

SPECIFICATIONS AND NOTES APPLICABLE TO ALL OVERHEAD SIGN DRAWINGS:

FROM JUNE 30, 1999, ONLY OVERHEAD SIGN STRUCTURES INCLUDED IN THE AUTHORITY'S APPROVED LIST WILL BE ACCEPTED. AFTER THIS DATE, IF AN OVERHEAD SIGN STRUCTURE HAS NOT BEEN INCLUDED IN THE AUTHORITY'S APPROVED LIST, IT WILL BE SUBMITTED FOR EVALUATION AND INCLUSION IN THE APPROVED LIST BEFORE USING IT IN ANY OF OUR CONSTRUCTION PROJECTS. THE CONTRACTOR SHALL NOT BEGIN THE CONSTRUCTION OF ANY OVERHEAD SIGN STRUCTURE IF THE AUTHORITY HAS NOT APPROVED THE STRUCTURE.

OVERHEAD SIGN STRUCTURES THAT INCLUDE VARIABLE MESSAGE SIGNS ARE NOT INCLUDED IN THIS PROCEDURE AND PROJECT BY PROJECT SHOP DRAWINGS WILL CONTINUE TO BE SUBMITTED.

SIGN STRUCTURES WITH CANTILEVER ARMS, SPANS AND/OR SIGN AREAS WHICH EXCEED THE MAXIMUM VALUES INCLUDED IN THE STANDARD DRAWINGS WILL BE APPROVED ON A CASE BY CASE BY SUBMISSION OF SHOP DRAWINGS BY THE CONTRACTOR AS A SUBSIDIARY OBLIGATION.

DESIGN SPECIFICATIONS AND GENERAL CRITERIA:

OVERHEAD SIGN STRUCTURES SHALL BE DESIGNED USING THE AASHTO STANDARD SPECIFICATION FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS--SECOND DRAFT, MAY 1998, OR LATER DRAFTS, OF SAID SPECIFICATION. HEREIN AFTER REFERRED TO AS THE AASHTO GUIDE.

THE FOLLOWING DESIGN CONTROLLING CRITERIA WILL BE USED:

- WIND SPEED 125 MILES PER HOUR
- WIND IMPORTANCE FACTOR (IR) 1.00
- GUST EFFECT FACTOR (G) 1.14
- HEIGHT AND EXPOSURE FACTOR (Kz) 0.94
- WIND DRAG COEFFICIENT (Cd) SHALL BE AS INDICATED IN THE DRAWINGS.
- SNOW AND ICE LOADS NEED NOT BE USED.

WELDING SHALL CONFORM TO THE LATEST EDITIONS OF THE AWS STRUCTURAL WELDING CODE. FOR STEEL AND ALUMINUM REFER TO THE AASHTO STANDARD SPECIFICATIONS. FOR WELDING STRUCTURAL STEEL HIGHWAY BRIDGES.

THE CONTRACTOR IS RESPONSIBLE FOR SURVEYING THE OVERHEAD SIGN STRUCTURE LOCATION AND OBTAINING ADEQUATE AND ACCURATE SURVEY DATA THAT WOULD ALLOW THE DESIGN AND DIMENSIONING OF THE PROPOSED OVERHEAD SIGN STRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR CONDUCTING UNDERGROUND SURVEYS OF THE SIGN LOCATION BY MEANS OF TEST PITS OR REMOTE SENSING DEVICES TO ASCERTAIN THE EXISTENCE OR NON EXISTENCE OF CONFLICTS WITH UNDERGROUND OBSTRUCTIONS. IF UNDERGROUND OR OVERHEAD OBSTRUCTIONS EXIST, THE CONTRACTOR WILL OBTAIN THE ENGINEER'S CONSENT TO RELOCATE THE SIGN STRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR SELECTING THE APPROPRIATE TYPE OF FOOTING DRILLED SHAFT OR SPREAD FOOTING TO MINIMIZE OBSTRUCTIONS AND CONFLICTS WITH THE MAINTENANCE OF TRAFFIC. ALL OF THESE ACTIONS WILL BE UNDERTAKEN AS A SUBSIDIARY OBLIGATION.

THE FACE OF THE VERTICAL STRUCTURAL SUPPORTS SHALL BE OFFSET FROM THE EDGE OF SHOULDER, EDGE OF PAVEMENT OR CURB LINE, AS MAY BE APPLICABLE, A MINIMUM OF 2 METERS TO ALLOW FOR THE DEFLECTION OF THE METAL BARRIERS.

THE OVERHEAD SIGN SUPPORT STRUCTURE SHALL BE DESIGNED SO THAT THE MINIMUM VERTICAL CLEARANCE FROM ANY POINT IN THE PAVEMENT OR SHOULDER SHALL BE 5.50 METERS (18.5 FEET).

- OVERHEAD SIGNS WILL NOT BE ILLUMINATED UNLESS INDICATED OTHERWISE IN THE PLANS.
- MAXIMUM DEVIATION FROM VERTICAL, FOR ANY COMPONENT, IN ANY DIRECTION SHALL BE 1/8" PER FOOT.
- MAXIMUM DEVIATION FROM HORIZONTAL, FOR ANY COMPONENT, IN ANY DIRECTION SHALL BE 1/8" PER FOOT.

MATERIALS SPECIFICATIONS:

ALL ALUMINUM MATERIALS SHALL MEET THE REQUIREMENTS OF THE ASTM B-209 ALLOYS 5052 H-32, 5052 H-36, 5052 H-38, 5086 H-34, 5154 H-36 OR 6061 T-6 SHEETS AND PLATES SHALL MEET THE REQUIREMENT OF ASTM B-209 EXTRUDED TUBE. BARS, RODS AND SHAPES, SHALL MEET THE REQUIREMENT OF ASTM B-221. STANDARD STRUCTURAL SHAPES SHALL MEET THE REQUIREMENT OF ASTM 308. SIGN PLATE SHEETS ARE TO BE DEGRADED, ETCHED AND NEUTRALIZED. NO BENTONITE PERMITTED ON SHEETS. ALUMINUM WELDING RODS SHALL MEET THE REQUIREMENTS OF ALUMINUM ASSOCIATION FILLER WIRE.

ALL STRUCTURAL STEEL SHALL MEET THE REQUIREMENTS OF AASHTO M 223 GRADE 36 (ASTM A 572, GRADE 36) OR AASHTO M 270 GRADE 36 (ASTM 709, GRADE 36).

ALL REINFORCEMENT STEEL SHALL CONFORM TO THE AUTHORITY'S STANDARD SPECIFICATION 602.

ALUMINUM BOLTS SHALL MEET THE REQUIREMENTS OF ALUMINUM ASSOCIATION ALLOY 024-T4 (ASTM F468M). THE BOLTS SHALL HAVE AN ANODIC COATING AT LEAST 0.005 MM THICK AND BE CHROMATE SEALED. LOCK WASHERS SHALL MEET THE REQUIREMENTS OF ALUMINUM ASSOCIATION ALLOY 7075-T6 (ASTM B221M). NUTS SHALL MEET THE REQUIREMENTS OF ALUMINUM ASSOCIATION ALLOY 6061-T6 OR 6262-T9 (ASTM F457M).

MATERIALS SPECIFICATIONS (CONT.):

STEEL BOLTS, NUTS, AND WASHERS - ALL BOLTS, NUTS AND WASHERS, SHALL BE CLASS 9.8 MANUFACTURED ACCORDING TO THE GEOMETRIC SPECIFICATIONS INCLUDED IN ANSI B18.2.3.5M USING MATERIAL CONFORMING TO ASTM F568 CLASS 9.8 (900 MPa TENSILE STRENGTH AND 720 MPa YIELD STRENGTH). THREADS SHALL CONFORM TO ANSI B1.13M CLASS 6g. BOLT HEADS SHALL BE MARKED WITH THE SYMBOL "9.8" AND THE MANUFACTURER'S IDENTIFICATION SYMBOL AS SPECIFIED IN ASTM F568 SECTION 9. ASTM F568 CLASS 9.8 BOLTS ARE ESSENTIALLY EQUIVALENT TO SAE J429 GRADE 5 BOLTS.

NUTS SHALL BE MANUFACTURED ACCORDING TO THE DIMENSIONS AND TOLERANCES IN ANSI B18.2.3.5M. SELF-LOCKING NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M298 (ASTM A307) FOR CLASS 12 NUTS. NUT THREADS SHALL CONFORM TO ANSI B1.13M FOR CLASS 6H.

ALL BOLTS IDENTIFIED AS A307 SHALL CONFORM WITH ASTM A307 REQUIREMENTS AND BE PROVIDED WITH CORRESPONDING NUT AND WASHER. BOLTS A307 SHALL BE EITHER GRADE A OR B AND SHALL BE HOT-DIP GALVANIZED, UNLESS OTHERWISE SPECIFIED. BOLT HEAD MAY BE EITHER HEX OR CARRIAGE.

HIGH STRENGTH STEEL BOLTS, NUTS, AND WASHERS SHALL CONFORM TO AASHTO M 164, TYPE 1 HOT DIP GALVANIZED.

TOLERANCES - ALL MATERIALS SHALL BE IN ACCORDANCE WITH THE GOVERNING ASTM SPECIFICATIONS.

GALVANIZING - ALL STEEL SHAPES, ANGLES, TEES AND PLATES SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH AASHTO M 111 (ASTM A 123). BOLTS AND NUTS SHALL BE ZINC-COATED TO EITHER AASHTO M232 (ASTM A153) FOR CLASS C OR AASHTO M298 (ASTM B695) CLASS 50, TYPE 1.

SIGN FACE TORQUE - ALL SIGN FACE CORNERS SHALL BE ROUNDED WITH A 12" RADIUS.

REFLECTING SHEETING - ALL BOLTS SHALL BE TIGHTENED ONE-SIXTH TURN BEYOND NUT IS IN FULL CONTACT WITH THE PLATE OR POST.

1. REFLECTIVE SHEETING USED ON ALL SIGNS SHALL CONFORM TO ASTM D4956, TYPE III THE BACKING SHALL BE CLASS 1 OR 2.

2. THE SIGN BACKGROUND, LEGEND AND BORDER SHALL BE APPLIED BY THE SILK SCREEN PROCESS, BY DIRECT APPLICATION OF CUT OUT CHARACTERS, OR BY THE APPLICATION OF ELECTRONIC CUTTABLE FILM, SERIES 1170, AS MANUFACTURED BY JM OR ELECTRONIC CUTTABLE TRANSPARENT OVERLAY FILM, SERIES 4800, AS MANUFACTURED BY STIMSONITE. REGARDLESS OF THE METHOD OF FABRICATION, THE BACKGROUND, LEGEND AND BORDER SHALL MEET THE REFLECTIVITY STANDARDS OF ASTM D4956, TYPE III.

3. NO SPLICES IN THE REFLECTIVE SHEETING WILL BE PERMITTED WHEN THE SIGN HEIGHT IS 4' OR LESS. ON SIGNS WITH HEIGHTS IN EXCESS OF 4', HORIZONTAL SPLICES WILL BE PERMITTED ON 4' SPACING, WITH THE LAST SPLICE PROVIDING FOR THE REMAINING SIGN HEIGHT. THE SPLICE UPPER PANEL SHALL OVERLAP 3/8" MAX. THE LOWER PANEL.

4. REFLECTIVE SHEETING FROM DIFFERENT MANUFACTURERS SHALL NOT BE MIXED WITHIN THE SAME SIGN PANEL. SIGN PANELS FABRICATED WITH REFLECTIVE SHEETING FROM DIFFERENT MANUFACTURERS SHALL NOT BE MIXED WITHIN THE SAME SIGN SUPPORT.

DIMENSIONS - ALL DIMENSIONS SHOWN ARE IN METERS UNLESS OTHERWISE SPECIFIED.

DIMENSIONS GIVEN IN MILLIMETERS SHALL BE INDICATED WITH: mm

AREAS GIVEN IN SQUARE METERS SHALL BE INDICATED WITH: SQM

DIMENSIONS GIVEN IN FEET SHALL BE INDICATED WITH: SQF

AREAS GIVEN IN SQUARE FEET SHALL BE INDICATED WITH: SQF

SIGN PANELS: - SIGN PANELS, WIND BEAMS, HANGERS AND THEIR ATTACHMENT TO THE OVERHEAD STRUCTURE SHALL BE DESIGNED AS ILLUSTRATED IN THESE STANDARD DRAWINGS.

EFFECTIVE DATE: OCTOBER 2000

COMMONWEALTH OF PUERTO RICO
DEPARTMENT OF TRANSPORTATION
AND PUBLIC WORKS
HIGHWAY AND TRANSPORTATION AUTHORITY

OVERHEAD SIGNS SPECIFICATIONS AND NOTES		RECOMMENDED BY: <i>[Signature]</i>
		DEPUTY EXEC. DIR. FOR TRAFFIC AND TOLL ROADS DATE: 21-10-00
APPROVED BY: <i>[Signature]</i>		EXECUTIVE DIRECTOR DATE: 26-10-00
DATE 08-2000	BY R E V I S I O N	STD. OHTS DWG. 1 OF 20
	ADDED MATERIAL SPECIFICATIONS LV.	