REQUEST FOR QUOTATIONS

The West Virginia Parkways Authority will receive sealed proposals for the following:

Pole and Arm Assembly for Overhead Signs 13 & 52

Proposals will be received at the office of the WV Parkways Authority, Administration Building, 3310 Piedmont Rd., Charleston, WV until **2PM on Wednesday, April 12th, 2023.** If proposals are mailed via the U. S. Postal Service regular mail, they must be addressed to the WV Parkways Authority, P. O. Box 1469, Charleston, WV 25325. This mail is picked up by the Authority once a day between 7:00 and 8:00 a.m. However, Drop-Off, Express Mail One Day Service, Federal Express, United Parcel Service (UPS), etc. must be delivered /sent to the West Virginia Parkways Authority, 3310 Piedmont Rd., Charleston, WV 25306. Faxed or emailed bids will not be accepted.

It shall be the bidders' responsibility to determine their method of transmittal such that their bids will arrive in the Authority's office prior to the scheduled bid opening. The Authority cannot waive or excuse late receipt of a proposal which is delayed and late for any reason. Late submissions will not be accepted and will remain unopened. Any proposal received after the proposal opening date and time will be immediately disqualified in accordance with applicable law and administrative rules and regulations applicable to the Authority. Changes to the Request for Quotation may be posted at any time to our website www.wvturnpike.com under the Purchasing tab. It is the Vendors responsibility to check the website. Any addendum issued must be signed and submitted with your RFQ.

All proposals **must** be enclosed in a sealed envelope. The outside of the envelope must include the name and address of the proposer and clearly marked as follows:

Attn: Purchasing Department

RFQ: Pole and Arm Assembly for Overhead Signs 13 & 52

Bid Opening Date: 4/12/23

Specifications are available at www.wvturnpike.com

The West Virginia Parkways Authority reserves the right to reject any and/or all proposals. Prospective vendors are responsible for all toll charges incurred while providing goods or services to the West Virginia Parkways Authority.

The WVPA is an Equal Opportunity Employer.

SECTION 1.0 INSTRUCTIONS TO VENDORS SUBMITTING BIDS: The attached documents contain a solicitation for proposals. Please read these instructions and all documents in their entirety. These instructions provide critical information about requirements that if overlooked could lead to disqualification of a Vendor's proposal. All bids must be submitted in accordance with the provisions contained in these instructions and the Solicitation. Failure to do so may result in disqualification of such Vendor's proposal.

1.1 Questions
All questions must be submitted in writing. Questions regarding this RFQ should be directed to Margaret Vickers, Director of Purchasing, Phone 304 926-1900, fax 304 926-1909 or email: mvickers@wvturnpike.com. Deadline to submit written questions: Monday, April 10th, 2023 by 12pm EST. Non-written discussions, conversations, or questions and answers regarding this solicitation are preliminary in nature and are nonbinding. Submitted emails should have the proposal solicitation name in the subject line. Only information issued in writing and added to the Solicitation by an official written addendum is binding.

1.2 Registration
Prior to contract award, the apparent successful Vendor must be properly registered with the West Virginia Purchasing Division www.wvoasis.gov, WV Secretary of State, WV State Tax Department, as applicable, and any other entities as necessary. Each of these entities has different fees that may be applicable to their respective registration requirements.

1.3 Purchasing Affidavit
Vendors are required to sign, notarize and submit the Purchasing Affidavit stating that neither the Vendor nor related parties owe a debt to the State in excess of $1,000.00. **The affidavit must be submitted with the Vendor's proposal.** A copy of the Purchasing Affidavit is included herewith.

1.4 Traditional Vendor Preference: Vendors that meet certain requirements are entitled to a price preference when bidding on 1) motor vehicles and 2) construction and maintenance equipment and machinery used in highway and other infrastructure projects. Vendors must request the preference in writing at the time of bid submission and provide (at the time of bid submission) all documentation necessary to prove its entitlement to the preference requested to be eligible. This preference is applied by increasing the bids of other vendors in comparison with the preference recipient.

1.5 Reciprocal Preference: The state of West Virginia applies a reciprocal preference to all solicitations for commodities and printing in accordance with W.Va. Code § 5A-3-37(b). In effect, non-resident vendors receiving a preference in their home states will see that same preference granted to West Virginia resident vendors bidding against them in West Virginia.
In order to receive the reciprocal preference, vendors must identify themselves as a West Virginia vendor, provide (at the time of bid submission) all documentation required by W. Va. CSR § 148-1-6.4.d.1. to prove its status as a resident of West Virginia, and request in writing (at the time of bid submission) that reciprocal preference be applied. The required documentation must include, but is not limited to:

A. A Certificate of Good Standing from the West Virginia Tax Division;

B. Documentation filed with the Secretary of State showing the state of incorporation, the address of all officers, the corporate headquarters, the address of the principal place of business, and other pertinent information. Entities not required to file with the Secretary of State may provide an affidavit confirming that the headquarters or principal place of business is in West Virginia, along with a copy of a utility bill in the name of the business entity;

C. A copy of the most recent personal property tax ticket showing taxes have been paid; and

D. D. An affidavit confirming that the business entity has paid all applicable business taxes imposed by Chapter 11 of the West Virginia Code.

1.6 SWAM Preference: A non-resident vendor certified as a small, women owned, or minority-owned (SWAM) business, pursuant to W. Va. Code § 5A-359, shall be provided the same preference made available to any resident vendor. The SWAM rules found in W. Va. § 148 C.S.R. 22-9 further explain that a non-resident SWAM business will receive the highest preference made available to a resident vendor in the solicitation for which the SWAM business has submitted a bid. In order to obtain this preference, however, a non-resident SWAM business must identify itself as such in writing with the bid and must be properly certified under the rules governing certification pursuant in W. Va. § 148 C.S.R. 22-1 et seq.

2.0 AWARD CRITERIA

2.1 It is the Authority's intent to open this procurement to a wide audience of bidders. The specifications outlined herein are general in nature describing a unit that the Authority feels best meets its needs. However, the Authority will consider any reasonable alternates to the specifications if the bidder can demonstrate that the proposed alternate is comparable in performance, quality and functionality.

2.2 The Authority realizes that certain models can have features beneficial to the Authority even though such features may not be specifically described in the technical specifications, Section 6.0. The vendor is to submit available literature and supporting documentation describing the unit in as much detail as possible. If the vendor wishes to point out certain beneficial features of his proposed unit, it may do so in a separate document included in its bid submittal package. In evaluating the bids the Authority may consider any special or unique features not included in the technical specifications. The Authority will award the bid to the vendor that provides the best overall value to the Authority whether or not the vendor has the lowest bid.

2.3 The Authority reserves the right to reject any or all proposals or to waive any non-consequential irregularities or informalities in proposals received. The Authority reserves the right to accept the proposal that will, in the Authority's judgment, best serve the interest of the Authority regardless of whether such proposal is the lowest cost submitted.

WEST VIRGINIA PARKWAYS AUTHORITY
MAINTENANCE DIVISION
PROCUREMENT SPECIFICATIONS

POLE and ARM ASSEMBLY for OVERHEAD SIGNS 13 & 52

The West Virginia Parkways Authority, hereafter "Authority", is accepting quotations for providing a new pole and arm assembly for Overhead Signs 13 & 52. The design number for Overhead Signs 13 & 52 assemblies shall be DAC-24. The height shall be field verified as per the Standard Drawings. The pole and arm assembly shall be constructed with galvanized steel as per the attached Specifications. The existing sign panel shall be utilized and modified as needed for the new pole and arm assembly.

Scope of Work

The vendor shall be responsible for submitting a quotation on providing each new pole and arm assembly. Minor adjustments to the detail are acceptable; however, each vendor is required to obtain approval from the Authority prior to submitting proposals that vary from the attached detail. The work here shall meet all standards for compliance with Local, State and Federal code guidelines.

All design specifications, base plate, pole, and arm dimensions shall be shown on the fabrication drawings along with required weld sizes. The Authority requires that each set of drawings be stamped by a West Virginia Registered Professional Engineer.

Testing

All material, fabrication and testing shall be in accordance with the enclosed specifications and West Virginia Division of Highways Standard Detail Sheets TE4-3A and TE4-5, January 2019.

Specifications

The governing specifications for the pole and arm assemblies are as follows:

Design Standards

- AASHTO LRFD Specification for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 1st Edition with latest Interim Revisions
- AISC 360-10, Specifications for Structural Steel Buildings
- WVDOH Standard Specifications Roads and Bridges, 2023
- AASHTO LRFD Bridge Design Specifications, 9th Edition

Manufacturing Standards

- Fabrication shall be in accordance with ANSI/AISC 360-10, as applicable
- All welding shall be in accordance with the latest edition of the ANSI/AWS D1.1 Structural Welding Code

Shipping

The sign shall be dropped off by the Vendor at the following location:

374 George Street
Beckley, WV 25801

Other

Any and all questions pertaining to these specifications or this procurement process must be in **writing** and submitted to:

Margaret Vickers, Director of Purchasing
West Virginia Parkways Authority
3310 Piedmont Rd. Charleston, WV 25306
Phone: (304) 926-1900
Email; mvickers@wvturnpike.com

QUOTATION SUBMISSION PAGE

POLE & ARM ASSEMBLY

FOR

OVERHEAD SIGNS 13 & 52

Bid Opening 4/12/23 @ 2PM

Total Lump Sum Price _____

Estimated Delivery Date_____

SUBMITTED BY:

COMPANY NAME _____

ADDRESS _____

PHONE NUMBER _____

FAX NUMBER _____

EMAIL ADDRESS _____

COMPANY CONTACT _____

SIGNATURE _____

VENDOR REGISTRATION NUMBER _____
www.wvoasis.gov

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

CONSTRUCTION CONTRACTS: Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

ALL CONTRACTS: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceed five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (*W. Va. Code* §61-5-3) that: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: _____

Authorized Signature: _____ Date: _____

State of _____

County of _____, to-wit:

Taken, subscribed, and sworn to before me this ___ day of _____, 20___.

My Commission expires _____, 20___.

AFFIX SEAL HERE **NOTARY PUBLIC** _____

2ND ADDENDUM TO MASTER SERVICE SUBSCRIPTION AGREEMENT

STATE AGENCY: WEST VIRGINIA PARKWAYS AUTHORITY
VENDOR:
COMMODITY:

AGREEMENT ADDENDUM

In the event of conflict between this addendum and the agreement, this addendum shall control:

1. **DISPUTES** – Any references in the agreement to arbitration or to the jurisdiction of any court are hereby deleted
2. **HOLD HARMLESS** - Any provision requiring the Agency to indemnify or hold harmless any party is hereby deleted in its entirety
3. **GOVERNING LAW** – The agreement shall be governed by the laws of the State of West Virginia. This provision replaces any references to any other State's governing law.
4. **TAXES** - Provisions in the agreement requiring the Agency to pay taxes are deleted. As a State entity, the Agency is exempt from Federal, State, and local taxes and will not pay taxes for any Vendor including individuals, nor will the Agency file any tax returns or reports on behalf of Vendor or any other party.
5. **PAYMENT** –Payments for goods/services will be made in arrears only upon receipt of a proper invoice, detailing the goods/services provided or receipt of the goods/services, whichever is later. Notwithstanding the foregoing, payments for software licenses, subscriptions, or maintenance may be paid annually in advance.
6. **INTEREST** – Any provision for interest or charges on late payments is deleted. The Agency has no statutory authority to pay interest or late fees.
7. **NO WAIVER** – Any language in the agreement requiring the Agency to waive any rights, claims or defenses is hereby deleted.
8. **FISCAL YEAR FUNDING** – Service performed under the agreement may be continued in succeeding fiscal years for the term of the agreement, contingent upon funds being appropriated by the Legislature or otherwise being available for this service. In the event funds are not appropriated or otherwise available for this service, the agreement shall terminate without penalty on June 30. After that date, the agreement becomes of no effect and is null and void. However, the Agency agrees to use its best efforts to have the amounts contemplated under the agreement included in its budget. Non-appropriation or non-funding shall not be considered an event of default.
9. **STATUTE OF LIMITATION** – Any clauses limiting the time in which the Agency may bring suit against the Vendor, lessor, or individual, or any other party are deleted.
10. **SIMILAR SERVICES** – Any provisions limiting the Agency's right to obtain similar services or equipment in the event of default of non-funding during the term of the agreement are hereby deleted.
11. **FEES OR COSTS** – The Agency recognizes an obligation to pay attorney's fees or costs only when assessed by a court of competent jurisdiction. Any other provision is invalid and considered null and void.
12. **ASSIGNMENT** – Notwithstanding any clause to the contrary, the Agency reserves the right to assign the agreement to another State of West Virginia agency, board or commission upon thirty (30) days written notice to the Vendor and Vendor shall obtain the written consent of Agency prior to assigning the agreement.
13. **LIMITATION OF LIABILITY** – The Agency, as a State entity, cannot agree to assume the potential liability of a Vendor. Accordingly, any provision limiting the Vendor's liability for direct damages to a certain dollar amount or to the amount of the agreement is hereby deleted. Limitations on special, incidental or consequential damages are acceptable. In addition, any limitation is null and void to the extent that it precludes any action for injury to persons or for damages to personal property.
14. **RIGHT TO TERMINATE** – Agency shall have the right to terminate the agreement upon thirty (30) days written notice to Vendor. Agency agrees to pay Vendor for services rendered or goods received prior to the effective date of termination.
15. **TERMINATION CHARGES** – Any provision requiring the Agency to pay a fixed amount or liquidated damages upon termination of the agreement is hereby deleted. The Agency may only agree to reimburse a Vendor for actual costs incurred or losses sustained during the current fiscal year due to wrongful termination by the Agency prior to the end of any current agreement term.
16. **RENEWAL** – Any reference to automatic renewal is deleted. The agreement may be renewed only upon mutual written agreement of the parties.
17. **INSURANCE** – Any provision requiring the Agency to purchase insurance for Vendor's property is deleted. The State of West Virginia is insured through the Board of Risk and Insurance Management, and will provide a certificate of property insurance upon request.
18. **RIGHT TO NOTICE** – Any provision for repossession or equipment without notice is hereby deleted. However, the Agency does recognize a right of repossession with notice.
19. **ACCELERATION** – Any reference to acceleration of payments in the event of default or non-funding is hereby deleted.
20. **CONFIDENTIALITY** – Any provision regarding confidentiality of the terms and conditions of the agreement is hereby deleted. State contracts are public records under the West Virginia Freedom of Information Act.
21. **AMENDMENTS** – All amendments, modifications, alterations or changes to the agreement shall be in writing and signed by both parties. No amendment, modification, alteration or change may be made to this addendum without express written approval of the Purchasing Division and the Attorney General.

ACCEPTED BY:

WEST VIRGINIA PARKWAYS AUTHORITY,
an agency of the State of West Virginia

Signed: _____
Title: _____
Date: _____

VENDOR

Company Name: _____
Signed: _____
Title: _____
Date: _____

Revised 11/22/19

GENERAL TERMS & CONDITIONS
REQUEST FOR QUOTATION (RFQ) AND REQUEST FOR PROPOSAL (RFP)

1. Awards will be made in the best interest of the West Virginia Parkways Authority.

2. The Authority may accept or reject in part, or in whole, any proposal.

3. All quotations are governed by the West Virginia Code and the Legislative Rules of the Purchasing Division and The Authority's purchasing rules.

4. Prior to any award, the apparent successful vendor must be properly registered with the Purchasing Division and have paid the required registration fee.

5. Payment may only be made after the delivery and acceptance of goods or services.

6. Interest may be paid for late payment in accordance with the West Virginia Code.

7. Vendor preference, if applicable, will be granted upon written request in accordance with the West Virginia Code.

8. Agencies of The State of West Virginia are exempt from federal and state taxes and will not pay or reimburse such taxes.

9. The Authority's Director of Purchasing may cancel any Purchase Order/Contract upon 30 days written notice to the vendor.

10. The laws of the State of West Virginia and the Legislative Rules shall govern all rights and duties under the Contract, including without limitation the validity of this Contract.

11. Any reference to automatic renewal is hereby deleted. The Contract may be renewed only upon mutual written agreement of the parties.

12. BANKRUPTCY: In the event the vendor/contractor files for bankruptcy protection, this Contract may be deemed null and void, and terminated without further order.

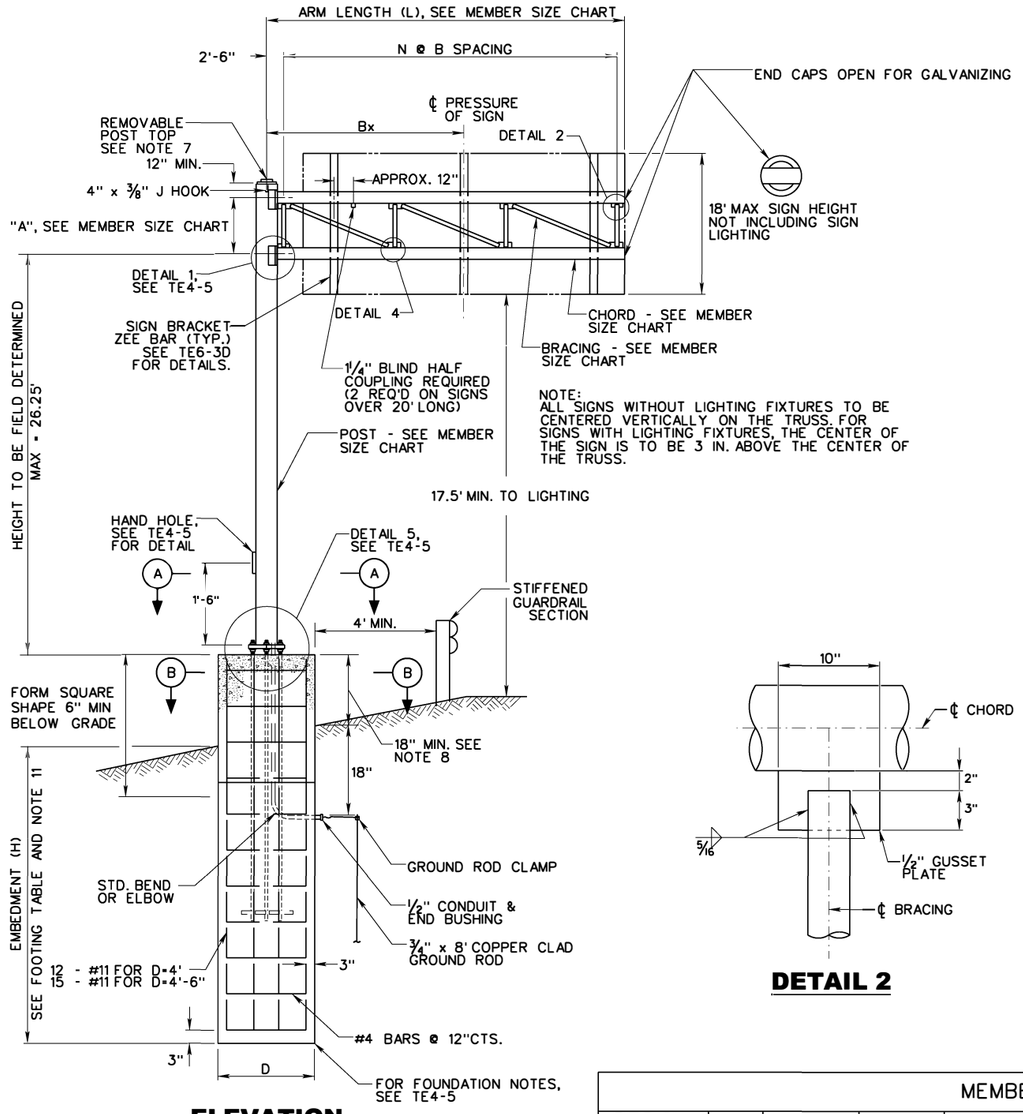
13. HIPAA Business Associate Addendum - The West Virginia State Government HIPAA Business Associate Addendum (BAA), approved by the Attorney General, and available online at the Purchasing Division's web site (http://www.state.wv.us/admin/purchase/vrc/hipaa.htm) is hereby made part of the agreement. Provided that, the Agency meets the definition of a Covered Entity (45 CFR §160.103) and will be disclosing Protected Health Information (45 CFR §160.103) to the vendor.

INSTRUCTIONS TO BIDDERS

1. Use the RFP forms provided by the Authority.
2. SPECIFICATIONS: Services offered must be in compliance with the provisions of the RFP. Any deviations must be clearly indicated by the proposer in the proposal. Alternates offered by the proposer as EQUAL to those specified in the RFP must be clearly defined. The Authority, because of the unique nature of the services to be provided under the RFP, may decide not to accept EQUAL services under the RFP. A proposed offering an alternate should attach complete specifications and literature to the proposal. The Purchasing Director may waive minor deviations to certain requirements.
3. Complete all sections of the proposal form.
4. Unit prices shall prevail in cases of discrepancy.
5. All quotations are considered F.O.B. destination unless alternate shipping terms are clearly identified in the quotation.
6. PROPOSAL SUBMISSION: All quotations must be delivered by the proposer to the office listed prior to the date and time of the proposal opening. Failure to deliver the proposal on time will result in disqualifications.

Rev. 12/28/16

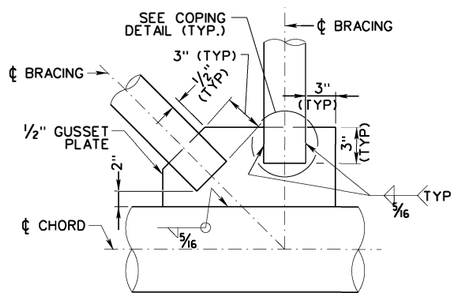
WV PARKWAYS AUTHORITY
Purchasing Department



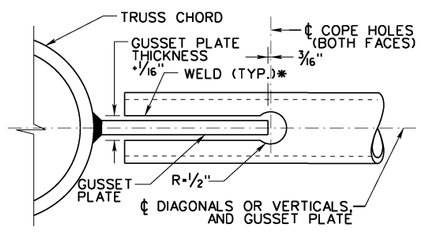
ELEVATION

POST = VERTICAL LEG SUPPORT
BASE PLATE = LEG PLATE

DETAIL 2

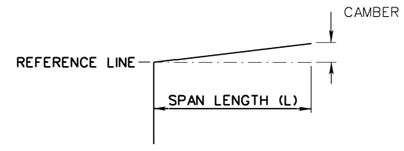


DETAIL 4



COPING DETAIL

* PROVIDE A WELD 'HOLDBACK' AT THE EDGE OF THE GUSSET PLATE IN THE BRACING MEMBERS EQUAL TO THE WELD SIZE REQUIRED.



CAMBER DETAIL

NOTES:

1. THE STRUCTURES ARE DESIGNED IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 6TH EDITION, 2013, USING 90 MPH WIND SPEED AND FATIGUE CATEGORY I.
2. FOR SECTION A-A, B-B & D-D, SEE TE4-5.
3. FOR FOUNDATION NOTES, SEE TE4-5.
4. FOR ANCHOR BOLT DETAIL, SEE TE4-5.
5. HI-STRENGTH BOLTS SHALL CONFORM TO THE REQUIREMENTS OF THE SPECIFICATIONS. TIGHTEN ALL HIGH STRENGTH BOLTS IN ACCORDANCE WITH THE SPECIFICATIONS.
6. DETAILS LABELED AS 'NOT TO SCALE' ARE INTENTIONALLY NOT DRAWN TO SCALE FOR VISUAL CLARITY.
7. THE REMOVABLE CAP SHOULD BE A FRICTION TYPE CAP. FOR REQUIREMENTS AND DETAILS, SEE NOTES ON SHEET TE1-5A.
8. IF THE FOUNDATION IS WITHIN OR PROJECTS INTO A CONCRETE OR ASPHALT SURFACE UTILIZED BY PEDESTRIANS, THE GUIDELINES PROVIDED IN SECTION 658 OF THE STANDARD SPECIFICATIONS SHALL BE FOLLOWED IN REGARDS TO PLACEMENT AND PEDESTAL HEIGHT. OTHERWISE, ALL FACES OF THE FOUNDATION SHALL BE A MINIMUM OF 18 IN. ABOVE GROUND LEVEL. WHEN FOUNDATION IS INSTALLED ON A SLOPE, THE 18 IN. MIN. SHALL BE APPLIED TO THE UPHILL FACE.
9. FOR A STRUCTURE WITH ARM LENGTH VARYING FROM THE DESIGN LENGTHS SPECIFIED, SIZE MEMBER DIMENSIONS BASED ON THE NEXT LONGER ARM LENGTH IN THE CHART AND ADJUST PANEL WIDTH (B) ACCORDINGLY WHILE RETAINING THE NUMBER OF PANELS (N).
10. SEE SHEET TE6-3A FOR GROUNDING NOTES.
11. DEPTH OF FOUNDATION IS BASED ON AN ASSUMED SOIL SUCH AS MEDIUM CLAY OR SAND CLAY PROVIDING AN UNCONFINED COMPRESSIVE STRENGTH NOT LESS THAN 2500 LBS/SQFT. THESE FOUNDATIONS MAY BE USED IN COHESION-LESS TYPE SOILS PROVIDING THAT THE FRICTION ANGLE IS NOT LESS THAN 30 DEGREES.

MEMBER SIZE CHART

DESIGN NUMBER	L (FT)	Bx	A	B	N	MAX. CAMBER	CHORD	BRACING	POST (d X t)	MAX SIGN AREA (SF)
DAC-16	16	9'-3"	5'-0"	4'-4"	3	⅞"	10SCH40	2.5SCH40	24 X 0.5	245
DAC-24	24	13'-3"	5'-6"	5'-3"	4	1½"	16SCH40	4SCH40	24 X 0.688	390
DAC-32	32	19'-6"	6'-0"	5'-9"	5	3⅛"	16SCH40	4SCH40	30 X 0.5	450
DAC-40	40	29'-0"	6'-6"	6'-2"	6	5½"	18SCH40	5SCH40	30 X 0.5	400

L=ARM LENGTH
Bx=℄ POST TO ℄ SIGN PRESSURE
A=℄ OF CHORD TO ℄ OF CHORD
B=LENGTH OF EACH PANEL
N=NUMBER OF TRUSS PANELS
d=OUTSIDE DIAMETER (IN.)
t=PIPE THICKNESS (IN.)
NPS=NOMINAL PIPE SIZE
CAMBER MAY VARY.

Existing Arm = 26' per Contract TPS 1-04, and Orig. Const. Plans.
Assume 24' new arm (DAC-24)
Existing Sign = 90"x156" = 14,040 in^2 = 97.5 ft^2
DAC-24 = 390 ft^2 > 97.5 ft^2 OKAY

FOOTING TABLE

DESIGN NUMBER	POST (DIA. IN.)	PLATE DIMENSION S	F	T	B	ANCHOR BOLTS NO.	DIA.	HOLE	FOOTING EMBEDMENT (H)	DIAMETER (D)
DAC-16	24	38"	19"	2"	32"	6	1¾"	2⅛"	11'-0"	4'-0"
DAC-24	24	38"	19"	2"	32"	6	2"	2⅜"	12'-6"	4'-0"
DAC-32	30	44"	22"	2"	38"	6	2"	2⅜"	13'-2"	4'-6"
DAC-40	30	44"	22"	2¼"	38"	6	2¼"	2⅝"	14'-10"	4'-6"

BOX CONNECTION TABLE

DESIGN NUMBER	CHORD SIZE (NPS)	THICKNESS OF END PLATE (A)	THICKNESS OF BOX FLANGE PLATE (B)	BOX HEIGHT (HB)	OFFSET (X)	NO. OF BOLTS TOP AND BOTTOM	SPACING (W)	NO. OF INTERM. ROWS	TOTAL NO. OF BOLTS
DAC-16	10	2"	1"	9"	8"	5	24"	2	14
DAC-24	16	2"	1"	14"	7"	6	26"	2	16
DAC-32	16	2½"	1¼"	14"	10"	6	28"	2	16
DAC-40	18	2¾"	1½"	16"	9"	6	30"	4	20

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STANDARD DETAIL

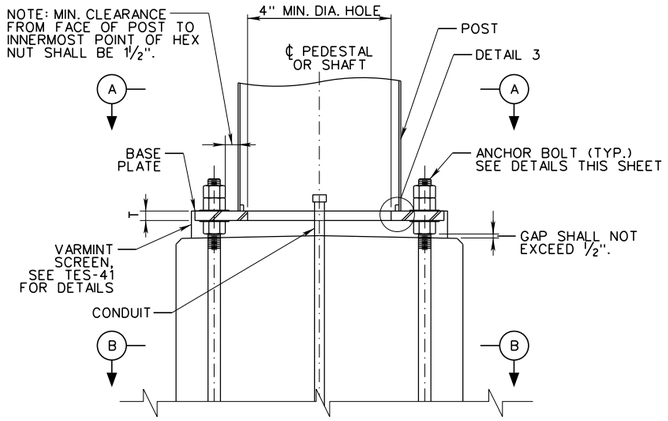
PREPARED: 8/2018
REVISION DATE

OVERHEAD SIGN SUPPORT-STEEL

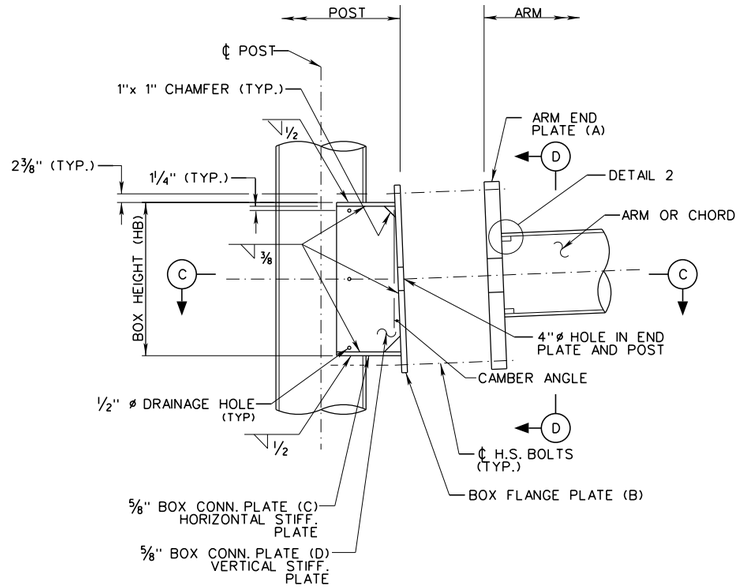
DOUBLE ARM CANTILEVER

STANDARD SHEET TE4-3A

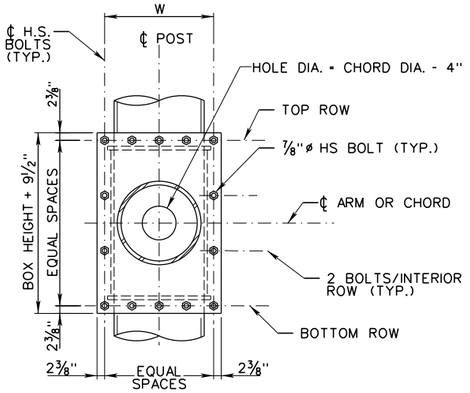
12/19/2018
Z:\Projects\WVDOT\Standard Details vol 1\New_Sheets\Signing\TE4-3A.dgn
J04C02C03-STDBOR c
TRAFFIC ENGINEERING DIVISION



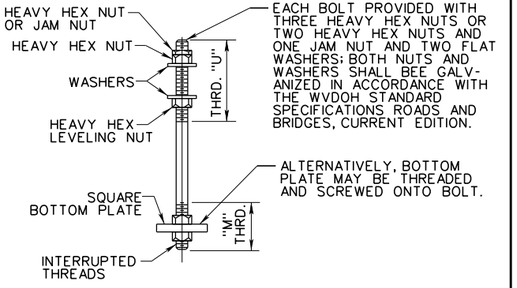
DETAIL 5



DETAIL 1
(SEE TE4-3A TE4-4A & TE4-4B FOR DIMENSIONS A, B, & HB)

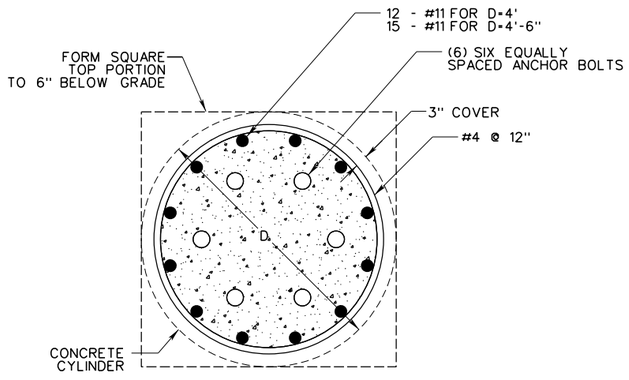


SECTION D-D
NOT TO SCALE

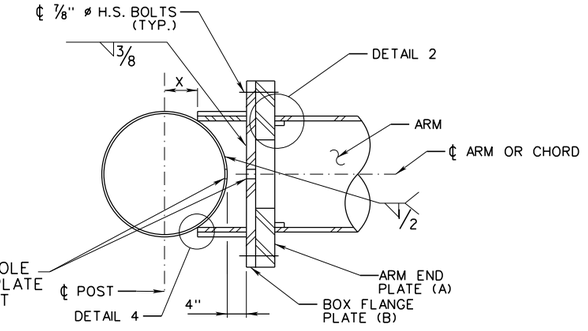


ANCHOR BOLT DETAIL

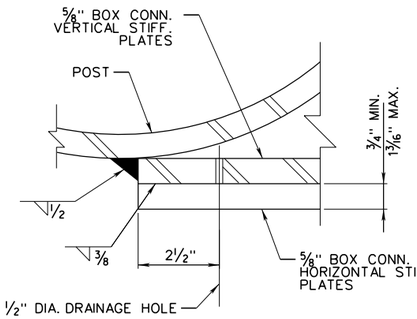
ANCHOR BOLT CHART			
ANCHOR BOLTS (IN)	BOTTOM PLATE (IN)	"M" (IN)	"U" (IN)
1¼x42	5x5x1½	4½	8
1½x54	6x6x1¾	5¼	9
1¾x84	6¾x6¾x2	6	10
2x90	7¾x7¾x2¼	6¾	11
2¼x96	9x9x2½	7½	12



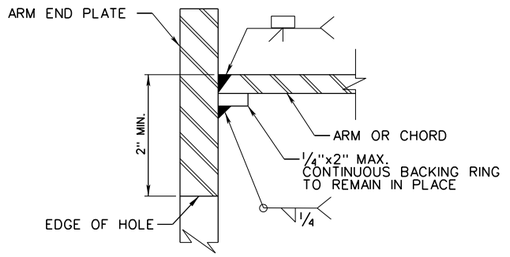
SECTION B-B



SECTION C-C
NOT TO SCALE



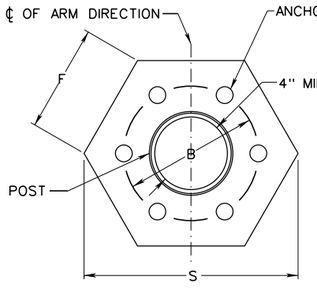
DETAIL 4
NOT TO SCALE



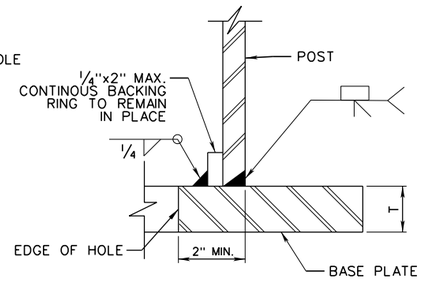
DETAIL 2
NOT TO SCALE

NOTES:

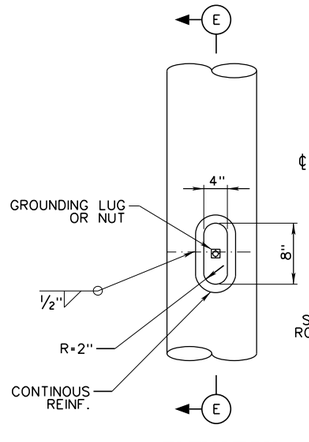
1. BOX CONNECTION ASSEMBLY PROCEDURE:
   A. FIT-UP PLATES B, C AND D (TACK WELD).
   B. MAKE ALL FILLET WELDS. SEQUENCE AS REQUIRED TO MINIMIZE DISTORTION.
   C. WELD BOX CONNECTION ASSEMBLY TO POST.
2. ANCHOR BOLTS SHALL CONFORM TO SECTION 658 OF THE SPECIFICATIONS.
3. DETAILS SHOWN ON THIS DRAWING ARE NOT TO SCALE FOR VISUAL CLARITY.
4. GALVANIZE ALL ANCHOR BOLTS AND ASSOCIATED HARDWARE IN THEIR ENTIRETY.



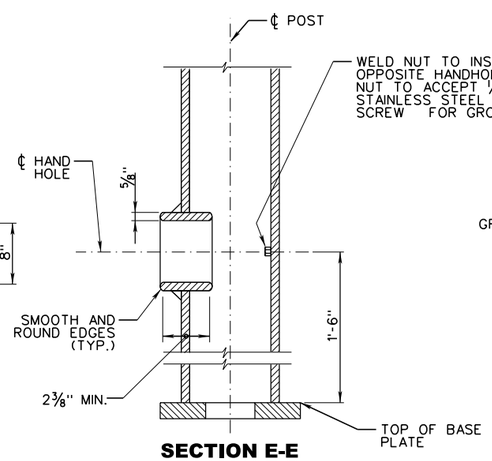
SECTION A-A



DETAIL 3

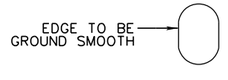


ELEVATON



SECTION E-E

POST HANDHOLE DETAIL



COVER

NOTE:
DETAILS OF THE COVER TO BE DETERMINED BY THE FABRICATOR. COVER TO FIT TIGHTLY,EXCLUDE WATER, AND BE REMOVABLE WITH A WRENCH. ALL FASTENERS, NUTS, AND WASHERS SHALL BE STAINLESS STEEL.

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STANDARD DETAIL

PREPARED: 8/2018
REVISION DATE

OVERHEAD SIGN SUPPORT-STEEL COMMON DETAILS

STANDARD SHEET TE4-5

12/19/2018
Z:\Projects\WVDOT\Standard Details vol 1\New_Sheets\Signing\TE4-5.dgn
J04C02C03-STDBOR c
TRAFFIC ENGINEERING DIVISION

SECTION 658
OVERHEAD SIGN STRUCTURES

658.1-DESCRIPTION:

This item shall consist of the fabrication and erection of overhead frame, cantilever, butterfly, and span structure sign supports and fastening accessories in accordance with the requirements of the Plans and of these Specifications. All details not specified or not shown on the Plans shall conform to the details and requirements set forth in the following Specifications and publications:

i. West Virginia Department of Transportation, Division of Highways, Standard Details Book Vol. II, Signing, Signals, Lighting, Markings, and ITS, latest issue, including revisions (further referenced to herein as the Standard Details).
ii. The Manual on Uniform Traffic Control Devices for Streets and Highways, latest issue, as printed by the Federal Highway Administration, U.S. Department of Transportation (Referred to as the MUTCD).
iii. Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition, including revisions, American Association of State Highway and Transportation Officials.

All material, fabrication, and installation requirements for overhead frame structures shall be included in the project Plans and shop drawings.

658.2-MATERIALS:

Materials furnished shall be of new stock conforming to the requirements of the Specifications, and shall meet the approval of the Engineer.

658.2.1-Pipe: Non-tapered steel pipe used for arms, chords, support legs, and bracing shown on various Standard Detail sheets shall be seamless or welded pipe conforming to A500 Gr. B or C, API 5L X42 or X52, A53 Grade B, or A252 Grade 3.

Non-tapered aluminum pipe used for chords and bracing shown on Standard Detail sheets TE5-1A and TE5-1B shall conform to ASTM B221, ASTM B429, or ASTM B241, all Alloy 6061, temper T6.

Tapered steel pipe used for arms and support legs shown on Standard Detail sheet TE4-4B shall be manufactured from steel having a min. yield strength of 55,000 PSI after fabrication. Galvanized in accordance with ASTM A123.

658.2.2-Plate: Flat steel plate used for chord plates, base plates, arm end plates, arm splice plates, and box flange plates shown on various Standard Detail sheets shall conform to ASTM A572, Grade 42. Galvanized in accordance with ASTM A123.

Flat steel plate used for gusset plates, saddle plates, hand hole plates, and stiffener plate shown on various Standard Detail sheets shall conform to ASTM A36. Galvanized in accordance with ASTM A123.

Flat aluminum plate used for gusset plates and chord plates shown on Standard Detail sheets TE5-1A and TE5-1B shall conform to ASTM B209, Alloy 6061, temper T6.

658.2.3-Structural Connection Bolt: Carbon steel structural connection bolts and associated hardware shown on various Standard Detail sheets shall conform to the following

requirements. Bolts: ASTM F3125 Grade A325, Type I. Nuts: ASTM A563, Grade DH with lubricant contrasting with the color of the galvanizing. Washers: ASTM F436, Type I. All galvanized in accordance to ASTM B695.

658.2.4-Friction Caps: Steel friction caps shown on various Standard Detail sheets shall conform to ASTM A653, designation CS, and shall be zinc electrodeposited coated in accordance with ASTM B633, Class 12.

Aluminum friction caps shown on Standard Detail sheets TE5-1A and TE5-1B shall conform to ASTM B26, Alloy 356, temper F.

658.2.5-Structural Shapes: Steel W10x77 beams as shown on Standard Detail sheets TE3-1 and TE3-2 shall be standard wide flange shapes fabricated from steel conforming to ASTM A36 or ASTM A572 Grade 50. Steel conforming to ASTM A992 and dual certified to ASTM A572 Grade 50 may also be used. The beams shall be galvanized in accordance with ASTM A123.

Steel WT8x25 tees as shown on Standard Detail sheets TE5-1A and TE5-1B shall be standard WT shapes fabricated from steel conforming to ASTM A36 or ASTM A572 Grade 50. Steel conforming to ASTM A992 and dual certified to ASTM A572 Grade 50 may also be used. The tees shall be galvanized in accordance with ASTM A123.

658.2.6-U-Bolts: Carbon steel u-bolts and associated hardware shown on various Standard Detail sheets shall conform to the following requirements: Bolts: ASTM A307 Grade A. Nuts: ASTM A563A Hex. Flat washers: ASTM F844. All galvanized in accordance with ASTM F2329.

658.2.7-Anchor Bolts: Steel anchor bolts and associated hardware shown on various Standard Detail sheets shall conform to the following requirements: Bolts: ASTM F1554 Grade 55. Nuts: ASTM F563 Grade A. Washers: ASTM F436. All galvanized in accordance with ASTM B695.

658.2.8-Concrete: All concrete shall be Class B in accordance with Section 601.

658.2.9-Reinforcing Steel: All reinforcing steel shall be meet the requirements of Section 602.

CONSTRUCTION METHODS

658.3-FABRICATION:

658.3.1-General: Before fabrication of any sign structure, the Contractor shall submit for the Engineer's approval complete detail drawings, eight copies, of each structure. This shall include drawings of all structural steel or aluminum framing and bracing, aluminum or steel castings, lighting fixtures and supporting brackets, sign brackets and any miscellaneous accessories for the above. It is expressly understood that the review by the Engineer of these drawings relates to the requirements for strength and general details, and will not relieve the Contractor from responsibility for errors in detail, dimension, or quantity of materials, etc.

Overhead sign supports shall be fabricated in accordance with the Plans and this Specification. Any alternate design or significant departure from the Plans proposed by the Contractor must be presented in written or plan form for approval. The Division will approve or disapprove alternate proposals in writing. All materials in any alternate proposal which is a

significant departure from the Specifications shall conform to the requirements of current AASHTO and ASTM Specifications. The Division will not approve substitution of material or design detail changes which constitute a reduction in quality, workmanship or strength of the structures.

Ends of sections shall be cut true and smooth, free from burrs and ragged breaks. Open ends of tubular sections shall be capped as shown on the Plans. Drain holes and handholes shall be provided wherever shown or necessary.

Sign supports, either aluminum or steel, shall be void of circumferential welding except at the base, flanges, or intersection of diagonals.

The welding of steel shall be in accordance with the requirements of American Welding Society D1.1 and shall be done by qualified welders. Aluminum Alloy Welding shall be accomplished in accordance with subsection 658.4.

The loading, transporting, unloading, and piling of structural materials shall be conducted so that the metal will be kept clean and free from injury in handling. Structural materials shall be stored above the ground upon platforms, skids, blocks, or other supports. They shall be kept free from accumulation of dirt, oil, acids, or other foreign matter. Any structural material which has been deformed shall be straightened by approval methods before being laid out, punched, drilled, or otherwise worked upon in the shop. Sharp kinks or bends will be cause for rejection.

Where required or indicated on the Plans, a sufficient number of reinforced handholes and electrical wire inlets and outlet fittings shall be built into the structures. Where a cable passes through a hole or runs along a surface at any point through or on the complete assembly, such holes and surfaces shall be deburred and void of any sharp edges through or along the surface. A "J" hook shall be provided on the inside of the top of the vertical support on which the electrical wiring shall be placed as shown on the Detail Drawings.

658.3.2-Structures Utilizing Galvanized Steel: The flanges at the center of the cross beam and at the ends of the horizontal arms shall be fastened to the tapered or straight sections by means of two circumferential welds. One of the circumferential welds shall firmly weld the outside of the flange to the tube. Any alternate flange connection offered shall be designed to develop fully the strength of the tubular sections being jointed together by means of the flange connection.

It is essential that all exposed surfaces of the completed steel structure by finished with a galvanized coating. The frame shall be fabricated into sections as large as can be handled in pickling and galvanizing tanks and then dipped as complete units, ready for field bolted connections wherever possible. Field welding and the need for repairing zinc coatings damaged by assembly shall be kept to an absolute minimum.

Galvanized coatings damaged for any reason shall be repaired by the application of a zinc rich paint conforming to the requirements of subsection 711.21.

The places to be painted shall be thoroughly cleaned before the paint is applied.

658.3.3-Structures Utilizing Weathering Steel: Overhead sign structures of weathering steel are to have a natural weathering finish and shall be kept clear of all paint, grease, or other agents which will tend to cause an uneven finish on the posts. Any identification marks shall be painted on the bottom of the base plates, inside faces of loose column components and the top surface of horizontal members. All structures shall be delivered to the job site at least three months prior to completion of the work and stored in a manner that will allow them to obtain initial natural weathering. If they are stacked on the job site during this period, they shall be

rotated at least once each two months. All members shall be shop cleaned in accordance with subsection 615.6.4, utilizing commercial blast cleaning throughout. No corrosion inhibitors shall be used in the processes.

All welding shall conform to the requirements of AWS D1.1.

658.4-WELDING OF ALUMINUM ALLOYS:

These specifications apply to the welding of aluminum alloys used in sign structures, bridge rails, lamp posts, etc.

The welding terms used in these specifications shall be interpreted in accordance with the definitions given in the latest edition of AWS Definitions—Welding and Cutting (AWS A3.0) of the American Welding Society.

The welding symbols used on plans shall be those shown in the latest edition of Standard Welding Symbols (AWS A2.0) of the American Welding Society. Special conditions shall be fully explained by added notes or details.

658.4.1-Base Metals: The aluminum alloys to be welded under these specifications may be any of the following alloy designations (ASTM designations):

i. Wrought non-heat-treatable alloys
   Alloy 3003, Alloy 3004, Alloy 5052, Alloy 5083, Alloy 5086, Alloy 5456
ii. Wrought heat-treatable alloys
   Alloy 6061, Alloy 6063
iii. Cast heat-treatable alloys
   Alloy 356.1, Alloy A356.2

658.4.1.1-Materials used for permanent backing shall be at least equivalent in weldability to the base metal being welded.

658.4.2-Welding Processes: These Specifications include provisions for welding by the gas metal-arc process and the gas tungsten-arc process. Other processes shall not be used except as permitted by the Engineer.

658.4.3-Filler Metal: Bare wire electrodes for use with gasmetal-arc process and welding rods for use with the gas tungsten-arc process shall conform to the requirements of the latest edition of Specifications for aluminum and aluminum alloy rods and bare electrodes AWS A5.10.

Tungsten electrodes for the gas tungsten-arc process shall conform to the requirements of the latest edition of Specifications for Tungsten-Arc-Welding Electrodes, AWS A5.12.

Filler metals to be used with particular base metals shall be as shown in Table 658.4.3. Other filler metals may be used as approved by the Engineer.

TABLE 658.4.3

Base Metal	Filler Material
3003 to 3003	ER1100
3004 to 3004	ER4043
5052 to 5052	ER5356 *
5083 to 5083	ER5183
5086 to 5086	ER5356 *
5456 to 5456	ER5556
5670B to 6061	ER4043 *
5670B to 6063	ER4043 *
356.1 to 6061	ER4043
A356.2 to 6063	ER4043
6061 to 6063	ER4043 or ER5356
6061 to 6061	ER4043 or ER 5356
6063 to 6063	ER 4043 or ER5356

* ER5183, ER5356, and ER 5556 may be used interchangeably for these base metals.

Filler metals shall be kept covered and stored in a dry place at relatively uniform temperatures. Original rod or wire containers shall not be opened until time to be used. Rod and wire shall be free of moisture, lubricant, or other contaminants. Spools of wire temporarily left unused on the welding machine shall be kept covered to avoid contamination by dirt and grease collecting on the wire. If a spool of wire is to be unused for more than a short length of time, it shall be returned to the carton and the carton tightly resealed.

658.4.4-Shielding Gases: Shielding gases shall be welding grade or better.

Shielding gas for gas metal-arc welding shall be argon, helium, or a mixture of the two (approximately 75 percent (75%) helium and 25 percent (25%) argon).

Shielding gas for gas tungsten-arc welding done with alternating current shall be argon.

Shielding gas for gas tungsten-arc welding done with direct current, straight-polarity, shall be helium.

Hose used for shielding gases shall be made of synthetic rubber or plastic. Natural rubber hose shall not be used. Hose which has been previously used for acetylene or other gases shall not be used.

658.4.5-Preparation of Materials: Joint details shall be in accordance with design requirements and detail drawings. The locations of joints shall not be changed without the approval of the Engineer.

Edge preparation shall be by sawing, machining, clipping, or shearing. Gas tungsten-arch or gas metal-arc cutting may also be used. Cut surfaces shall meet the American Standards Association surface roughness rating value of 1,000. Oxygen cutting shall not be used.

Surfaces and edges to be welded shall be free from fins, tears, and other defects which would adversely affect the quality of the weld.

Dirt, grease, forming or machining lubricants or any organic materials shall be removed from the areas to be welded by cleaning with a suitable solvent or by vapor degreasing.

On all edges and surfaces to be welded, the oxide shall be removed just prior to welding by wire brushing or by other mechanical methods such as rubbing with steelwool or abrasive

cloth, scraping, filing, rotary planning, or sanding. If wire brushing is used, the brushes shall be made of stainless steel. Hand or power driven wire brushes which have been used on other materials shall not be used on aluminum.

Where mechanical methods of oxide removal are found to be inadequate, a standard chemical method shall be used. Welding shall be done within 24 hours after chemical treatment.

When gas tungsten-arc welding with direct current, straight polarity is being used, all edges and surfaces to be welded shall have the oxide removed by a standard chemical method.

Welding shall not be done on anodically treated aluminum, unless the condition is removed from the joint area to be welded.

658.4.6-Welding Procedure: All butt welds requiring 100 percent (100%) penetration, except those produced with the aid of backing, shall have the root of the initial weld chipped or machined out to sound metal before welding is started from the second side. Butt welds made with the use of backing shall have weld metal thoroughly fused with the backing. Where accessible, backing for welds that are subject to computed stress or which are exposed to view on the completed structure and which are not otherwise parts of the structure, shall be removed and the joints ground or machined smooth. In tubular members, butt welds subjected to computed stresses shall be made with the aid of permanent backing rings or strips.

The procedure used for production welding of any particular joint shall be the same as used in the procedure qualification for that joint.

All welding operations, either shop or field, shall be protected from air currents or drafts so as to prevent any loss of gas shielding during welding. Adequate gas shielding shall be provided to protect the molten metal during solidification.

The work shall be positioned for flat position welding whenever practicable.

In both shop and field, all weld joints shall be dry at the time of welding.

The size of the electrode, voltage and amperage, welding speed, gas or gas mixture, and gas flow rate shall be suitable for the thickness of material, design of joint, welding position and other circumstances attending the work.

Gas metal-arc welding shall be done with direct current, reverse polarity.

Gas tungsten-arc welding shall be done with alternating current or with direct current straight polarity.

When the joint to be welded requires specific root penetration, the Contractor shall make a sample joint and a macroetched cross section of the weld to demonstrate that the joint welding procedure to be used will attain the required root penetration. The sample joint shall have a length of at least one (1) foot and shall be welded with the electrode, polarity, amperage, voltage, speed, gas mixture and gas flow rate that are proposed to be used in production welding. The Engineer, at their discretion, may accept evidence on record in lieu of the preceding test.

Where preheat is needed, the temperature of preheat shall not exceed 350° F for heat-treated alloys or 600° F for non-heat-treated alloys. The temperature shall be measured by temperature indicating crayons or by pyrometric equipment. Heat treated alloys shall not be held at the maximum preheat temperature or at temperatures near the maximum for more than 30 minutes.

658.4.7-Weld Quality: Regardless of the method of inspection, the acceptance or rejection of welds shall be determined by the following conditions:

i Cracks in welds or adjacent base metal will not be acceptable.

ii Copper inclusions will not be acceptable.
iii Porosity in excess of that permitted by Appendix IV, Section of the ASME Boiler and Pressure Vessel Code will not be acceptable.
iv Lack of fusion, incomplete penetration, or tungsten or oxide inclusions will be acceptable only if small and well dispersed.

Undercut shall not be more than 0.01 inch deep when its direction is transverse to the primary stress in the part that is undercut.

Undercut shall not be more than 1/32 inch deep when its direction is parallel to the primary stress in the part that is undercut.

No overlap shall be allowed.

All craters shall be filled to the full cross section of the welds.

Welds having defects greater than the levels of acceptance specified above shall be considered as rejected unless corrected in accordance with subsection 658.4.9.

658.4.8-Inspection: To determine compliance with subsection 658.4.7, all welds shall be visually inspected and, in addition, all welds subjected to computed stress shall be inspected by the dye penetrant method except as specified in subsection 658.4.8.3.

658.4.8.1-For highway sign structures, the dye penetrant method shall be used on butt welds in columns and main chord members, and on fillet welds connecting columns to bases and main chord members, including the associated flanges, gussets, or main load carrying brackets or members; also, on fillet welds connecting flanges to the main truss chord members.

658.4.8.2-The dye penetrant tests shall be performed in accordance with the requirements of ASTM E165, Method B, Procedures B-2 or B-3.

658.4.8.3-Dye penetrant inspection may be omitted provided that the inspector examines each layer of weld metal with a magnifier of 3X minimum before the next successive layer is deposited.

658.4.9-Corrections: In lieu of rejection of an entire piece or member containing welding which is unacceptable, the corrective measures listed below may be permitted by the Engineer, whose approval shall be obtained prior to making each repair.

658.4.9.1-Defective welds shall be corrected by removing and replacing the entire weld, or as follows:

i. Cracks in welds or base metal: Determine full extent of crack by dye penetrant method or other positive means. Remove crack throughout its length and depth, and reweld.
ii. Excessive porosity, lack of fusion: Remove defective portions and reweld.
iii. Copper or tungsten inclusions: remove defective portions and reweld.
iv. Excessive concavity of crater, undercut, undersize weld: Clean and deposit additional weld metal.
v. Overlap: Reduce by removal of excess weld metal.

658.4.9.2-The defective areas shall be removed by chipping or machining. Oxygen cutting shall not be used. Before rewelding, the joint shall be inspected to assure that all the defective weld has been removed. If dye penetrant has been used to inspect the weld, all traces of penetrant solutions shall be removed with solvent, water, heat, or other suitable means before rewelding.

658.4.10-Qualification of Procedures, Welders and Welding Operators: Joint welding procedures which are to be employed in executing contract work under these specifications shall be previously qualified by tests prescribed in Part B, Section IX, of the ASME Boiler and Pressure Vessel Code. The qualifications shall be at the expense of the Contractor. The Engineer, at their discretion, may accept evidence of previous qualification of the joint welding procedures to be employed.

All welders and welding operators to be employed under these specifications shall be previously qualified by tests as prescribed in Part B, Section IX, of the ASME Boiler and Pressure Vessel Code. The Engineer, at their discretion, may accept evidence of previous qualification of the welders and welding operators to be employed. The same process and type of equipment that is required for execution of the construction work shall be used in qualifying welders and welding operators.

658.5-ERECTION:

658.5.1-General: All structures shall be installed at the points designated on the Plans or by the Engineer in accordance with these specifications, the Plans, and approved shop drawings and shall be erected in reasonably close conformity to the locations, elevations, and angles shown on the Plans or established by the Engineer.

Erection of sign structures shall be in accordance with the applicable provisions of the current edition of the Specifications and the requirements given below. The Contractor shall provide all tools, equipment and appliances necessary for the expeditious handling of the work, all of which shall be subject to the approval of the Engineer. Materials and workmanship not previously inspected will be inspected on the site of the work and all rejected material shall be removed from the site of the work.

The Contractor shall take full responsibility for checking all cross sections at approved structure locations to determine final support lengths. Necessary support lengths shall be determined in accordance with the roadway overhead clearance requirements shown in the Plans or Standard Details.

Before proceeding further, the Contractor shall initially establish the location of each structure in accordance with the Plans or as directed by the Engineer and shall mark each site with construction stakes. The Contractor shall furnish stakes, paint, other materials, and labor for performing the locating and staking as described. When the sites have been staked and are ready for inspection, the Contractor shall inform the Engineer, who will check and approve the site or make necessary changes. Centerline station information will be furnished to the Contractor by the Engineer.

All existing or proposed assembly locations are approximate. In cases where an existing assembly, including supports, is to be removed and replaced with a new assembly, the new assembly shall be located as close as possible to the original with a minimum of twenty (20) feet of clearance between the existing foundation and the new foundation unless otherwise approved by the Engineer.

658.5.2-Excavation: The Contractor shall perform excavations for each concrete foundation to the depths and dimensions shown on the Plans. The excavation shall be made in accordance with the applicable provisions of the Specifications.

The Contractor shall contact WV 811 and shall notify all applicable WV 811 non-participating utilities prior to beginning excavation or conduit jacking activities. The Contractor shall hand dig to locate lines or open cut in areas of possible conflict, as determined by the Engineer. The Contractor shall also be responsible for locating and verifying Division owned underground conduit to avoid conflict or damage. All such work shall be incidental to the Contract bid items. All costs associated with any disruption of services as a result of the Contractor's activities shall be the Contractor's sole responsibility.

Earth augers, if used shall be of the same diameter as the footings. Where a trench is required, it shall be only as wide and long as is necessary to accommodate the work.

If rock or boulders are encountered during the excavation, they shall be removed to a depth sufficient, in the judgement of the Engineer, to obtain the stability necessary to support the sign structure. The Standard Detail drawings are compiled on the basis of average soil conditions. Soil conditions surrounding specific foundations may require larger foundations. The Contractor shall adjust the foundation dimensions if directed to do so by the Engineer. Any work in such cases shall be performed without change in the unit bid price.

If a foundation is to be installed within the area of an existing concrete or asphalt surface, the concrete or asphalt shall be carefully opened by drilling, saw cutting, or other suitable methods approved by the Engineer that will not cause unnecessary damage to the surrounding surface.

The Contractor shall remove all excavated material from the site that is not needed for backfill or, if permitted by the Engineer, shall spread this material out in the area immediately surrounding the foundation location to the satisfaction of the Engineer. The Contractor shall restore all disturbed areas to within reasonable conformity of their original conditions by grading, seeding, mulching, and/or fertilizing as directed by the Engineer. These operations and required materials shall be paid for incidental to the Contract bid items.

658.5.3-Conduit and Ground Rods: All overhead sign structures shall have conduit and ground rods, regardless of whether they have sign lighting or other electrical components.

A two (2) inch diameter galvanized conduit shall be furnished and installed in the support foundations at locations as specified on the Plans. The conduit shall terminate above the top of the foundation and shall be fitted with a two (2) inch capped grounding bushing above the foundation. The lower end of the conduit shall emerge from the side of the footing to be joined to conduit from the junction box.

Ground rods shall be copper clad steel, ¾ inches in diameter with a minimum length as noted on the Plans and shall be one piece. Sectional or segmented ground rods are not permitted. The ground rods shall be complete with ground clamp and square head bolt.

658.5.4-Foundation Placement: The foundations shall be of Class B concrete, reinforced, of the types shown on the Plans. Steel reinforcement, anchor bolts and conduit for the footings shall be as shown on the Plans.

All concrete for each foundation shall be placed in one placement with no construction joints.

Each foundation shall typically be installed with a pedestal as shown on the Standard Details. All pedestals shall be square to a depth of six (6) inches minimum below ground level. Each of the two pedestals on each end of box truss span structures shall be constructed at the

same elevation. For foundations which are within or project into a concrete or asphalt surface utilized by pedestrians, Americans with Disabilities Act (ADA) walkway specification requirements shall be met as directed by the Engineer. In such cases, the following guidelines shall be followed:

i. Unless unachievable due to right of way restrictions, the foundation shall be placed such that a forty-eight (48) inch minimum wide walkway is maintained from the edge of the foundation to the roadside edge of the walkway. This measurement shall not include curbs constructed with a joint separating the curb and walkway.

ii. If it is not possible to maintain a forty-eight (48) inch wide walkway, the pedestal portion of the foundation above grade shall be eliminated, and the top of the foundation shall be constructed flush with the walkway. In this case, the width of the walkway shall be measured from the roadside edge of the structure base plate to the roadside edge of the walkway. This measurement shall not include curbs constructed with a joint separating the curb and walkway. This measurement shall not be restricted to less than thirty-two (32) inches, and the continuous longitudinal length over which the walkway is restricted to less than forty-eight (48) inches shall be for no more than twenty-four (24) inches. The width of the restriction shall be minimized as much as possible within the available right of way.

The anchor bolts shall be set accurately by means of a template in the position shown on the drawings and held rigidly in the forms so as to avoid displacement during the placement of concrete. The steel reinforcement and conduit shall be properly placed and secured before the placement of concrete. The Contractor shall make periodic checks of the bolt positions and elevations during concrete placement operations. It is essential that the distance between the centers of anchor bolt groups of the two foundations of a span structure be exactly the span lengths shown on the Plans.

The exposed surfaces of all foundations constructed with pedestals as shown in the Standard Details shall be given a Class 1, ordinary finish as defined in Section 601.

658.5.5-Backfilling: If any backfilling is required, excavations shall be backfilled with random material, approved by the Engineer, in horizontal layers not to exceed four (4) inches after compaction. Each lift shall be compacted to the satisfaction of the Engineer. Testing is not required.

All surplus material shall be removed from the right-of-way and the backfill finished flush with surrounding natural ground, including replacement of any damaged facilities or appurtenances. The Contractor shall restore all areas disturbed by this excavation or other operations within reasonable conformity to their original conditions including grading, seeding, mulching and/or fertilizing as directed by the Engineer. No separate payment will be made for backfilling materials or operations.

658.5.6-Structure Installation:

658.5.6.1-General: All structures depicted in the Standard Details shall have the support legs installed with the anchor bolts fully tightened before installation of the arms or chords.

The individual sections of any box truss span structure made up of multiple sections shall be spliced together for the full length of one span before lifting into place. In addition, all sign panels, lighting and other accessories required thereon, as described elsewhere in the Specifications, shall be fully installed before lifting the box truss into place.

Two-Tube-Span and One-Tube-Span structures as shown on Standard Detail sheets TE3-1 and TE3-2 shall have the entire span assembled and fully tightened before lifting the span into place. The arm splice connections of Heavy Single Arm Cantilevers and Light Single Arm Cantilevers as shown on Standard Detail sheets TE4-4A and TE4-4B may be assembled after lifting the section attaching to the support leg into place and fully tightening the structural connection bolts.

The field assembling of the component parts of a structure shall be done in a manner not likely to produce damage by twisting, bending, or otherwise deforming the metal. Signs required to be installed prior to erection or immediately after erection as described herein shall be covered in a manner approved by the Engineer if determined to be necessary due to operational considerations.

658.5.6.2-Installation Preparation: Proper condition and lubrication of hardware associated with anchor bolts and structural bolted connections is critical to proper installation. Only un-weathered hardware components in new condition shall be used. Fastener components shall be protected from dirt and moisture in closed containers at the site of installation. Fastener components shall not be cleaned of lubricant that is present in the as delivered condition. Components that accumulate rust or dirt resulting from plant or job-site conditions shall not be incorporated into the work. Galvanized structural connection bolts that have been fully pretensioned shall not be reused. If a new structure is to be placed on existing foundation(s) and connected to existing anchor bolts, all washers and nuts for the connection shall be replaced with new.

All nuts shall be pre-coated with a lubricant as specified herein. Prior to snug tightening of any nuts or bolts, lubricant shall be applied to the bolt threads if the threads of the bolts have not been lubricated, were last lubricated more than twenty-four (24) hours prior, or have gotten wet since they were last lubricated. Beeswax or toilet ring wax may be used. If the bolt heads are turned in order to tighten a connection, the Contractor shall apply lubricant to the face of the washer that the bottom of the bolt head is to be tightened against. If pre-coated nuts have gotten wet, lubricant shall be reapplied to the threads and the bearing surface face of the nut.

Prior to erection, the following steps shall be taken by the Contractor:

1. Inspect the separate components of the structure for bent or damaged members, damaged coatings, distortion, blemishes, scratches, cracks, and defective fabrication that would affect proper erection, durability, or structure performance. Localized defects in the galvanizing coating shall be repaired in accordance with the requirements of ASTM A780. Any member slightly bent or twisted shall have all defects corrected in an approved manner before being placed. The Engineer may direct the Contractor to not proceed with the erection of any structure if any serious defects warranting further assessment and possible rejection are found.
2. Verify that there will be no potential fit-up problems when the components of the structure are assembled. Insure connecting plates will fit with no burrs or other seating inhibitors. If more than 25-percent (25%) of the surface area of the face of a flange bolted to the face of another component, or surface area of the underside of a structural bolt head or nut, is visible after snugging of the bolts this shall be cause for rejection.
3. Apply protective coating materials if aluminum components are to be attached to concrete, masonry, or steel if the steel is neither galvanized nor stainless. If to be attached to steel which is neither galvanized nor stainless, the aluminum points of

contact shall be coated with a zinc chromate primer or as called for on the Plans, and the steel shall be coated at the points of contact with a suitable priming paint followed by a coat of aluminum paint. If to be attached to concrete or masonry, the points of contact shall be coated with a heavy coat of an alkali-resistant bituminous paint.

4. Verify that the foundations are set to the proper elevation and anchor bolts are set in the correct pattern and orientation, are of the correct size, and are plumb with the specified extension and thread length above the top of concrete.
5. Just prior to erection, the aluminum shall be thoroughly cleaned, and any accumulations of oil, grease, dirt or foreign materials shall be removed using an approved solvent cleaner.

658.5.6.3-Installation Procedure: The following steps shall be followed during the erection procedure:

1. Clean the anchor bolts with a wire brush or equivalent and lubricate the anchor bolts as described herein if this has not already been done.
2. If the structure is to be placed on existing foundation(s) and connected to existing anchor bolts, the Contractor shall verify that it is possible to turn a new properly lubricated nut onto each anchor bolt by hand below the elevation where the leveling nut will be initially placed. If this is not possible, the installation procedure shall be suspended and this issue shall be reported to the Engineer and in turn referred to the Traffic Engineering Division for further direction.
3. Place and level the foundation leveling nuts with washers on top. Initial placement of the leveling nuts shall be no more than ¼-inch above the top of the foundation.
4. Bring the support leg(s) into position for placement. Insure anchor bolts and the bolt holes in base plate are properly aligned. No cold working of the anchor bolts shall be allowed. No cutting or reaming of holes will be allowed without prior approval from the Traffic Engineering Division.
5. Place the support leg(s). The Contractor shall take due care to avoid damaging the anchor bolt threads during this process. If the structure has multiple support legs, one support leg shall be placed and fully tightened into place at a time.
6. With the support leg as plumb as possible, adjust the leveling nuts as needed. The gap between the top of concrete and the bottom of each leveling nut shall not exceed the diameter of the anchor bolt after this process is completed.
7. Fully tighten the anchor bolt top nuts in accordance with Materials Procedure (MP) 658.05.06. The tightening process shall be documented and transmitted to the Traffic Engineering Division in accordance with MP 658.05.06. When the snug tightening portion of MP 658.05.06 is completed, the Contractor shall verify that all nuts and washers were brought into firm contact with the base plate. Beveled washers may be necessary under the leveling or top nut if any face of the base plate has a slope greater than 1:20 and/or any nut could not be brought into firm contact. If it is determined that beveled washers are required, the support leg shall be disassembled from the anchor bolts and the erection procedure shall be restarted using the beveled washers. Beveled washers shall be manufactured of the same material as the base plate and shall be galvanized. Beveled washers shall be square with the length of each side being equal to or greater than the diameter of the normal washers. The minimum thickness of the beveled washers shall be the thickness of the normal washers

8. Release any load by crane or other erection device. The anchor bolt nuts must be properly tightened before removal of the crane. If problems exist such as the anchor connections are loose after release, then repeat the nut tightening procedure.
9. Lift the structure arms or span into place. The Contractor shall be responsible for determining and selecting appropriate lift points in order to not overstress the structural components or attachments during lifting.
10. Once components that are attached using structural connection bolts are lifted into place and lubrication is applied to the hardware components as required, the bolts shall be snug tightened and then fully tightened immediately. The snug tightening procedure used shall be the same as described for the anchor bolts in MP 658.05.06. The procedure for fully tightening the bolts is described in Section 658.5.6.3.1. Once span structures are lifted into place and proper alignment is verified, they shall be secured to the support legs by installing and tightening the u-bolts immediately.
11. Check structure. If problems exist, such as loose arm connections or showing gaps, the load must be removed from the area in question and steps repeated as necessary. If this requires loosening structural connection bolts that have already been fully tightened, the bolts shall be replaced.
12. If not installed prior to lifting the arms or chords into place (required for box truss spans), all signs to be attached to the structure arms or chords shall be installed immediately after the attachment hardware for the arms or chords are fully tightened.

658.5.6.3.1-Structural Connection Bolt Tightening: After snug tightening has been accomplished, apply the appropriate rotation to the turning elements in the same sequence as snug tightening. Rotation shall be in accordance with Table 615.5.6.3B. Full tightening of each bolt shall be accomplished in approximately 10- seconds using a hydraulic torque wrench meeting the requirements specified herein, or impact wrenches of adequate capacity.

658.6-METHOD OF MEASUREMENT:

658.6.1-Class B Concrete Footing, Reinforced, Overhead: The quantity of work done for Class B Concrete Footings, Reinforced, Overhead will be measured in cubic yards, complete in place and accepted, as determined by the dimensions on the Plans or Contract documents, subject to adjustment as provided for in subsection 104.2 and 109.2.

658.6.2-Overhead Sign Structures: Measurement for payment for overhead sign structures will be based on each unit complete in place, which will include the various elements of the structure consisting of vertical end support units, horizontal units, vertical sign brackets, structural framing for signing if required, sign lighting support hardware if required (horizontal brackets, pads, bolts, nuts, plates, etc.) and any other accessories or hardware as required to make a complete installation as called for on the Plans or as directed by the Engineer.

658.7-BASIS OF PAYMENT:

The quantities, determined as provided above, shall be paid for at the contract unit price for the items listed below, which prices and payment shall be full compensation for furnishing all the materials and doing all work prescribed in a workmanlike and acceptable manner, including staking out footings and stakes therefore; excavating for footings regardless of the type of material

encountered; constructing and removing forms; furnishing and installing reinforcing steel, anchor bolts, washers and nuts; furnishing and installing electrical grounding and conduit sleeves; furnishing, placing, finishing and curing the concrete; furnishing and placing grout as required by the Plans; fabrication, delivery and erection of each overhead sign; and including all tools, equipment, supplies and incidentals necessary to complete the work. All incidental work and materials for which no basis of payment is provided will be considered as completely covered by the prices bid for the items included in the contract.

658.8-PAY ITEMS:

ITEM	DESCRIPTION	UNIT
658001-*	Class B Concrete Footings, Reinforced, Overhead	Cubic Yard
658005-*	Overhead Sign, Two Tube Span	Each
658006-*	Overhead Sign, One Tube Span	Each
658007-*	Overhead Sign, Double Arm Cantilever	Each
658008-*	Overhead Sign, Butterfly Cantilever	Each
658009-*	Overhead Sign, Single Arm Cantilever (Heavy)	Each
658010-*	Overhead Sign, Single Arm Cantilever (Light)	Each
658011-*	Overhead Sign, Steel Box Truss Span	Each
658012-*	Overhead Sign, Aluminum Box Truss Span	Each
658013-*	Overhead Sign, Frame	Each

* Sequence Number