *| signs under the following contract items:

(1) **Footing Excavation.** The Engineer will make payment for footing *| excavation according to Section 206 - Excavation and Backfill for | Conduits and Structures. |

(2) **Concrete.** The Engineer will make payment for concrete in footings *| according to Section 503 - Concrete Structures. *|

(3) **Reinforcing Steel.** The Engineer will make payment for reinforcing *| steel according to Section 602 - Reinforcing Steel. *|

The Engineer will make payment under: *

Pay Item	Pay Unit
Panel for _____	Square Foot
_____ Post for _____	Linear Foot
Type _____ Post and Arms for _____	Each
Reflector Marker _____	Each
Regulatory and Warning Sign _____	Each
Type _____ Route Marker Assembly	Each
Directional Sign Post	Each
Type _____ Footing for _____ Sign	Each

When the Engineer accepts an alternate design, the total amount paid *| shall be full compensation for furnishing and installing materials and | furnishing equipment, tools, labors, and incidentals necessary to complete | the work. The Engineer will not make payment for additional materials, *| equipment, tools, labor and other incidentals that might become necessary to *| complete the installation due to the alternate design.