

**UNIFORM STANDARD SPECIFICATIONS
CLARK COUNTY AREA, NEVADA**

YEAR 2012 REVISIONS

<u>SECTION</u>	<u>TITLE AND REVISION SUMMARY</u>	<u>EFFECTIVE DATE</u>
627	"Permanent Signs" - Revisions to update types of sign sheeting materials, signs and pavement markings to reflect current industry standards.	07/01/12
631	"Street Name Signs" - Revisions to update types of sign sheeting materials, signs and pavement markings to reflect current industry standards.	07/01/12
716	"Sign Materials" - Revisions to update types of sign sheeting materials, signs and pavement markings to reflect current industry standards.	07/01/12

SECTION 627
PERMANENT SIGNS
 DESCRIPTION

627.01.01 GENERAL

- A. This work shall consist of furnishing, erecting, relocating, and installing signs, sign supports, and other materials required for highway signs in accordance with the current edition of the *Manual on Uniform Traffic Control Devices* (MUTCD) and these specifications, as shown on the plans, and as directed by the Engineer.
- B. This item does not include street name signs or construction signs used for traffic control during construction.
- C. The work shall generally consist of:
 - 1. Overhead signs, including concrete foundations, steel sign posts and frames, and aluminum sign panels with reflective sheeting.
 - 2. Ground mounted signs consisting of concrete foundations, steel sign posts, pole mounted signs, aluminum sign panels with reflective sheeting, and appurtenances.
- D. This work does not include sign illumination systems.

627.01.02 SHOP DRAWINGS

- A. When overhead sign structures are to be furnished, the Contractor shall submit to the Engineer 5 sets of shop drawings for each overhead sign structure for approval.
- B. Fabrication of the overhead sign structures shall not commence until the shop drawings have been approved by the Contracting Agency.
- C. Shop drawings for other than overhead signs will not be required; however, all signs shall conform to the plans and the MUTCD.
 - 1. For signs which are shown on the Sign Summary Sheets and are not included in the MUTCD, special sign design sheets shall be furnished by the Contracting Agency to the bidders of the project.
 - 2. The special design sheets shall include such information as letter heights, spacing between letters and words, borders, sign radii, and so forth.
 - 3. These signs shall conform to the special design sheets as well as the drawings noted in the plans.

MATERIALS

627.02.01 GENERAL

- A. Materials shall conform to Section [716](#), "Sign Materials."

627.02.02 REFLECTORIZATION

- A. All signs shall utilize Type XI retroreflective sheeting for sign background, letters, numerals, symbols, borders, and accessories.

- B. All letters, numerals, symbols, borders, and accessories shall be directly applied to the sign background.

627.02.03 LETTERS, NUMERALS, SYMBOLS, AND ACCESSORIES FOR GUIDE SIGNS

- A. All names of places and highways on guide signs shall be composed of lower case letters with initial capital letters.
 - 1. The initial capital letters shall be 1-1/3 times the loop height of the lower case letters.
 - 2. Other legends on guide signs shall be in capital letters.
- B. The initial capital letters and numerals used shall be Series E, modified by widening the stroke-width to approximately 1/5 the letter or numeral height.
- C. Tables of recommended letter spacing can be obtained from the FHWA.
- D. Arrows that are used for large directional guides shall be in direct proportion to the arrows shown in the MUTCD.

CONSTRUCTION

627.03.01 PANEL FASTENINGS

- A. The panel sections shall be provided with suitable fastenings, as shown on the plans, to permit easy attachment to the supporting frames.
 - 1. The fastenings shall be so designed as to carry the full design load with a factor of safety of not less than 1.5.
 - 2. Panel sections shall be provided with closure strips at the joints.
- B. Panel fastenings for use on sign panels covered with sign sheeting shall utilize nylon washers for contact between the sheeting and the metal washer.

627.03.02 CLOSURE STRIPS

- A. Closure strip shall be anchored by aluminum rivets as shown on the plans.
- B. Rivets shall be the same color as the sign face.
- C. Closure strips are required only on aluminum sign panels.

627.03.03 INSTALLATION

- A. Sign locations indicated on the plans are approximate only. Final determination of sign locations will be made in the field by the Engineer.
- B. Signs and sign islands shall be constructed to the lines and grades given by the Engineer and in accordance with the design and locations shown on the plans.
- C. All signs shall be erected as specified before, during, or immediately after the completion of bituminous plantmix surface operations.
- D. The date of installation, consisting of month and year, shall be permanently stamped on the back of each sign with metal dies and shall be visible only on close inspection. The stamp shall be placed on the lower right hand corner when facing the rear of the sign.
- E. Each sign face shall be thoroughly cleaned according to the reflective material manufacturer's recommendations.

1. All undesirable material that is visible on the face of the sign shall be removed.
 2. The use of abrasives or other cleaning material that will scratch or otherwise deface the sign shall not be permitted.
- F. Sign islands shall be constructed as roadway embankment in conformity with Section [203](#), "Excavation and Embankment."
1. Structure excavation and backfill shall conform to Section [206](#), "Structure Excavation," and Section [207](#), "Structure Backfill."
 2. Anchor bolts shall be set true to line and grade.
 3. Posts shall be plumb.
- G. Sign faces of all directional signs facing public traffic and directing such traffic to a portion of the project not yet open to public traffic shall have the message covered.
- H. Care shall be exercised at all times in the handling, storing, transporting, and erecting of the signs. Signs that are damaged shall be repaired or replaced at no additional cost to the Contracting Agency.
- I. Pipe sign posts may be field cut and drilled to adjust for local conditions when approved by the Engineer.
1. Flame cutting will not be permitted.
 2. All field cuts and abraded areas on steel posts shall be thoroughly cleaned and given 2 coats of paint having a high-zinc dust content conforming to Federal Specification MIL-P-21035.
- J. Extending the lengths of sign posts to adjust for local conditions by splicing or welding will not be permitted.

627.03.04 TESTS

- A. The Contractor shall verify that all required tests have been made by qualified testing laboratories as approved by the Contracting Agency.
- B. The Contractor shall furnish the Contracting Agency with a written certification that all required tests have been satisfactorily completed and that materials and fabrication thereof comply with all the requirements.

627.03.05 RELOCATION

- A. This work shall consist of temporary or permanent relocation of existing permanent sign panels, posts, and footings as shown on the plans and as directed by the Engineer.
- B. Existing sign panels and posts that are removed for relocation shall be stockpiled on the jobsite at locations determined by the Engineer and shall remain the property of the Contracting Agency.
- C. The Contractor shall remove and dispose of all concrete from sign posts prior to stockpiling as directed by the Engineer.
- D. Temporary relocation of permanent sign panels for public bus or transit stops shall be as indicated on the plans or as directed by the Engineer. Temporary locations for public bus or transit stops shall conform to Subsection [107.07](#), "Traffic and Access."

- E. The Contractor shall exercise care when removing and stockpiling signs for relocation. Signs that are damaged shall be repaired or replaced at no additional cost to the Contracting Agency.

METHOD OF MEASUREMENT

627.04.01 MEASUREMENT

- A. Permanent signs, other than signs listed as "Overhead," shall be measured for payment by the number of square feet of sign face surface. The square footage shall be determined from the dimensions of sign panels in the completed and accepted work.
- B. The quantity of "Permanent Signs, Relocate" to be measured for payment shall be the number of each sign relocated, temporary or permanent.
- C. Sign panels on permanent signs listed as "Overhead" signs shall be measured by the square foot of sign panel in the completed and accepted work.
- D. Measurement for payment of sign supports for permanent signs listed as "Permanent Overhead Sign Support Structures" shall be measured on a Lump Sum basis.
- E. All measurements will be made in accordance with Subsection [109.01](#), "Measurement of Quantities."

BASIS OF PAYMENT

627.05.01 PAYMENT

- A. Sign panels shall be paid for at the contract unit price bid per square foot for "Permanent Signs (Ground Mounted)," which shall be full compensation for furnishing all labor, materials, tools, supplies, equipment, and incidentals and for doing all the work involved in furnishing and erecting permanent signs (other than signs listed as overhead) complete in place as shown on the plans and as herein specified, including but not limited to structure excavation and backfill, concrete foundations, supports, sign islands, and making all required tests.
- B. Sign panels shall be paid for at the contract unit price bid per square foot for "Permanent Sign Panels (Overhead)" which shall be full compensation for furnishing all labor, materials, tools, supplies, equipment, and incidentals and for doing all the work involved in furnishing and erecting permanent sign panels (for signs listed as overhead signs) complete in place as shown on the plans and herein specified.
- C. Sign supports shall be paid for at the contract Lump Sum price bid for "Permanent Overhead Sign Support Structures" which shall be full compensation for furnishing all labor, materials, tools, supplies, equipment, and incidentals and for doing all the work involved in furnishing and erecting permanent sign supports (for all signs listed as overhead signs) complete in place as shown on the plans and as herein specified, including structure excavation and backfill, concrete foundations, cast-in-place concrete piles, structural steel posts and frame, sign islands, and making all required tests.
- D. The contract unit price bid per each for "Permanent Signs, Relocate" shall be full compensation for removal of sign panels and posts, removal and disposal of sign footing, stockpiling of existing sign panels and posts, installing existing sign panel at temporary location, furnishing and installing posts and new footings, and installing existing sign panels thereon and for furnishing all labor, materials, tools, supplies, equipment, and

incidentals necessary to complete the work as shown on the plans, as specified, and as directed by the Engineer.

- E. All payments will be made in accordance with Subsection [109.02](#), "Scope of Payment."
- F. Payment will be made under:

PAY ITEM	PAY UNIT
Permanent Signs (Ground Mounted).....	Square Foot
Permanent Sign Panels (Overhead).....	Square Foot
Permanent Overhead Sign Support Structures.....	Lump Sum
Permanent Signs, Relocate.....	Each

SECTION 631

STREET NAME SIGNS

DESCRIPTION

631.01.01 GENERAL

- A. Non-illuminated street name signs, mounting post, location, fabrication, and installation shall conform to these specifications and any specifications referred to as part of this specification.

631.01.02 STREET NAME SIGN FACES

- A. The legend shall include the name of the street with proper suffix, ordinal, and block number as assigned by the responsible agency for that jurisdiction, all in accordance with the Standard Drawings.

MATERIALS

631.02.01 GENERAL

- A. The finished face shall be applied to an aluminum sign blank conforming to the Standard Drawings.

631.02.02 SIGN LEGEND

- A. The legend shall be made by 1 of the following 3 methods:
1. By reverse screening with green (blue for the City of North Las Vegas) transparent ink on a white wide-angle prismatic retroreflective sheeting that conforms to the material specified in Subsection [716.03.01](#), "Reflective Sheeting," . When this method is used, the block number on the sign face may be 2-inch numerals, die-cut from white conforming to the material specified in Subsection [716.03.01](#) "Reflective Sheeting,", white, using pressure-sensitive adhesive.
 2. By applying white die-cut letters to green (blue for the City of North Las Vegas) wide-angle prismatic retroreflective sheeting that conforms to the material specified in Subsection [716.03.01](#) "Reflective Sheeting,".
 - a. When this method is used, the letters and numerals shall be die-cut from white sheeting conforming to the material specified in Subsection [716.03.01](#), "Reflective Sheeting,", white, and shall be applied using pressure-sensitive adhesive.
 - b. The sign fabricator shall supply the Contracting Agency with a written guarantee of workmanship in compliance with Section 716 "Sign Materials", stating that any lettering that peels or loosens from the sign face within the life requirement will be repaired, or the sign replaced, at no cost to the Contracting Agency.
 3. By applying green (blue for the City of North Las Vegas) electronic cuttable transparent overlay film to white wide-angle prismatic retroreflective sheeting that conforms to the material specified in Subsection [716.03.01](#), "Reflective Sheeting,".

CONSTRUCTION

631.03.01 STREET NAME SIGN INSTALLATION

- A. The fabricated signs shall be installed using the hardware and piping as shown on the Standard Drawings and as specified in Subsection [716.03.06](#), "Sign Hardware, Post," and Related Materials."
- B. The signs shall be installed on the corners of the intersection as indicated on an approved plan. Further, the signs shall be located on the P.C. line as indicated in the Standard Drawings.

631.03.02 EXCEPTIONS

- A. No exceptions to the above specifications shall be allowed without prior written consent from the Contracting agency.

METHOD OF MEASUREMENT

631.04.01 MEASUREMENT

- A. The quantity of street signs measured for payment will be the number of complete signs in place.
- B. All measurements will be made in accordance with Subsection [109.01](#), "Measurement of Quantities."

BASIS OF PAYMENT

631.05.01 PAYMENT

- A. Payment for street name signs shall be for each complete sign in place.
- B. All payments will be made in accordance with Subsection [109.02](#), "Scope of Payment."
- C. Payment will be made under:

PAY ITEM	PAY UNIT
Street Name Sign	Each

SECTION 716
SIGN MATERIALS

SCOPE

716.01.01 MATERIALS COVERED

- A. This specification covers the kind and quality of materials used in the construction and fabrication of traffic control devices used in temporary event zones and for permanent installations.

REQUIREMENTS

716.02.01 GENERAL

- A. The following materials shall conform to the requirements as noted:

Material	Section
Portland Cement Concrete	501
Reinforcing Steel	505

716.02.02 CERTIFICATES

- A. The Contractor shall ascertain that all required tests have been made by qualified testing laboratories as approved by the Contracting Agency.
- B. The Contractor shall furnish the Engineer with a written certification that all required tests have been satisfactorily completed and that materials and fabrication thereof comply with all the requirements.

716.02.03 SUBMITTALS

- A. Before fabrication is started, 5 sets of shop drawings for each overhead sign structure shall be submitted to the Engineer for approval.

PHYSICAL PROPERTIES AND TESTS

716.03.01 REFLECTIVE SHEETING

- A. Sheeting for all orange signs and devices shall be Fluorescent Orange with the exception of Type 1, Type 2, and Type 3 barricades, which shall be pre-striped white and non-fluorescent Orange sheeting.
- B. Fluorescent Yellow-Green sheeting shall be used on School, Bicycle, and Pedestrian signs, and related supplemental plates, or as directed by the Contracting Agency.
- C. Inks and films for symbols, legends and borders on sheeting shall be in accordance with the manufacturer's sheeting specification. Films shall be a durable, transparent, acrylic colored film coated with a transparent pressure-sensitive adhesive.
- D. Protective overlay film (anti-graffiti film for non-illuminated signs), shall be a durable, solvent resistant, transparent, fluoropolymer film, coated with a transparent pressure-sensitive adhesive, and applied to the finished sign in accordance with the manufacturer's sheeting specification.

- E. **Non-Reboundable Signs and Devices:** Retroreflective sheeting shall conform to ASTM D4956, Type XI. The warranty for the sheeting shall be twelve years for non-fluorescent sheeting, ten years for Fluorescent Yellow and Fluorescent Yellow-Green sheeting, and three years for Fluorescent Orange sheeting,
- F. **Reboundable Devices and Delineators:** Retroreflective sheeting shall conform to ASTM D4956, Type IV and Type VI with the following modifications:
1. Minimum Coefficient of Retroreflection (R_A) [$\text{cd}/\text{fc}/\text{ft}^2$ ($\text{cd}/\text{lx}\cdot\text{m}^2$)] for both Type IV and Type VI shall conform to the requirements for ASTM D4956, Type VI as shown in Table 716-1
 2. Daytime color – the chromaticity coordinates and total luminance factor shall conform to the requirements as described in 23 CFR Part 655 Appendix to Subpart F.

TABLE 716-1 MINIMUM COEFFICIENT OF RETROREFLECTION (R_A)

Observation Angle	Entrance Angle	White	Fluorescent Orange	Fluorescent Yellow	Fluorescent Yellow-Green
0.2°	-4°	500	200	300	400
0.2°	30°	200	80	120	160
0.5°	-4°	225	90	135	180
0.5°	30°	85	34	51	68

- G. Fluorescence Luminance Factor (L_F) for all Fluorescent sheeting shall conform to the requirements in Table 716-2.
- H. Unless otherwise specified, the Contractor shall use only Type IV, Type VI, and Type XI products listed in the NDOT QPL.

TABLE 716-2 FLUORESCENCE LUMINANCE FACTOR (Y_F)

Color	Y_F Initial Requirement	Y_F Minimum Requirement
Fluorescent Orange	20	15
Fluorescent Yellow	25	20
Fluorescent Yellow-Green	30	20

I. .Field Performance Life Requirement:

1. The supplier shall warranty that signs supplied shall have an effective retroreflective life of not less than that specified above.
2. The retroreflective sheeting shall be considered unsatisfactory and failing this life requirement if it has deteriorated due to natural causes to the extent that 1 or more of the following is true:
 - a. The sign is ineffective for its intended purpose when viewed from a moving vehicle under normal day and night conditions.
 - b. The values for the coefficients of retroreflection for Type IV, Type VI, and Type XI are less than 50 percent of the required values for the same sign when new in accordance with ASTM D4956.
 - c. The sign material's integrity or adhesion to the sign substrate has substantially failed.
3. Sheeting which fails the life requirement within the specified required lifetime shall be replaced by the supplier at no cost to the Contracting Agency.
4. Replaced sheeting warranty shall begin at time of replacement and the warranty shall be to the life requirement per sheeting type.
5. All finished signs shall be dated with the month and year of delivery in order to ascertain compliance with the life requirements.

716.03.02 BLANK**716.03.03 ALUMINUM SIGN PANELS (FOR REFLECTIVE SHEETING)**

- A. Sheet aluminum for sign panels shall be of 0.100-inch aluminum alloy Alclad 5052-H38 or 6061-T6 and shall conform to ASTM B209.
- B. Sign panels for street name signs shall be as required in the Standard Drawings.
- C. Sign panel sections shall be fabricated of standard width aluminum sheets not less than 4 feet wide, except that not more than 2 sheets for any 1 sign may be cut not less than 18 inches in width to provide sign widths to nearest 6-inch increments. Panel sections shall run from the top edge to the bottom edge of the sign without horizontal joints.
- D. The aluminum shall be free of all corrosion, white rust, and dirt.
 1. All sign dimensions, metal gauge, and bolt holes shall conform to the plans and these specifications.
 2. Blanks shall be cleaned, degreased, and chromated or otherwise properly prepared according to methods recommended by the sheeting manufacturer.
- E. Metal shall not be handled, except by device or clean canvas gloves, between all cleaning operations and the applications of the sign background material. There shall be no opportunity for the aluminum to come in contact with greases, oils, or other contaminants prior to application of the background material.
- F. All fabrication, including cutting, shall be completed prior to the cleaning process.
 1. Metal panels shall be cut to size and shape and shall be free of defects resulting from fabrication.
 2. The surface of all sign panels shall be a plane surface.

716.03.04 BLANK**716.03.05 OVERHEAD SIGN STRUCTURES AND SIGN FRAMES**

- A. The materials used in the fabrication of overhead sign structures and footings shall conform to the requirements specified below.
- B. **Sign Frames:** Bars, plates, and shapes shall be structural steel conforming to ASTM A36.
- C. **Sign Pipe Posts:**
1. Pipe posts shall be welded or seamless steel pipe conforming to ASTM A53, Grade B.
 2. At the option of the Contractor, posts may be fabricated from structural steel conforming to ASTM A36 or ASTM A283, Grade D, except that plates more than 1 inch in thickness shall be structural steel conforming to ASTM A373.
- D. **Sign Steel Walkway Gratings:** Steel walkway gratings shall be furnished and installed in accordance with details shown on the plans and the following provisions:
1. Gratings shall be the standard product of an established grating manufacturer.
 2. Material for gratings shall be structural steel conforming to ASTM A36.
 3. For welded type gratings, each joint shall be full resistance welded under pressure to provide a sound, completely beaded joint.
 4. For mechanically locked gratings, the method of fabrication and interlocking of the members shall be approved by the Engineer, and the fabricated grating shall be equal in strength to the welded type.
 5. After fabrication, gratings shall be hot-dip galvanized.
 6. Gratings shall be free from warps, twists, and other defects affecting their appearance or serviceability.
 - a. The tops of the bearing bars and cross members shall be in the same plane.
 - b. Gratings distorted by the galvanizing process shall be straightened.
- E. **Bolts and Nuts:**
1. Bolts and nuts shall conform to ASTM A307.
 2. Bolted connections shall conform to Subsection [506.03.10](#), "Bolts and Bolted Connections."
- F. Bearing plates and gusset or stiffener plates shall be of the sizes and dimensions shown on the plans and shall be galvanized after fabrication.
1. Steel shall conform to ASTM A36.
 2. Galvanizing shall conform to ASTM A123.
 3. All welding shall conform to Subsection [506.03.20](#), "Welding."
- G. Anchor bolts, nuts, and washers shall be of structural carbon steel conforming to Section [710](#), "Structural and Eyebar Steel," and shall be galvanized in accordance with ASTM A153 or cadmium plated in accordance with ASTM A165, Type TS.
1. The top portion of anchor bolts shall be galvanized or cadmium plated so that the galvanized or cadmium plated portion will extend at least 2 inches into concrete.
 2. Anchor bolts shall be of the size, shape, and length shown on the plans.

- H. All bolts, nuts, clamps, and metal washers not otherwise noted shall be galvanized or cadmium plated.
 - 1. Cadmium plating shall conform to ASTM A165, minimum thickness as prescribed for grade Type TS.
 - 2. Galvanizing shall conform to ASTM A153.
- I. Supporting frame shall be manufactured in accordance with the plans and requirements herein specified.
 - 1. All metal parts shall be galvanized after fabrication, in accordance with Section [715](#), "Galvanizing."
 - 2. When permission is granted by the Engineer to zinc coat a surface by means other than hot-dip galvanizing, the metalizing process shall be used to place the zinc.
 - 3. Metalizing shall be performed in accordance with AWS specifications and the thickness of the sprayed zinc coat shall be at least 5 mils.
- J. Truss frames shall be fabricated to the largest practical sections prior to galvanizing.
 - 1. Splice locations shall be submitted to the Engineer for approval.
 - 2. Contractor shall not commence fabrication until such splice locations are approved.
- K. All welding on the fabrication of the structure shall be done by welders qualified in accordance with AWS requirements using the inert-gas shielded-arc method.
 - 1. Welds shall be free from cracks, blow holes, and other irregularities.
 - 2. Welds shall be wire brushed or otherwise cleaned.
 - 3. No field welding on any part of the structural assembly will be permitted.

716.03.06 SIGN HARDWARE, POST, AND RELATED MATERIALS

- A. Bearing plates and gusset or stiffener plates shall be of the sizes and dimensions shown on the plans and shall be galvanized after fabrication.
 - 1. Steel shall conform to ASTM A36.
 - 2. Galvanizing shall conform to ASTM A123.
 - 3. All welding shall conform to Subsection [506.03.20](#), "Welding."
- B. Structural I-beam steel shall be galvanized in accordance with ASTM A153 or cadmium plated in accordance with ASTM A165, Type TS.
- C. Anchor bolts, nuts, and washers shall be of structural carbon steel conforming to Section [710](#), "Structural and Eyebar Steel."
 - 1. The top portion of anchor bolts shall be galvanized or cadmium plated so that the galvanized or cadmium plated portion will extend at least 2 inches into the concrete.
 - 2. Anchor bolts shall be of the size, shape, and length shown on the plans.
- D. Steel pipe for posts shall conform to ASTM A53, Grade B, and shall be galvanized.
 - 1. Galvanized steel pipe posts shall be of the diameter and length shown on the plans.
 - 2. The top of the posts shall be fitted with a cover.
 - 3. Posts showing damage shall be repaired or rejected.

- E. Wood posts shall be constructed of Douglas Fir, West Coast Hemlock, or any other equivalent stress-rated wood material, at the option of the Contractor.
1. The wood material shall be construction grade, free of heart center, minimum stress rating of 1200f, and graded in accordance with the provisions contained in Section [718](#), "Timber."
 2. Sweep shall not exceed 0.08 feet in 10 feet.
- F. Aluminum stiffeners, braces, and stringers used as horizontal supporting structural members shall be of aluminum alloy 6061-T6.
1. These extrusions shall have a continuous, inverted "T" slot.
 2. The inverted "T" shall accommodate positionable stainless steel clamping devices.
 3. The clamping devices shall provide complete freedom of alignment within the slot, forming an interlocking clamp system for fastening the sign to the post.
 4. The sign support system described herein shall conform to AASHTO *Standard Specifications for Highway Signs, Luminaires and Traffic Signals*, latest revision, and be rated for minimum wind velocities of 80 mph.
 5. All bolts, nuts, clamps, and metal washers in contact with this aluminum channel shall be Stainless Steel Type 304.
 6. The system shall be compatible with all I-beam, steel post, and wood post systems.
- G. All other bolts, nuts, clamps, and metal washers in contact with other aluminum components shall be galvanized or cadmium plated.
1. Cadmium plating shall conform to ASTM B766, minimum thickness as prescribed for Class 5 Type 3.
 2. Galvanizing shall conform to ASTM A153.
- H. Cantilever arm brackets shall be used when it is desired to offset the entire length of a sign to 1 side of a post or pole.
1. Cantilever arm brackets shall consist of a stainless steel or aluminum head mounted to an extruded aluminum "TEE" section.
 2. The "TEE" section shall have a continuous slot that will accept signs up to 1/8 inch thick.
 3. If sign thickness, including aluminum sign panel and reflective sheeting, exceeds the width of the "TEE" section slot, sign panel thickness may be reduced to not less than 0.080 inch, or reflective sheeting may be eliminated in the bracket area, as directed by the Engineer.
 4. The heads shall be designed to accept 3/4-inch stainless steel banding.
 5. The "TEE"-shaped extrusions shall be made from 6061-T6 aluminum alloy.
 6. The cantilever arm brackets shall be used to support the entire length of the sign on both the top and the bottom.
 7. The sign shall be attached to the brackets using 1/8-inch rivets spaced according to the hole pattern pre-drilled on the extruded "TEE" section.
 8. The cantilever arm brackets shall be compatible with any size and shape of post or pole.

9. The system shall be designed for use on signs up to 72 inches in length with a maximum surface area of 9.5 square feet.
10. Signs with surface area greater than 2 square feet shall be fastened to round posts or poles using 3/4-inch by 0.030-inch stainless steel banding.
11. When mounting to square posts or flat surfaces, compatible stainless steel threaded studs or bolts can be used as well as 3/4-inch by 0.030-inch stainless steel banding.
12. For signs less than 2 square feet in surface area, 5/8-inch banding is acceptable.